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Bechtel Jacobs Company LLC

DOE Contract No. DE-AC05-98OR22700
Job No. 23900
December 20, 2001

Mr. W. Don Seaborg
Paducah Site Manager
U.S. Department of Energy
P.O. Box 1410
Paducah, KY 42002-1410

Subject: Transmittal of the Final Risk Methods Document

Dear Mr. Seaborg:

Enclosed for your use is ten copies of the revised Human Health and Ecological Risk Methods document for the Paducah Gaseous Diffusion Plant. This revision includes changes consistent with the comment resolution package previously approved by the Environmental Protection Agency (EPA) and the Commonwealth of Kentucky (Kentucky). A copy of the comment resolution package has been enclosed as an insert to the document for your convenience.

If the enclosed is satisfactory, please transmit copies to EPA and Kentucky at your earliest convenience. A draft transmittal letter has also been enclosed for your convenience.

If you have any questions or require additional information, please contact J. W. Morgan of my staff at 5069.

Sincerely,

Gordon L. Dover
Paducah Manager of Projects

GLD:mk
LTR-PAD/SRA-MK-01-0024

Enclosure: 1. Draft transmittal letter
2. Revised Human Health and Ecological Risk Methods document

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Subject: Risk Methods Document

Dear Messrs. Crane, Volpe, and Welch:

Enclosed is the revised Human Health and Ecological Risk Methods document for the Paducah Gaseous Diffusion Plant. This revision includes changes consistent with the comment resolution package previously approved by the Environmental Protection Agency and Commonwealth of Kentucky. A copy of the comment resolution package has been enclosed as an insert to the document for your convenience.

Sincerely,

W. Don Seaborg

received
11/2/02 cw

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Department of Energy
Oak Ridge Operations
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December 20, 2001

Mr. Jeffrey L. Crane
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Dear Mr. Crane and Mr. Welch:

TRANSMITTAL OF THE HUMAN HEALTH AND ECOLOGICAL RISK METHODS DOCUMENT, PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY

Enclosed for your information is the subject document. This revision includes changes consistent with the comment resolution package previously approved by the Environmental Protection Agency and Kentucky Department for Environmental Protection. A copy of the comment resolution package has been enclosed as an insert to the document for your convenience.

If you have any questions or require additional information, please call Gary Bodenstein at (270) 441-6831.

Sincerely,

W. Don Seaborg, Site Manager
Paducah Site Office

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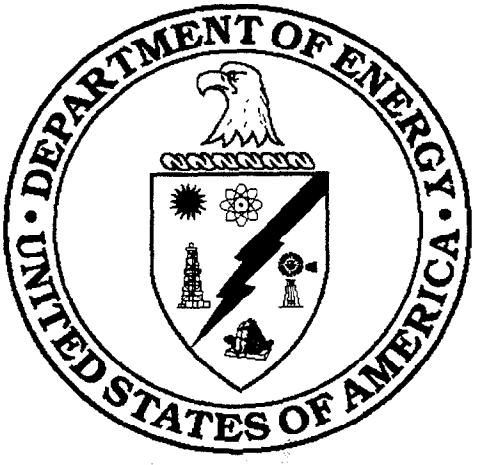
Methods for Conducting Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant Paducah, Kentucky Volume 1. Human Health



CLEARED FOR PUBLIC RELEASE

This document has received the appropriate reviews for release to the public.

DOE/OR/07-1506&D2

Methods for Conducting Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky Volume 1. Human Health

Date Issued—December 2000

Prepared for the
U.S. Department of Energy
Office of Environmental Management

Environmental Management Activities at the
Paducah Gaseous Diffusion Plant
Paducah, Kentucky 42002
Managed by
Bechtel Jacobs Company, LLC
for the
U.S. Department of Energy
under contract DE-AC05-98OR22700

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PREFACE

This *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah Kentucky* (DOE/OR/07-1506&D1/V1/R1) was prepared in accordance with the requirements under both the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA). This document provides guidance for the completion of risk analyses beyond the guidance found in the most recent revision of *Site Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1207&D2). Specifically, this document integrates results of discussions between the regulatory agencies and the U.S. Department of Energy in the Federal Facilities Agreement during comment resolution and technical meetings and provides methods that should be followed when completing risk analyses to ensure consistency in risk analyses. Risk analyses considered in this document are human health risk assessments and risk evaluations prepared for both informal and formal reports.

In accordance with Sect. IV of the *Federal Facilities Agreement for the Paducah Gaseous Diffusion Plant*, this integrated technical document was developed to satisfy both CERCLA and RCRA corrective action requirements. It is noted that the phases of the investigation process are referenced by CERCLA terminology within this document to reduce the potential for confusion.

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ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances and Disease Registry
CDI	chronic daily intake
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
COPC	chemicals of potential concern
DAF	dilution/attenuation factor
DOE	U.S. Department of Energy
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
FFA	Federal Facilities Agreement
FS	feasibility study
GI	gastrointestinal
HEAST	Health Effects Assessment Summary Tables
HI	hazard index
HQ	hazard quotient
IRIS	Integrated Risk Information System
KYDEP	Kentucky Department of Environmental Protection
KYRHTAB	Kentucky Radiation Health and Toxic Agents Branch
MCL	maximum contaminant level
MDA	minimum detectable activities
MOC	medium of concern
PA/SI	preliminary assessment/site investigation
PAH	polycyclic aromatic hydrocarbon
PCB	polychorinated biphenyl
POC	pathway of concern
PGDP	Paducah Gaseous Diffusion Plant
PRAP	proposed remedial action plan
PRGs	preliminary remediation goals
PTSM	principal threat source material
RAGS	Risk Assessment Guidance for Superfund (EPA 1989a)
RAO	remedial action objective
RAWG	Risk Assessment Working Group
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RGA	Regional Gravel Aquifer
RGO	Remedial Goal Option
RI	remedial investigation
ROD	record of decision
SAS	Statistical Analysis System
SMP	PGDP Site Management Plan (DOE 1999b)
SWMU	solid waste management unit
TEFs	toxicity equivalence factors
UCL	upper confidence limit
UCRS	Upper Continental Recharge System

EXECUTIVE SUMMARY

This document describes the methods to be used to prepare the human health risk assessments and risk evaluations needed to complete remedial activities at the Paducah Gaseous Diffusion Plant (PGDP). The materials and methods presented in this document were developed following agreements reached between the U.S. Department of Energy (DOE) and the regulatory agencies during comment resolution meetings, in the Federal Facilities Agreement (FFA), and at technical meetings. In this document, the human health risk analyses that will occur during each phase of remedial activities are discussed, analytical techniques are described, and several analytical tools are presented. By providing this material in a single document, the consistency of human health risk assessments and evaluations performed for the PGDP can be improved, thereby speeding the completion and review of risk assessments and risk evaluations.

This document also discusses some of the methods used to complete dose assessments at PGDP. The methods for dose assessment are presented generally and additional discussion should be held with regulatory agencies prior to initiating any dose assessment project.

This document was prepared by the PGDP Risk Assessment Working Group (RAWG). The RAWG is a multiagency, multidisciplinary group tasked by the PGDP Core Team with meeting the following goals:

- Produce tools that can be used by the Core Team to prioritize remedial activities at the PGDP.
- Develop methods to complete risk evaluations for the PGDP.
- Make the results of the risk assessments and evaluations at the PGDP more useful to risk managers.
- Enhance risk communication between the producers of risk assessments and risk evaluations and the users of this information (e.g., risk managers).

Organizations participating in the production of this document and their affiliations are the U.S. Department of Energy, U.S. Environmental Protection Agency, Commonwealth of Kentucky Division of Environmental Services, Commonwealth of Kentucky Division of Waste Management, and Commonwealth of Kentucky Radiation Control Branch.

1. INTRODUCTION

Analyses of risks and hazards presented by environmental contamination at the Paducah Gaseous Diffusion Plant (PGDP) are integral to the Federal Facilities Agreement's (FFA) primary objective of implementing remedies that minimize, control, or eliminate risks to human health and the environment. These analyses begin during the scoping phase [e.g., during scoping meetings and during preparation of preliminary assessment/site investigation (PA/SI)] when available environmental media and historical information is interpreted and compared against site-specific preliminary remediation goals (PRGs) and other screening criteria to determine if action may be required at release sites and the timing of that action. These analyses continue during the remedial investigation/feasibility study (RI/FS) when historical information, site-specific PRGs, and other screening criteria are used to focus the integrated RI/FS work plan on the risk-related problems that must be investigated and which may need to be addressed during data collection. Subsequently, the results of the risk analyses are used in the proposed remedial action plan (PRAP) and record of decision (ROD) or their removal action equivalents to justify why or why not an action is needed at a site. During the production of the PRAP and ROD, the risk analyses are also used to develop the risk-based cleanup goals used in subsequent remedial design activities.

Several major decision points occur during the aforementioned process. These decision points often limit the scope of risk analyses performed during site investigation and remedy selection but allow for early actions to address important environmental concerns. Several of these are shown in the Decision Framework in Fig. 1.1. As shown there, decision points occur several times during the remedial action process.

Individuals providing information at the decision points are risk assessors. Individuals using that information to make decisions are risk managers. These individuals and their roles are defined as follows (EPA 1995).

- **Risk Assessor** – An individual, team, or organization that generates site- or media-specific risk assessments for use in site-specific decision making. The assessor relies on existing databases (e.g., EPA Integrated Risk Information System, health assessment documents, and program-specific toxicity information) and media- or site-specific exposure information in characterizing risk. This group also relies, in part, on regulatory agency risk assessment guidelines and program-specific guidance to address science policy issues and scientific uncertainties.

- **Risk Manager** – An individual, team, or organization with responsibility for or authority to take action in response to an identified risk. Risk managers *integrate* the risk characterization information provided by the risk assessor with other considerations specified in applicable statutes to make and justify regulatory decisions. Generally, this group includes lead and regulatory agency managers and decision makers. Risk managers also play a role in determining the scope of risk assessments.

This document presents the methods to be used to complete the analyses described above. It also provides many of the analytical tools that can be used to complete this process and discusses the sources of all tools. Materials and methods used to complete scoping activities, including the derivation of risk- and dose-based PRGs, the background concentrations of chemicals and radionuclides, and other screening criteria are in Sect. 2; materials and methods specific to the human health risk assessments, including work plan preparation and baseline human health risk assessment, are in Sect. 3; materials and methods applicable to the FS risk evaluation, including remedial level development and consideration of residual risks, are in Sect. 4. Dose assessment is also discussed within these sections.

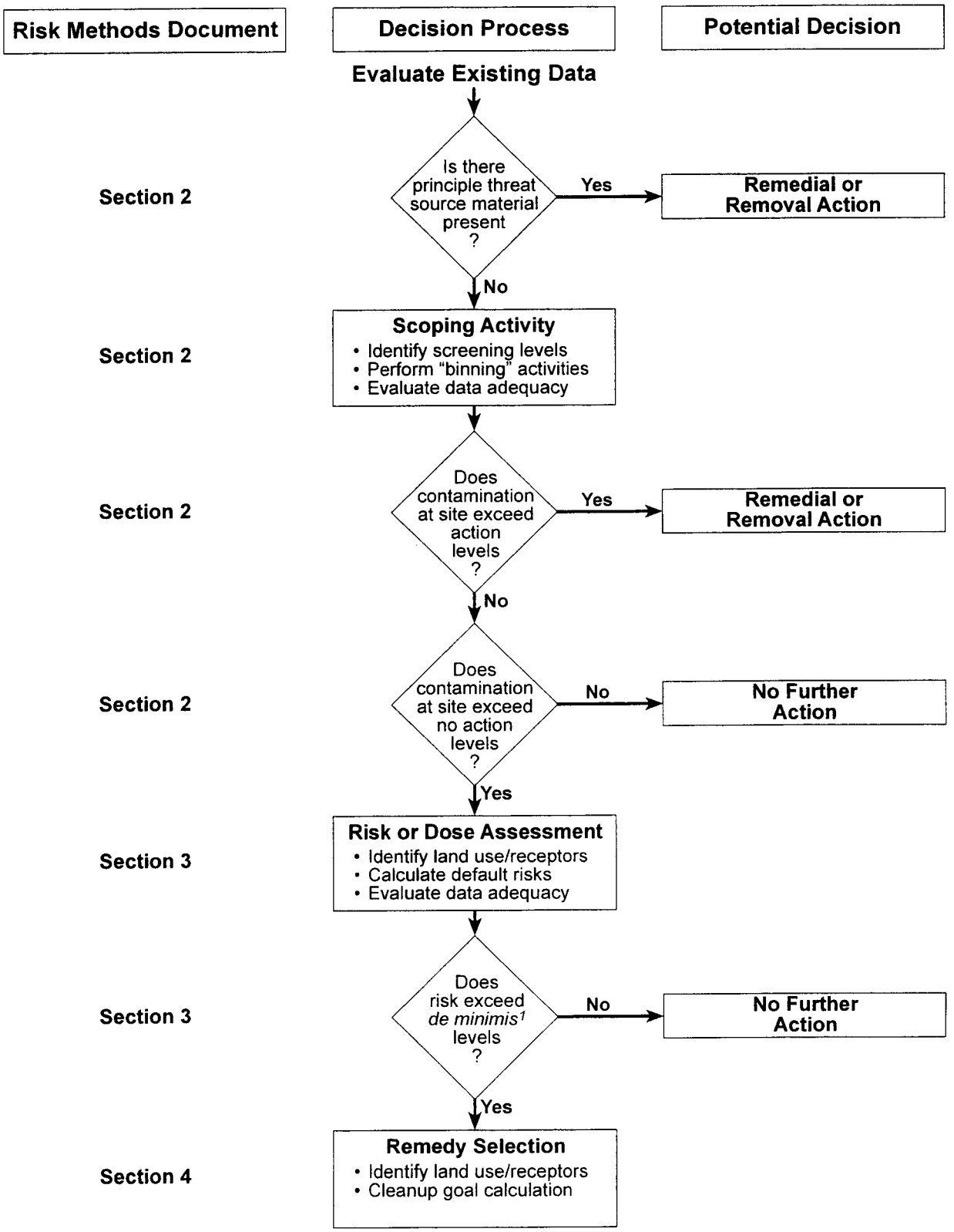

Fig. 1.1. Remedy decision process.

2. RISK ANALYSES DURING SCOPING ACTIVITIES

Risk analyses during site scoping activities will be performed to:

- determine if site risks (or doses) are so great as to require immediate action prior to RI/FS (i.e., early action);
- determine if site risks (or doses) are so low as to support a no-further-action decision;
- prioritize the further investigation of those sites not requiring early action or potentially requiring no further action; and,
- provide information to be used in subsequent work plan development.

General depictions of the methods that will be followed to complete these analyses are shown in Fig. 2.1. Figures 2.2, 2.3, 2.4, and 2.5 present specific issues related to the risk screening process (including issues related to dose).

Generally, analyses completed as part of risk- and dose-based site scoping will rely on simple comparisons between site contamination data to PGDP-specific PRGs, including risk-based action and no-action concentrations, dose-based concentrations, background concentrations, and regulatory values. The risk-based action and no-action concentrations and dose-based concentrations for significant contaminants of potential concern at PGDP (Table 2.1) are presented in Tables A.1 through A.11 in Appendix A. Table A.1 presents risk-based action concentrations for contaminants in soil and sediment; Table A.2 presents risk-based action levels for contaminants in groundwater; Table A.3 presents risk-based action levels for contaminants in surface water; Table A.4 presents risk-based no-action levels for contaminants in soil and sediment; Table A.5 presents risk-based no-action levels for contaminants in groundwater; Table A.6 presents risk-based no-action levels for contaminants in surface water; Table A.7 presents risk-based no-action levels for contaminants in soil that are protective of groundwater drawn from the Regional Gravel Aquifer (RGA) immediately adjacent to a contaminated area; Table A.8 presents dose-based levels for radionuclide contaminants in soil and sediment; Table A.9 presents dose-based levels for radionuclide contaminants in groundwater; Table A.10 presents dose-based levels for radionuclide contaminants in surface water; and, Table A.11 presents dose-based levels for radionuclide contaminants in soil that are protective of groundwater drawn from the RGA immediately adjacent to a contaminated area. Tables with more extensive listings of potential contaminants are also presented at the end of Appendix A. Methods used to develop the risk-based and dose-based screening values are presented in Appendix B of this document.

Provisional background concentrations for chemicals and radionuclides in soil and groundwater to be used during site-scoping activities are presented in Tables A.12 and A.13, respectively. Values in these tables are medium-specific and cannot be used for screening against sediment and surface water samples. For these media, only a site-specific analysis involving upgradient versus downgradient samples can be used to determine if contamination above reference is present. For this comparison, the full range of results collected at the upgradient location will be used. Additionally, as part of the analysis, the data adequacy at both the upgradient location and potentially contaminated site must be considered.

To perform the screening analyses during site scoping, available data must be deemed sufficient to determine the potential contamination at a site. Therefore, data used during site scoping should be from samples collected using approved, documented collection techniques and analyzed using approved, documented analytical techniques (see Fig. 2.2).

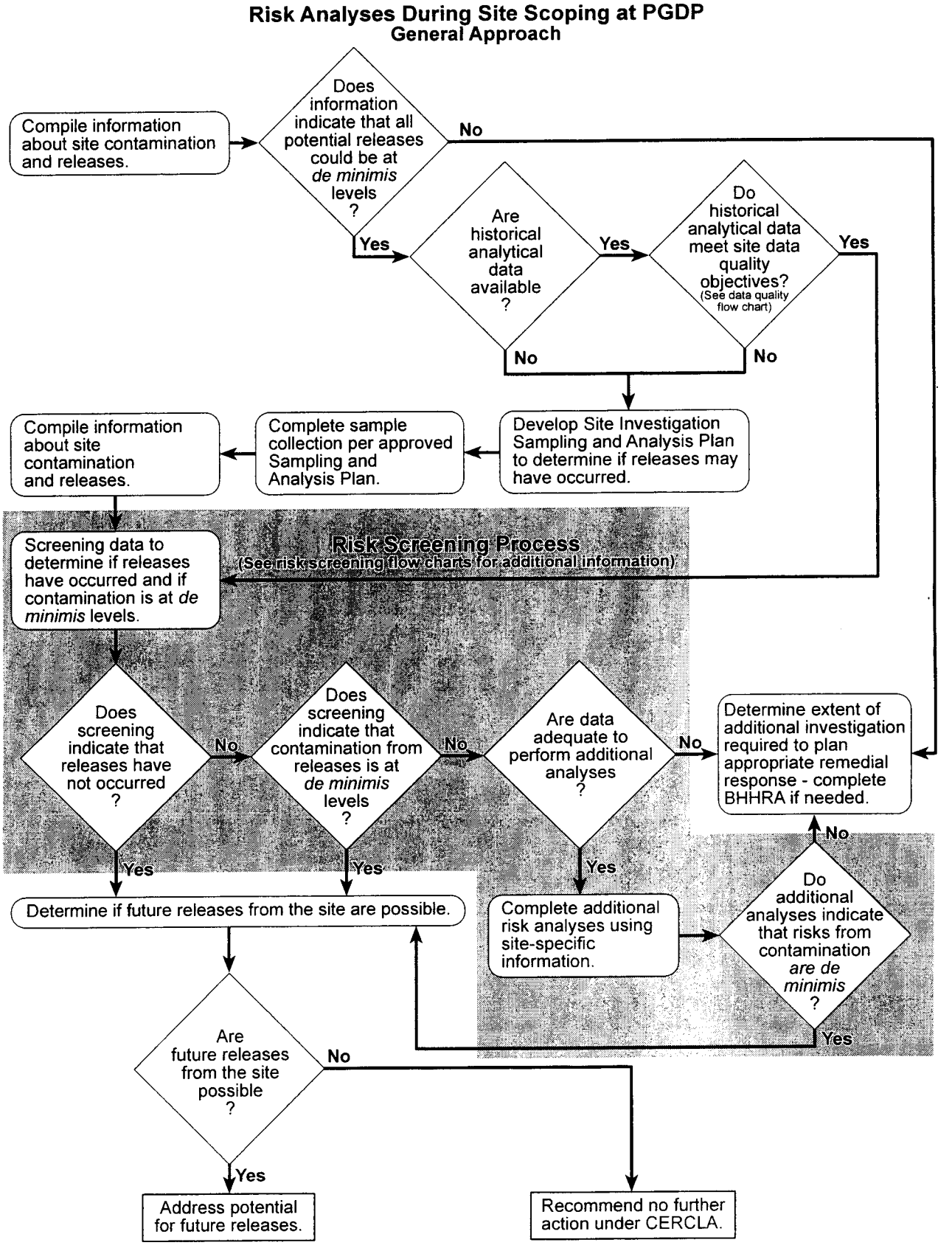

Fig. 2.1. General approach to risk-based site scoping.

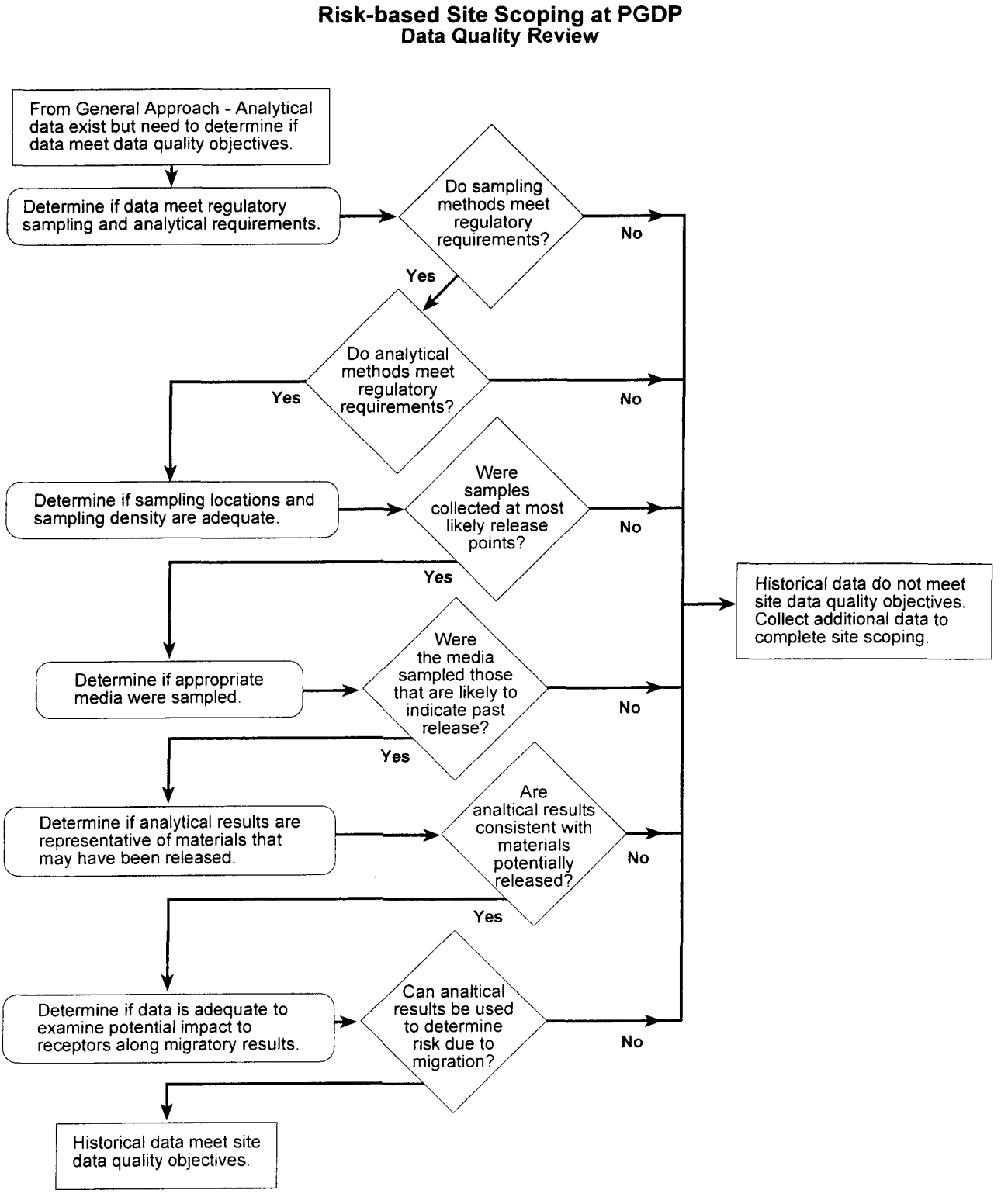

Fig. 2.2. Data quality review to support risk-based site scoping.

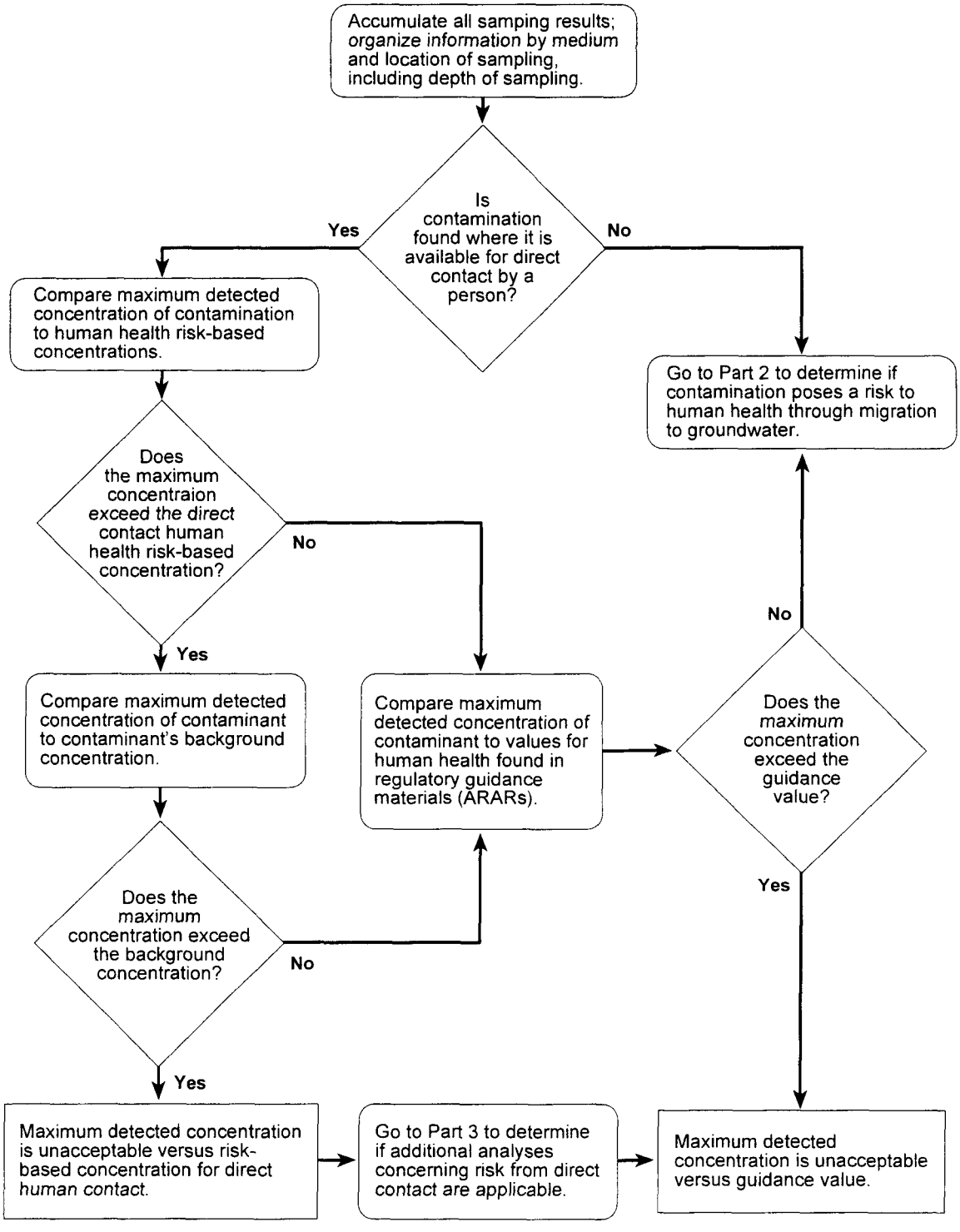

Fig. 2.3. Human health direct contact screening during risk-based site scoping.

Risk-based Site Scoping at PGDP
Part 2 - Groundwater Protection Screening

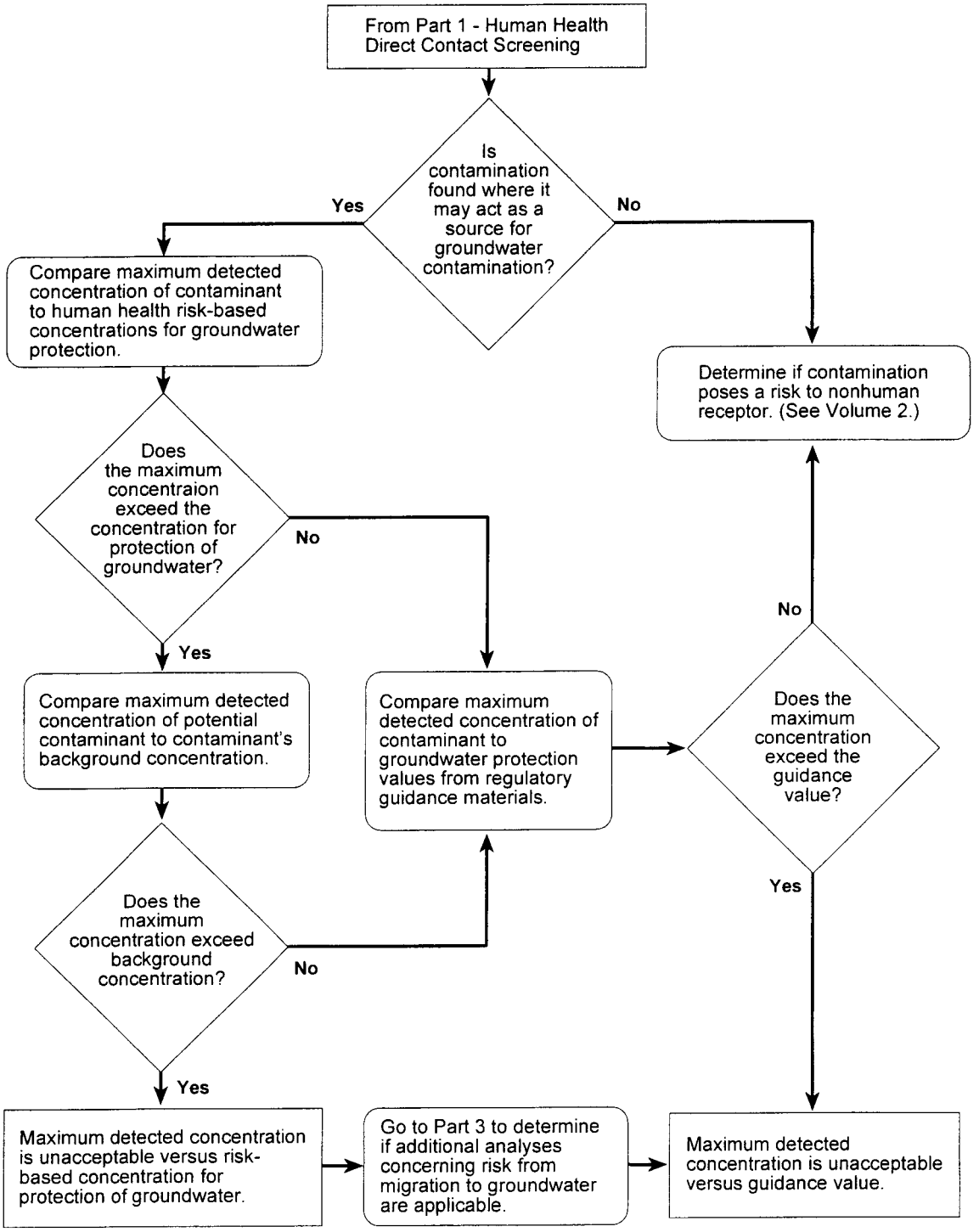

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Fig. 2.4. Groundwater protection screening during risk-based site scoping.

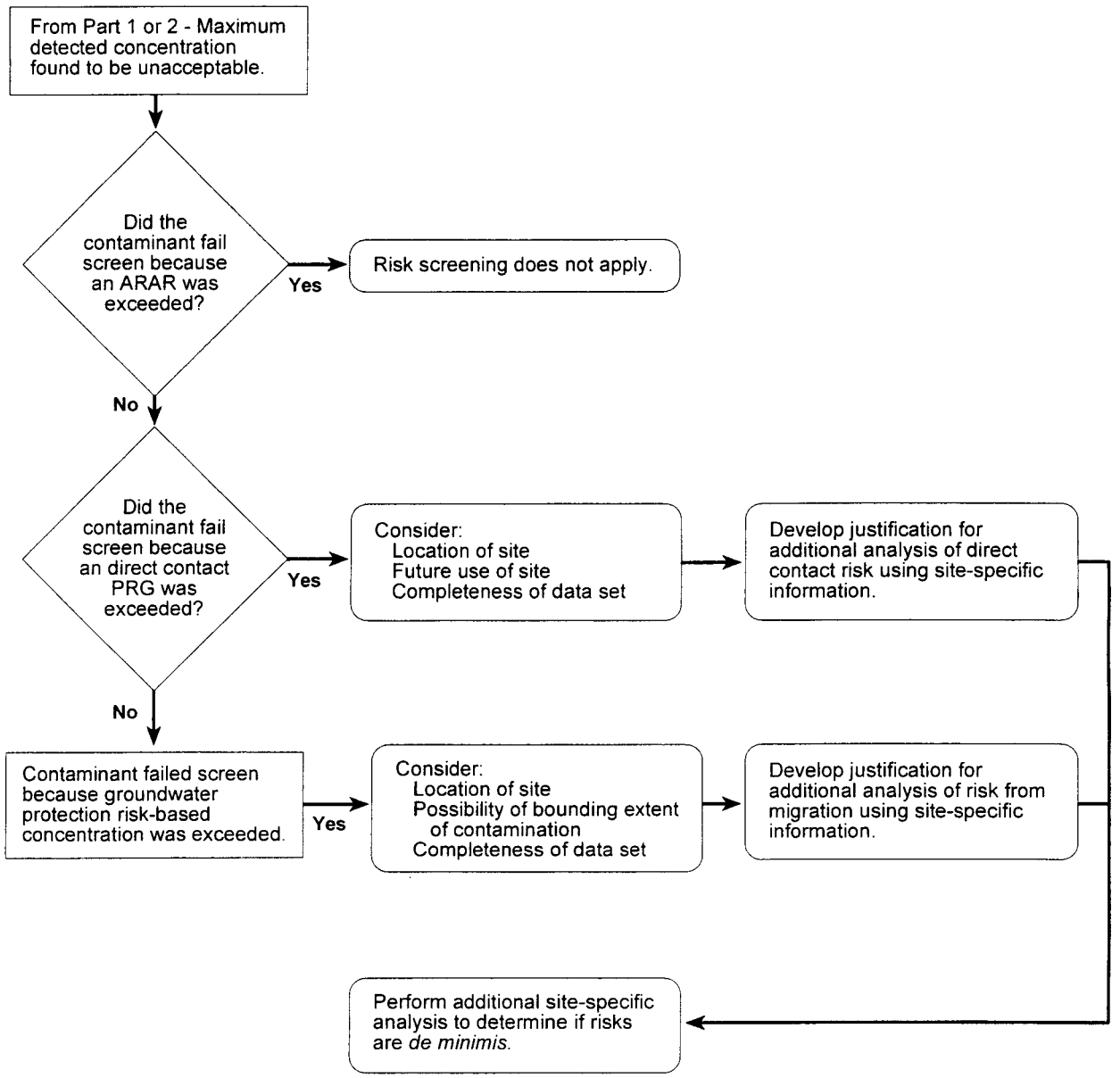

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Fig. 2.5. Consideration of additional analyses during risk-based site scoping.

Table 2.1. Significant contaminants of potential concern at the PGDP[1]

Inorganic Chemicals		Organic Compounds		Radionuclides	
Analyte	CAS Number	Analyte	CAS Number	Analyte	CAS Number
Antimony	7440360	Acenaphthene	83329	Americium-241	14596102
Arsenic	7440382	Acenaphthylene	208968	Cesium-137+D	10045973
Beryllium	7440417	Acrylonitrile	107131	Cobalt-60	10198400
Cadmium	7440439	Anthracene	120127	Neptunium-237+D	13994202
Chromium III	16065831	Benzene	71432	Plutonium-238	13981163
Chromium VI	18540299	Carbon tetrachloride	56235	Plutonium-239	15117483
Copper	7440508	Chloroform	67663	Plutonium-240	14119336
Iron	7439896	1,1-Dichloroethene	75354	Radium-226+D	13982633
Lead	7439921	1,2-Dichloroethene (mixed)	540590	Radon-222+D	14859677
Manganese	7439965	trans-1,2-Dichloroethene	156605	Stontium-90+D	10098972
Mercury	7439976	cis-1,2-Dichloroethene	156592	Technetium-99	14133767
Molybdenum	7439987	Ethylbenzene	100414	Thorium-228+D	14274829
Nickel	7440020	Fluoranthene	206440	Thorium-230	14269637
Selenium	7782492	Fluorene	86737	Thorium-232	7440291
Silver	7440224	Naphthalene	91203	Uranium-234	13966295
Thallium	7440280	Phenanthrene	85018	Uranium-235+D	15117961
Uranium	NA	Pyrene	129000	Uranium-238+D	7440611
Vanadium	7440622	Tetrachloroethene	127184		
Zinc	7440666	Trichloroethene	79016		
		Total Dioxins/Furans	1746016		
		2,3,7,8-HpCDD	37871004		
		2,3,7,8-HpCDF	38998753		
		2,3,7,8-HxCDD	34465468		
		2,3,7,8-HxCDF	55684941		
		OCDD	3268879		
		OCDF	39001020		
		2,3,7,8-PeCDD	36088229		
		1,2,3,7,8-PeCDF	57117416		
		2,3,4,7,8-PeCDF	57117314		
		2,3,7,8-TCDD	1746016		
		2,3,7,8-TCDF	5127319		
		Total PAHs	50328		
		Benz(a)anthracene	56553		
		Benzo(a)pyrene	50328		
		Benzo(b)fluoranthene	205992		
		Benzo(k)fluoranthene	207089		
		Chrysene	218019		
		Dibenz(a,h)anthracene	53703		
		Indeno(1,2,3-cd)pyrene	193395		
		Total PCBs	1336363		
		Aroclor 1016	12674112		
		Aroclor 1221	11104282		
		Aroclor 1232	11141165		
		Aroclor 1242	53469219		
		Aroclor 1248	12672296		
		Aroclor 1254	11097691		
		Aroclor 1260	11096825		
		Vinyl chloride	75014		
		Xylenes (Mixture)	1330207		
		p-Xylene	106423		
		m-Xylene	108383		
		o-Xylene	95476		

CAS = Chemical Abstract Service

[1] This list of chemicals, compounds, and radionuclides was compiled from the results of baseline risk assessments performed at PGDP between 1990 and 2000 (e.g., DOE 1996b, DOE 1996c, DOE 1999b).

In presenting the results of risk- and dose-based site scoping analyses, several tables should be prepared following the format approved by the PGDP Core Team (see Appendix C for example). Using this format allows for easy identification of those chemicals, compounds, and radioisotopes potentially leading to unacceptable levels of risk and dose and provides a table that can be used directly in the additional analyses described in the following sections.

To complete the risk- and dose-based screening analyses for site scoping, tables will be prepared for soil and sediment, groundwater, surface water screening. For soil and sediment, up to three tables will be prepared utilizing the risk- and dose-based screening levels. These tables offer comparisons between:

- maximum detected concentrations and action levels,
- maximum detected concentrations and no-action levels, and
- maximum detected concentrations and levels deemed protective of groundwater.

For both groundwater and surface water, two tables will be prepared utilizing the risk- and dose-based screening levels. These tables offer comparisons between:

- maximum detected concentrations and action levels, and
- maximum detected concentration and no-action levels.

In addition, summary tables providing the following information will be prepared for each medium (see Appendix C). These tables include

- lists of analytes never detected;
- a presentation of summary statistics, including a comparison against background;
- lists of sampling stations that contain a contaminant at a concentration greater than the action screening level; and
- lists of sampling stations that contain a contaminant at a concentration greater than the no-action screening level.

2.1 ANALYSES SUPPORTING ACTION PRIOR TO RI/FS

As discussed in the PGDP Site Management Plan (SMP) (DOE 1999a), early action is required at those sites which pose an imminent risk or hazard to human health and the environment. Generally, sites requiring early action are those at which contamination with a single or small number of analytes presents a total carcinogenic risk greater than 1×10^{-4} or a systemic toxicity value (i.e., hazard index or HI) greater than 1 and for which the risk analyses indicate that exposure is occurring under current use patterns. [Note, the exact decision point for early action is a project-specific decision. The values included here are for illustration only. For example, it is possible that a site is a yard that contains principal threat source material (PTSM – See text box for a description). At such sites, the scoping analyses may not include a risk-based screen. Additionally, note that risks posed to nonhuman receptors (e.g., ecological risk) may call for an early response even when risks to humans are negligible.] For these sites, the screening risk analyses will be limited to that described above because additional analyses will slow response time. However, to complete later decision documents, estimates of cumulative risk will be required. To derive these estimates of cumulative risk, the methods in Eq. 1, 2, 3, and 4 will be used. (Methods to derive dose estimates are similar and are not presented. Also, note that the benchmark for dose-based action is 25 mrem/year.)

$$\text{Analyte-specific Risk} = \frac{\text{MAX}}{\text{Cancer PRG}} \times \text{Target Risk} \qquad \textbf{[Eq. 1]}$$

where: MAX = Maximum detected concentration in a medium.
Cancer PRG = The medium-specific risk-based no-action screening value for the analyte.
Target Risk = The target risk upon which the risk-based PRG calculation was based (1×10^{-6}).

$$\text{Total Risk} = \sum \text{Analyte-specific Risks} \qquad \textbf{[Eq. 2]}$$

where: Analyte-specific risk is the result from above.

$$\text{Analyte-specific Hazard} = \frac{\text{MAX}}{\text{Hazard PRG}} \times \text{Target Hazard} \qquad \textbf{[Eq. 3]}$$

where: MAX = Maximum detected concentration in a medium.
Hazard PRG = The medium-specific risk-based no-action screening value for the analyte.
Target Hazard = The target hazard upon which the risk-based PRG calculation was based (0.1).

$$\text{Total Hazard} = \sum \text{Analyte-specific Hazards} \qquad \textbf{[Eq. 4]}$$

where: Analyte-specific Hazard is the result from above.

PRINCIPAL THREAT SOURCE MATERIAL SCREEN

Principal Threat Source Material (PTSM) is the term used for waste or other material (e.g., dense nonaqueous phase liquids) that is an obvious threat to human health and the environment, either due to the nature and concentration of the contamination or due to a large mass of leachable material in the ground. At the PGDP, expedited remediation decisions can be made at sites that contain PTSM without lengthy risk assessment efforts.

The screening levels and benchmarks used for declaration of presence of PTSM when characterization data are available are as follows (RAWG 2000e):

- If concentration of a single contaminant exceeds its action level (target risk = 1×10^{-4}), then perform analysis to determine if cumulative risk is greater than 1×10^{-3}. If so, then declare presence of PTSM.
- If concentration of a single contaminant exceeds its action level (target hazard = 3), then perform analysis to determine if cumulative hazard is greater than 10. If so, then declare presence of PTSM.
- If concentration of a single contaminant exceeds its action level (target dose 25 mrem), then declare presence of PTSM.

When performing additional analysis:

- For on-site areas, use the industrial no-action levels and Eq. 1 through 4.
- For off-site areas, use the residential no-action levels and Eq. 1 through 4.

This definition is consistent with EPA 1991a. This guidance document should be consulted for additional information regarding PTSM.

Note, when performing these calculations, total risk and hazard estimates will be developed within medium for only the scenario appropriate to the unit's or area's location and use. A total risk (or hazard) over all media may be estimated if exposure to contaminants in multiple media may occur. Also, when summarizing this information, the analytes driving the medium-specific total risk and hazard and the major uncertainties in the estimate will be reported, and a total risk or hazard estimate over all media may be reported if this is deemed appropriate.

It should be further noted that the results provided by these analyses may not be sufficient for documentation of final actions, and additional risk assessment and risk evaluation may be needed to meet reporting requirements. Items not provided by these analyses include:

- The identification of use scenarios of concern, including consideration of sensitive subpopulations;

- The identification of pathways of concern;

- Consideration of risks and doses due to the transformation, degradation, or migration of contamination (although a comparison of analyte concentrations in soil to screening values protective of groundwater provides this in part); and,

- An analysis of uncertainties, including the effect of uncertainties on the resulting risk and dose estimates.

2.2 ANALYSES SUPPORTING NO FURTHER ACTION DECISIONS

As discussed in the SMP, no further action can be selected for those sites at which it can be demonstrated that no contamination is present or at which it can be demonstrated that the contamination present is so minimal that there is no unacceptable risk or dose (i.e., risks and doses are *de minimis*). (Note, non-risk issues must also be considered in making this decision. At some sites without unacceptable risk or dose, a no further action decision may not be appropriate because of non-risk concerns.)

In calculating the risk and dose estimate for this decision, the tables discussed earlier, and the equations presented earlier will be used. In summarizing this information, the estimated total dose, risk, and hazard from all contaminants under the appropriate use will be reported, and the future dose, risk, or hazard posed by contaminant transformation, degradation, and migration will be considered qualitatively. In addition, the uncertainties associated with the screening comparison will be discussed, and the effect of these uncertainties upon the total risk and hazard estimates for each scenario will be described. Note, as part of this screening analysis, the total dose, risk, or hazard over all media will be presented and discussed to ensure that a no further action decision is appropriate.

2.3 ANALYSES USED TO PRIORITIZE FURTHER INVESTIGATIONS

Remedial activities at PGDP must be prioritized to ensure that funds allocated to PGDP for remedial actions are directed towards those sites that pose the greatest risk to human health and the environment. This will insure that these actions provide the maximum benefits in risk reduction. When necessary, dose, risk, and hazard estimates for prioritization will be calculated using the tables and equations presented earlier. When summarizing this information, the estimated total dose, risk, and hazard from all contaminants under both industrial and residential use will be reported, and the potential future doses and risks posed by contaminant transformation, degradation, and migration will be considered qualitatively. In addition, the uncertainties associated with the screening comparison will be discussed, and the effect of these uncertainties upon the total dose, risk, and hazard estimates for each receptor group will be estimated qualitatively.

2.4 ANALYSES USED IN SUBSEQUENT WORK PLAN DEVELOPMENT

The results of the screening analyses discussed earlier can be used directly in work plan development to reduce the cost of subsequent RI/FS activities. The results of these analyses can be used to focus all investigation activities on those problems posing the greatest risks to human health and the environment. Investigation activities that can be directly affected include:

- Media to be sampled;
- Number of samples per medium;
- Number of samples per sampling location;

- Analyte list for laboratory analysis;
- The quantitation limits required for laboratory analysis; and,
- Selection of environmental models and model parameter collection.

Therefore, all RI/FS work plans, and some sampling and analysis plans, prepared for PGDP will include comparison tables similar to those discussed previously. These include comparisons against background concentrations, direct contact PRGs and groundwater protection PRGs for soil and sediment and comparison against background concentrations and direct contact PRGs for water. In addition, these plans will also include tables comparing quantitation, or analytical, limits and no-action levels and a summary of the methods to be used to complete the baseline risk assessment for the units and areas under investigation. A complete description of the risk-related material that will appear in work plans and sampling and analysis plans and how this information will be used to guide work plan development and remedial investigation is in Sect. 3.

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3. RISK ANALYSES DURING THE REMEDIAL INVESTIGATION

At PGDP, risk analyses occur at three times during the RI of sites. These are during the preparation of the RI work plan (and some sampling and analysis plans), following implementation of the initial round of work described in the RI work plan (if needed to plan contingency sampling), and during the preparation of the RI report. Analyses occurring at each of these times are discussed in the following sections. (Note that dose assessments are not specifically described in some of the following. Generally, the appropriate dose assessment will be performed in concert with the risk assessments.)

3.1 ANALYSES DURING WORK PLAN DEVELOPMENT AND IMPLEMENTATION (SCREENING RISK AND DOSE ASSESSMENTS)

As noted in the Sect. 2.4, the screening analyses performed during the site scoping can be used directly in work plan development to reduce the cost of subsequent RI/FS activities. This section discusses the screening analyses that will be performed as part of work plan development and describes the material that will appear in work plans and sampling and analysis plans. (Note, in the following material, "work plan" is used generically for work plans and for those sampling and analysis plans in which risk and dose screening is of use.)

Generally, in work plans, the majority of the risk- and dose-related information will appear as part of the initial evaluation. In the work plan's initial evaluation, the scope, objectives, and methods for the baseline risk and dose assessment will be related, preliminary conceptual site models will be presented, laboratory analytical (or quantitation) limits will be discussed relative to no action screening levels (i.e., risk-based PRGs), and a preliminary list of contaminants of potential concern (preliminary COPCs) will be identified. However, risk- and dose-related information will also appear in the introduction, site characterization summary, and alternatives development description contained in most work plans.

3.1.1 Analyses Appearing in the Introduction of the Integrated RI/FS Work Plan

In the introductory chapter of work plans, the requirements for risk and dose assessments and analyses will be used to help develop the data quality objectives for the RI. Data quality objectives are qualitative and quantitative criteria used to establish requirements for sample collection and analysis and are based on the needs and intended uses of the data. As a primary user of RI data, the consideration of risk and dose analyses are integral to this process.

The data quality objectives process is performed following a series of steps. The role of risk and dose assessment in each of these steps is briefly discussed in the remainder of this section.

During Step 1, Define the Site Conceptual Model, of the data quality objectives process, risk and dose analyses will be used to identify qualitatively lists of the preliminary COPCs, receptors that may be exposed to contaminants, locations at which exposure may occur, and pathways by which contaminants may reach these locations. This information will be used to develop the conceptual site model against which new data collected as part of the RI can be compared. As an example, the conceptual site model developed for Solid Waste Management Unit (SWMU) 171 is presented in Fig. 3.1.

Risk and dose analyses will be used during Step 2, State the Problem, of the data quality objectives process to ensure that the risk management issues are addressed during the investigation. For example, in

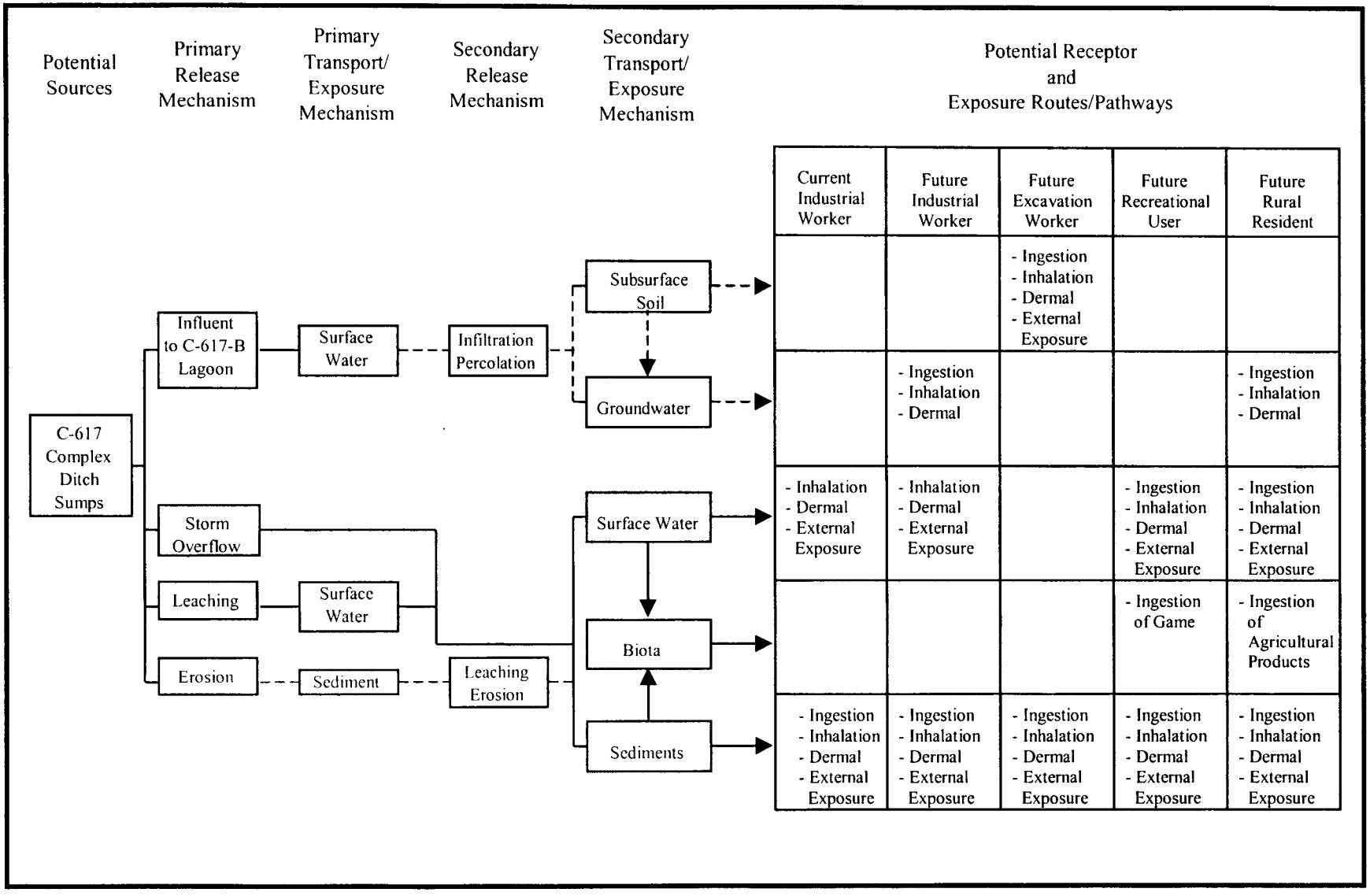

Fig. 3.1. Example risk-based conceptual site model.

the approved sampling and analysis plan for SWMU 2 of Waste Area Grouping 22 (DOE 1996b), the problem is stated as:

> In the past, uranium and multiple COCs were disposed of at SWMU 2. These contaminants have been shown by previous work to be migrating (vertically and horizontally) from the waste cells and show the potential for subsurface migration from the SWMU to the RGA at concentrations or activities that may pose risk to human health and the environment....

Risk analyses will be used during Step 3, Define Objectives and Potential Response Actions, of the data quality objectives process to establish the preliminary remedial action objectives (preliminary RAOs) that must be achieved to mitigate risk to human health and the environment and to provide information useful in determining which alternatives may achieve these objectives. RAOs are criteria used in the feasibility study to aid in the alternative development and selection process. They are site-specific goals that establish the primary objectives and extent of cleanup required by a CERCLA remediation (EPA 1988) and consider contaminants of concern (COCs), media of concern (MOCs), and potential exposure pathways. The screening levels presented in Sect. 2 are concentration goals which will make up a portion of the preliminary RAOs for each project. For all investigations at PGDP, the generalized human health RAO, adopted from the SMP, is to prevent exposure to contaminated media that results in a cumulative (or total) excess lifetime cancer risk (ELCR) greater than 1×10^{-6} or a cumulative (or total) hazard index (HI) greater than or equal to 1. This generalized RAO will be enhanced on a project-specific basis as needed (e.g., to include dose concerns).

Risk analyses will be used during Step 4, Identify Decisions, of the data quality objectives process to clearly pose questions that must be addressed during the RI. Generally, questions developed during Step 4 of the process will be related to acceptable contaminant concentration goals (i.e., contaminant concentrations that may remain at or migrate from a site and not pose unacceptable risk or dose), contaminant migration, and the activity patterns of present and potential future receptor populations. For example, in the SWMU 2 sampling and analysis plan (DOE 1996b), primary questions related to risk assessment and risk management included:

- Will the contaminants migrate (and how) to the RGA at unacceptable concentrations?
- Is there lateral/vertical contaminant movement in the Upper Continental Recharge System (UCRS)?
- What are the chemical characteristics of the waste?

Risk analyses will be used during Step 5, Identify Study Boundaries, of the data quality objectives process to aid in the determination of the spatial and temporal boundaries in which samples must be collected or to which contaminant concentrations must be modeled. Risk analyses will be used to identify spatial boundaries by delimiting the locations both at a SWMU and away from the SWMU at which exposure to contaminants may occur (i.e., exposure points). Risk analyses will be used to identify temporal boundaries by delineating the present and future receptors that may be exposed to contamination and the periods during which these receptors may potentially be present at the exposure points. This information will be used, in turn, to determine the modeling needs for the RI.

Risk analyses will be used during Steps 6 and 7, Identify Decision Rules and Identify Inputs to the Decision, to set the risk-and dose-based limits inherent in these rules and to identify the data required to determine if these limits may be exceeded. A primary decision rule that will be included in all work plans for PGDP will note that action must be considered if the risk or hazard posed by contamination at or migrating from a site exceeds allowable limits (i.e., ELCR greater than 1×10^{-6}, HI greater than or equal

to 1, or dose greater than 1 mrem/year). For example, in the SWMU 2 sampling and analysis plan, the leading decision rule (D1) is:

> If any of the constituents shown in Table 5.2 are migrating or could migrate (based on RESRAD for uranium and ^{99}Tc and best available 2- or 3-D model for other constituents) from the burial pits, soil matrix, and/or UCRS to the RGA in the future and are found to pose a risk greater than 1×10^{-6} (excess lifetime cancer) or an HI=1 (noncancer), then an action to control the migration will be evaluated.

Similarly, the inputs necessary to make this decision are common to all investigations and include:

- chemical-specific exposure point concentrations in environmental media, including contaminant concentrations in waste;
- land-use assumptions (i.e., which scenarios need to be considered);
- exposure pathways and exposure routes for all current and potential future receptors;
- modeling parameters; and
- risk and dose estimates for each receptor, including sensitive subpopulations if applicable.

Risk analyses will be used in Step 8, Specify Limits on Decision Errors, by providing the risk- and dose-based goals and contaminant concentrations and activities related to these goals that can be used either quantitatively or qualitatively to set decision error limits. As noted previously, the risk-based goals to be used in all investigations are 1×10^{-6} for ELCR and 1 for HI. The dose-based goal is 1 mrem/year. The concentrations and activities related to these goals are the PRGs presented as the no action levels in Sect. 2.

Risk analyses will be used in Step 9, Optimize Sample Design, to ensure that the sampling strategy proposed for all investigations meets the minimum requirements needed to achieve answers to the risk- and dose-related decision rules. To ensure that this is achieved, all sampling proposed as part of all investigations will be critically reviewed against the needs established under the decision rules for the investigation. Sampling that does not provide information useful to answering risk- and dose-related decisions will be justified on another basis.

3.1.2 Analyses Appearing in Prior Characterization Chapter of the Integrated RI/FS Work Plan

In the prior characterization chapter of work plans, results of previous risk and dose evaluations performed for the site under investigation or related to the site will be summarized. Generally, these summaries will consist of results from evaluations performed during the Phases I and II Site Investigations (CH2M Hill 1991 and 1992) or baseline risk assessments and screening analyses performed to support earlier decisions at or near the site, such as prioritization activities.

In presenting the information from previous evaluations, **no attempt will be made to correct any errors or update any values contained in the earlier reports**. All information contained in the earlier report will be presented without change. However, any errors or uncertainties effecting the results will be identified. Additionally, because in earlier baseline risk assessments, results were not summarized in a consistent format, an attempt will be made to present the results taken from these earlier reports in "two-way tables." [Note, the format for the two-way table is patterned after the format in Exhibits 8-2 and 8-3 of Risk Assessment Guidance for Superfund (RAGS), Part A (EPA 1989a) and is consistent with the risk characterization tables found in RAGS, Part D (EPA 1998a).] In addition, when summarizing the results of

previous assessments, the scenarios, pathways, contaminants, and media of concern for each unit or area under investigation will be listed, and major uncertainties affecting the risk assessment results will be noted.

An example of the format for the "two-way table," adapted from Table 5.78 of Appendix L.1 of the approved Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report for Waste Area Grouping 1 and 7 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE 1996c), is shown in Exhibit 1. The example table shown in the exhibit will be used to summarize risk assessment results because it allows easy identification of scenarios of concern [i.e., value in column entitled "Total Risk", COCs (i.e., values in the column entitled "Chemical-Specific Risk"), and pathways of concern (POCs) (i.e., values in the row entitled "Pathway Risk")]. In addition, the chemicals and pathways driving total risk can be easily identified, and the risk related to exposure to each environmental medium can be easily derived (i.e., by summing the appropriate pathway totals). Finally, the blank cells in the table, and the associated explanation for these blanks, show where data inadequacies and other problems prevented the calculation of risk estimates.

Exhibit 1. Example two-way table for presentation of historical risk assessment results

WAG 1, SWMU 136 **Excess Lifetime Cancer Risks for Future Rural Resident**							
Analyte	**Ingestion of Groundwater**	**Dermal Contact with Groundwater**	....	**Ingestion of Soil**	....	**Chemical-specific Risk**	**Total Risk**
Trichloroethene	2.30E-05	4.17E-06	....		....	8.35E-05	
Benzo(a)anthracene			....	8.78E-09	....	1.35E-06	
Benzo(a)pyrene			....	1.20E-07	....	1.83E-05	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
Uranium-238			....	1.53E-09	....	3.05E-07	
Pathway Risk	2.32E-05	4.23E-06	....	1.72E-07	....		
Total Risk							1.10E-04

Note: The reasons for blank cells will be discussed. Generally, blank cells will result from unavailable or inadequate data.

3.1.3 Analyses Appearing in Initial Evaluation Chapter of the Integrated RI/FS Work Plan

In the initial evaluation chapter of work plans, the methods to be used to complete the baseline risk assessment for the units or areas under investigation will be discussed, and a preliminary evaluation of historical information, including a comparison of concentrations and activities of analytes in environmental samples against health-based standards [i.e., PRGs, applicable or relevant and appropriate requirements (ARARs), etc.] and a comparison of analytical limits against background concentrations, will be presented. This information will be used, in turn, to develop the field sampling plan contained in the work plan.

The description of the methods to be used to complete the baseline risk assessments and dose estimates for the units or areas under investigation will follow that presented in Sect. 3.3 of this document. Generally, this material will clearly delineate the scope and objectives of the baseline risk assessment and briefly describe the activities that will occur during the data evaluation (i.e., identification of chemicals of potential concern), exposure assessment, toxicity assessment, risk characterization, and remedial goal option development stages of the baseline human health risk assessment. This material will also summarize the results that will be obtained from each stage of the baseline risk assessment and dose assessment. As part of this discussion, conceptual site models for each unit or area under investigation will be presented.

The preliminary evaluation of historical information presented in this chapter of the work plan will summarize the information presented in earlier chapters of the work plan and evaluate this information against the characterization and inventory of wastes, information status of key assessment factors, and release potential from contaminant sources. As part of the characterization and inventory of wastes, comparison tables similar to those discussed in Sect. 2 will be prepared. However, because additional screening criteria may need to be considered, the comparison tables prepared as part of site scoping activities may not be able to be transferred directly to the work plan. An example of the comparison table that will be used in work plans to compare PRGs to analytical results from soil (and sediment) and groundwater (and surface water) is shown in Exhibit 2.

Exhibit 2. Presentation of screening assessment results in the RI work plan

	Soil (mg/kg or pCi/g)			Groundwater (µg/l or pCi/l)			
Analyte	Maximum[1]	PRG[2]	Method Detection Limit[3]	Maximum	PRG	MCL[4]	Method Detection Limit
# 1							
# 2							
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
# N							

[1] This will be the maximum detected value for the medium reported in previous investigations. The qualifier codes attached to the value, if any, will be included with the value.
[2] The risk-based PRG that appears in this table will be the lessor of the cancer- and hazard-based, no action residential use PRGs taken from Appendix A. Additionally, the hazard-based PRG that is included will be that calculated for a child aged 1 to 7.
[3] This is the project-specific value reported in the Quality Assurance Project Plan of the work plan (or the appropriate chapter of sampling and analysis plans).
[4] The MCLs (i.e., maximum contaminant levels) will be taken from the most recent information.

After completion of the comparison table for each site, the analytes that were previously detected or are expected to be present and that have detection limits that exceed the PRGs will be reported. The analytes with detection limits exceeding PRGs will be reported because the quantitation limit (or method detection limit) used for samples providing data for risk and dose assessment should be less than those concentrations that may have an impact on human health or the environment. It is important to note that although this evaluation may show that some quantitation limits exceed their respective screening criteria, this evaluation alone will not be used to establish the analytical quantitation limits for a project. The analytical limits will be established considering both this information and factors such as site history and potential actions.

Material in the comparison tables will also be used to compile a list of preliminary COPCs for each unit or area under investigation. An analyte will be placed on this preliminary list if the concentration or activity of the analyte at a unit or area exceeds one or more of the screening criteria. Note, unless it can be shown that cross-media contamination is not present, the list of preliminary COPCs will be compiled over all media. If it can be demonstrated that cross-media contamination is not likely, then a list of preliminary COPCs will be compiled for each medium to be investigated during the project. These lists will provide risk managers with information that can be used in the initial selection and screening of alternatives. In addition, this list can be used to target the analyte list for the project to ensure that analytical costs are appropriate for the project.

An example of the comparison table that will be used in work plans to compare background values to analytical results for inorganic chemicals and radionuclides in soil and groundwater is shown in Exhibit 3. (Note, as discussed earlier, background values are not available for sediment and surface water; therefore, a

table comparing analytical results from sediment and surface water to background will not be presented.) This table will be used to justify the analyte list for the project. As with the list of preliminary COPCs, justification of the analyte list is important to ensure that analytical costs are appropriate for the project.

Exhibit 3. Presentation of background comparison in the RI work plan

Analyte	Soil Data for SWMU (mg/kg or pCi/g)[1]			Soil Background Concentration (mg/kg or pCi/g)[2]	Groundwater Data for SWMU (µg/l or pCi/l)[3]			Groundwater Background Concentration (µg/l or pCi/l)[4]
	SWMU 1	...	SWMU N		SWMU 1	...	SWMU N	
# 1		...				...		
# 2		...				...		
.		.				.		
.		.				.		
.		.				.		
# N		...				...		

[1] This will be the maximum detected value for soil reported in previous investigations. The qualifier codes attached to the value, if any, will be included with the value.
[2] The soil background concentration (or activity) will be that presented in Appendix A on updated values.
[3] This will be the maximum detected value for groundwater reported in previous investigations. The qualifier codes attached to the value, if any, will be included with the value.
[4] The groundwater background concentration (or activity) will be that presented in Appendix A on updated values.

3.1.4 Analyses Appearing in Remedial Alternatives Development Chapter of the Integrated RI/FS Work Plan

In remedial alternatives development chapter of work plans, attention will be paid to the importance of risk reduction in remedial alternatives development and to the method to be used to measure risk and dose reduction during the detailed analysis of remedial alternatives. For example, in this chapter, it will be noted that remedial alternatives are developed to be protective of human health and the environment and that remedial action objectives will consider COCs, POCs, and MOCs. In addition, this chapter will present the nine criteria used in the detailed analysis of alternatives under Superfund. Most importantly, this chapter will discuss if a qualitative or quantitative detailed risk analysis of alternatives is anticipated and delineate the data that are required to support this risk analysis. (Determining whether a qualitative or quantitative risk analysis of alternatives is needed is important because additional data may need to be collected during the RI to support a quantitative analysis. Additional discussion concerning qualitative and quantitative risk analysis of alternatives is in Sect. 4.)

3.2 ANALYSES FOLLOWING COMPLETION OF THE INITIAL ROUND OF INVESTIGATION

Many RI work plans will contain a description of contingency sampling that may be used to address the uncertainties in environmental contaminant distribution expected to be encountered during the investigation. If this contingency sampling is to be collected as part of a phased investigation, then analyses may be used to determine if contingency soil (or sediment) sampling is necessary. In this case, a formal or informal report may be prepared after the completion of the initial round of sampling. In this report, results from the initial sampling and relevant historical sampling may be compared to human health screening criteria (i.e., PRGs) for the expected future use of the area and background concentrations of chemicals and radionuclides. To keep this presentation consistent with that used in work plan development, this presentation will use comparison tables similar to those presented earlier. However, because the extent of soil (or sediment) contamination needs to be considered in addition to the nature of contamination,

tables considering the location of samples (horizontal and vertical) in addition to the tables considering the maximum detected analyte concentrations will be prepared. In addition, a spatial plane view presentation of the data should be provided.

The format of the comparison table to be used to determine if the nature of contamination in soil may pose an unacceptable dose, risk, or hazard is in Exhibit 4. In this table, the maximum detected concentration or activity in all soil samples collected at a site is compared to the no action direct contact PRG for the expected future land use, the groundwater protection PRG, and the background concentration. This table will be used to refine the list of preliminary COPCs and the analytical list for contingency sampling. In this evaluation, an analyte will become a preliminary COPC if its concentration exceeds any PRG and the background concentration or activity.

Exhibit 4. Presentation of screening assessment results to evaluate nature of contamination in soil after the initial round of sampling

Analyte	Soil (mg/kg or pCi/g)			
	Maximum[1]	Direct Contact PRG[2]	Groundwater Protection PRG[3]	Background[4]
# 1				
# 2				
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
# N				

[1] This will be the maximum detected value for soil reported in the current and relevant previous investigations. The qualifier codes attached to the value, if any, will be included with the value.
[2] The direct contact PRG will be the lessor of the no action cancer- and no action hazard-based PRGs for the appropriate future use taken from Appendix A. If residential use PRGs are used, then the no action hazard-based PRG should be that for a child aged 1 to 7.
[3] The groundwater protection PRG will be the lessor of the no action cancer- and no action hazard-based PRGs taken from Appendix A. Note, this PRG is protective of groundwater that may be used in the home. A PRG for protection of groundwater used industrially is not relevant to this screening assessment.
[4] The soil background concentration (or activity) will be that presented in Appendix A or the most recent update.

The format of the comparison table to be used to determine if the nature of contamination in sediment may pose an unacceptable dose, cancer risk, or hazard will be similar to that in Exhibit 4. However, for the sediment table, neither the groundwater protection PRG nor the background concentration or activity will appear. The groundwater protection PRG will not be included because migration of contaminants from sediment to groundwater is not expected to be a significant migratory pathway. Background concentrations of chemicals and radionuclides will not be included because these do not exist for sediment. As with the soil table, the sediment table will be used to refine the list of preliminary COPCs and the analytical list for contingency sampling. In this evaluation, an analyte will become a preliminary COPC if its concentration or activity exceeds any risk-based screening criterion.

The format of the comparison table to be used to evaluate the adequacy of initial sampling in delimiting the extent of contamination in surface soil is in Exhibit 5. In this table, the analyte concentrations or activities in surface soil samples collected along migration routes or at the periphery of a site are compared to the no action direct contact PRG for the expected future land use and the background concentration or activity. Note that the groundwater protection soil PRG is not used in this comparison because that evaluation is performed as part of the subsurface soil evaluation. Generally, surface sampling will be deemed adequate if analyte concentrations and activities in samples collected along migration routes do not exceed both the no action direct contact PRGs and background concentrations. However, in deciding if sampling has adequately determined the extent of contamination, additional factors such as historical information will be considered.

Exhibit 5. Presentation of screening assessment results to evaluate extent of contamination in surface soil after the initial round of sampling

Analyte	Soil (mg/kg or pCi/g)		
	Maximum[1]	Direct Contact PRG[2]	Background[3]
# 1			
# 2			
.	.	.	.
.	.	.	.
.	.	.	.
# N			

[1] This will be the maximum detected value for soil reported in a sample collected along migration routes or at the periphery of the unit or area in the current investigation. The qualifier codes attached to the value, if any, will be included with the value.
[2] The direct contact PRG will be the lesser of the no action cancer- and no action hazard-based PRGs for the appropriate future use taken from Appendix A.
[3] The soil background concentration (or activity) will be that presented in Appendix A or the most recent update.

The format of the comparison table to be used to evaluate the adequacy of initial sampling in delimiting the extent of contamination in sediment will be similar to that used for soil (i.e., Exhibit 5). However, the background concentration or activity will not appear in the sediment table because background values for sediment do not exist. The evaluation of this table will be as for soil.

The format of the comparison table to be used to evaluate the adequacy of initial sampling in delimiting the extent of contamination in subsurface soil is in Exhibit 6. In this table, the analyte concentrations or activities in subsurface soil samples collected at the periphery of the area under investigation will be compared to the groundwater protection PRGs and background concentrations of chemicals and radionuclides. Note, the no action direct contact PRGs are not in this table because these criteria are for direct contact with contaminated soil, and direct contact with subsurface soil is not expected. Generally, subsurface sampling will be deemed adequate if analyte concentrations and activities in samples collected at the periphery of the unit or area under investigation do not exceed both the groundwater protection PRGs and background concentrations. However, in deciding if sampling has adequately determined the extent of contamination, additional factors such as historical information will be considered.

Exhibit 6. Presentation of screening assessment results to evaluate extent of contamination in subsurface soil after the initial round of sampling

Analyte	Soil (mg/kg or pCi/g)		
	Maximum[1]	Groundwater Protection PRG[2]	Background[3]
# 1			
# 2			
.	.	.	.
.	.	.	.
.	.	.	.
# N			

[1] This will be the maximum detected value for subsurface soil reported in a sample collected at the periphery of the unit or area in the current investigation. The qualifier codes attached to the value, if any, will be included with the value.
[2] These are taken from Appendix A.
[3] The soil background concentration (or activity) will be that presented in Appendix A or the most recent update.

Analyses to evaluate groundwater and surface water sampling in determining the nature and extent of contamination in groundwater and surface water will be similar to those for soil. The format of the

comparison table to be used to determine if the nature of contamination in groundwater may pose an unacceptable excess cancer risk or systemic toxicity is in Exhibit 7. In this table, the maximum detected concentration or activity in all groundwater samples collected at the site will be compared to the no action PRG for residential use of groundwater, the maximum contaminant level (MCL), and the background concentration or activity. This table will be used to refine the list of preliminary COPCs and the analytical list for contingency sampling. In this evaluation, an analyte will become a preliminary COPC if its concentration exceeds any screening criterion and the background concentration or activity. Comparisons to MCLs will not be used to identify COPCs, but will be provided for information only.

Exhibit 7. Presentation of screening assessment results to evaluate nature of contamination in groundwater after the initial round of sampling

	Groundwater (μg/l or pCi/l)			
Analyte	Maximum[1]	Direct Contact PRG[2]	Maximum Contaminant Level[3]	Background[4]
# 1				
# 2				
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
# N				

[1] This will be the maximum detected value for groundwater reported in all samples collected around the unit or area during the current and relevant previous investigations. The qualifier codes attached to the value, if any, will be included with the value.

[2] The direct contact PRG will be the lessor of the no action cancer- and no action hazard-based PRGs in Appendix A. Note, the hazard-based PRG should be that for a child aged 1 to 7.

[3] The MCL will be taken from Appendix A or the most recent update.

[4] The groundwater background concentration (or activity) will be that presented in Appendix A or the most recent update.

The table used to determine if contamination in surface water may pose an unacceptable dose, cancer risk, or hazard will be similar to that in Exhibit 7. However, background concentrations of chemicals and radionuclides will not appear in the surface water table because background does not exist for surface water. The evaluation of this table will match that for groundwater.

For all investigations except the final RI of the groundwater integrator unit, there will be only limited evaluation of the extent of existing groundwater contamination during the evaluation of the initial round of sampling. Currently, only the extent of dense nonaqueous phase liquid contamination (i.e., secondary sources) is addressed during the investigation of the individual units and areas. The method used for the detection of these secondary sources does not rely on risk analysis and will not be discussed here. However, for the groundwater integrator unit investigation, the comparison table used to examine the adequacy of sampling in determining the extent of groundwater contamination will be similar to that in Exhibit 7. However, in this evaluation a table will be prepared for each groundwater sampling location along the suspected periphery of the contaminant plumes. In each of these tables, the maximum detected analyte concentrations and activities will be compared to the no action residential use PRGs, MCLs, and background concentrations. Generally, groundwater sampling will be deemed adequate to determine the extent of contamination if analyte concentrations and activities in samples collected along periphery of the suspected groundwater contaminant plumes do not exceed screening criteria and background concentrations. However, in deciding if sampling has adequately determined the extent of contamination, additional factors such as historical information will be considered.

The table to be used to determine the adequacy of sampling in determining the extent of surface water contamination will also be similar to that in Exhibit 7. However, as noted earlier, this table will not contain background concentrations of chemicals and radionuclides because background values are not

available for surface water. Generally, surface water sampling will be deemed adequate to determine the extent of contamination if analyte concentrations and activities in samples collected downstream of a unit or area do not exceed screening criteria. However, in deciding if sampling has adequately determined the extent of contamination, additional factors such as historical information will be considered.

3.3 ANALYSES FOR THE RI REPORT (BASELINE RISK ASSESSMENTS)

Baseline risk assessments will be prepared to support final actions at PGDP. To ensure consistency between assessments and conformity with agreements reached between the DOE and regulatory agencies, all assessments will contain either the material described in succeeding sections or an explanation stating why the material is not presented. Material described below but not relevant to a particular assessment will be noted in the assessment. Specific objectives of the remedial action process to be addressed in this section are to:

- delineate the methods PGDP will use in the evaluation, determination, and documentation of baseline risks to human health and the environment at a site and

- describe the methods PGDP will use to determine the concentrations and activities of analytes that can remain on-site and still be adequately protective of human health and the environment both on-site and off-site.

In the following sections, the presentation follows the outline to be used in baseline human health risk assessments. Data evaluation methods are discussed in Sect. 3.3.3, exposure assessment methods are presented in Sect. 3.3.4, toxicity assessment methods are described in Sect. 3.3.5, risk characterization methods are delineated in Sect. 3.3.6, uncertainty in the risk assessment is discussed in Sect. 3.3.7, and remedial goal option (RGO) derivation methods are discussed in Sect. 3.3.8. In addition, the sources used to prepare this material are listed in Sect. 3.3.1, and general issues are considered in Sect. 3.3.2.

[Note, the methods for the baseline ecological risk assessment are not considered here. They are described in the companion Ecological Risk Methods Document. Additionally, methods to be used for dose assessment are not presented in detail. The methods for dose assessment should generally follow those used for baseline risk assessments.]

3.3.1 Guidance Documents

The methods discussed in the following sections are consistent with current U.S. Environmental Protection Agency (EPA) Region IV and headquarters risk assessment guidance documents, the Commonwealth of Kentucky Department of Environmental Protection (KYDEP) risk assessment guidance, and applicable DOE Orders. In addition, these methods are consistent with agreements reached during meetings between DOE, EPA Region IV, and KYDEP risk assessment personnel (DOE 1996d, EPA 1996c, KYDEP 1996d, and RAWG 2000a, 2000b, 2000c, 2000d, 2000e, 2000f) and strategies and methods developed for human health risk assessments for use at other DOE Oak Ridge Operations sites located in Region IV (i.e., K-25, X-10, and Y-12 in Oak Ridge, Tennessee [Bechtel-Jacobs 1999]). However, some of these methods are not consistent with comments from regulatory agencies on earlier risk assessments completed at PGDP and do differ slightly from those delineated for other DOE Oak Ridge Operations sites. Inconsistencies between these methods and regulatory agency comments, and differences between these methods and those delineated for other DOE Oak Ridge Operations sites documents, are a result of the agreements reached between DOE, EPA, and KYDEP during comment resolution or during the meetings held in May through September 2000. Many of the documents and other materials used in developing the methods are listed chronologically in the following material.

3.3.1.1 EPA guidance documents and materials

- *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Parts A, B, C, and D* (EPA 1989a, 1991b, 1991c, 1998a, respectively) (RAGS, Parts A, B, C, *and D, respectively);*
- *Exposure Assessment Methods Handbook* (EPA 1989b);
- *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions* (EPA 1990a);
- *Guidance for Data Usability in Risk Assessment* (EPA 1990b);
- *Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"* (EPA 1991d);
- *Dermal Exposure Assessment: Principles and Applications* (EPA 1992a);
- *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment* (EPA 1992b);
- *Supplemental Guidance to RAGS: Calculating the Concentration Term* (EPA 1992c);
- *Guidelines for Exposure Assessment* (EPA 1992d);
- EPA Comments on the Public Health and Ecological Assessment, Phase II (EPA 1992e);
- EPA Review Comments on DOE's Responses to Comments. Draft Public Health and Ecological Assessment, Phase II at the Paducah Gaseous Diffusion Plant (EPA 1992f);
- Revisions to Sects. 3.3.1 and 3.3.2 of the RAGS, Part B (EPA 1993a);
- *Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure* (EPA 1993b);
- EPA Review Comments on *Human Health Baseline Risk Assessment for the Northwest Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-122&D1) (EPA 1994a);
- EPA Review Comments on *Groundwater Strategy Document for the Paducah Gaseous Diffusion Plant, Kentucky* (DOE/OR/07-1145&D1) (EPA 1994b);
- EPA Review Comments on *Surface Water Strategy Document for the Paducah Gaseous Diffusion Plant, Kentucky* (DOE/OR/07-1130&D1) (EPA 1994c).
- *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment* (EPA 1995a, EPA 2000b);
- EPA Review Comments on *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume Paducah Gaseous Diffusion Plant* (EPA 1995b);
- EPA Review Comments on *Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report for Waste Area Groupings 1 and 7 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1404/V1&D1) (EPA 1996a);

- EPA Review Comments on *Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report for Waste Area Groupings 1 and 7 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1404/V1&D2) (EPA 1996b);

- EPA Review Comments on Meeting Summary Risk Assessment/Risk Evaluation Meeting, February 7, 1996, in Atlanta, February 13, 1996, Conference Call (EPA 1996c);

- EPA Review Comments for the *Data Summary and Interpretation Report for Interim Remedial Design at Solid Waste Management Unit 2 of Waste Area Grouping 22 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1549&D1) (EPA 1997a);

- EPA Review Comments on *Remedial Investigation Report for Solid Waste Management Units 7 and 30 of Waste Area Grouping 22 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1604/V1&D1) (EPA 1997b);

- EPA Review Comments on *Remedial Investigation Report for Waste Area Grouping 6 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1727&D1) (EPA 1999a);

- EPA Review Comments on *Remedial Investigation Report for Waste Area Grouping 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1777&D1) (EPA 1999b);

- EPA Review Comments on *Remedial Investigation Report for Waste Area Grouping 28 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1846&D1) (EPA 2000a).

3.3.1.2 Commonwealth of Kentucky guidance documents and materials

- KYDEP Review Comments on Public Health and Ecological Assessment, Phase II (KYDEP 1992);

- KYDEP Additional Review Comments on the Draft Groundwater Strategy Document for the Paducah Gaseous Diffusion Plant, June 1993 (KYDEP 1994);

- *Risk Assessment Guidance* (KYDEP 1995);

- KYDEP Review Comments on *Resource Conservation and Recovery Act (RCRA) Facility Investigation/ Remedial Investigation (RFI/RI) Reports for Waste Area Groupings (WAGs) 1 and 7 and Kentucky Ordnance Works (KOW) Solid Waste Management Units (SWMUs) 94, 95, and 157 at the Paducah Gaseous Diffusion Plant.* (DOE/OR/071404&D1) and (DOE/OR/07-1405&D1). EPA Identification number KY8-890-008-982 (KYDEP 1996a);

- KYDEP Review Comments on *Resource Conservation and Recovery Act (RCRA) Facility Investigation/ Remedial Investigation (RFI/RI) Report for Waste Area Groupings (WAGs) 1 and 7 at the Paducah Gaseous Diffusion Plant (PGDP), Paducah, Kentucky.* DOE/OR/07-1404&D2. Permit #KY8-890-008-982 (KYDEP 1996b);

- KYDEP Review Comments on *Paducah Gaseous Diffusion Plant (PGDP): Human Health Baseline Risk Assessment for the Northwest Plume* (DOE/OR/07-1202&D1) and the *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume* (DOE/OR/07-1286&D1) (KYDEP 1996c);

- Paducah Gaseous Diffusion Plant Issues (KYDEP Review Comments on Meeting Summary Risk Assessment/Risk Evaluation Meeting, February 7, 1996 in Atlanta, February 13, 1996 Conference Call) (KYDEP 1996d);

- KYDEP Review Comments on *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant* (DOE/OR/07-1506&D1) (KYDEP 1996e);

- KYDEP Review Comments on *Data Summary and Interpretation Report for Interim Remedial Design at Solid Waste Management Unit 2 of Waste Area Grouping 22 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1549&D1) (KYDEP 1997a);

- KYDEP Review Comments on the *Remedial Investigation Report Waste Area Grouping 22, SWMUs 7 and 30 at the Paducah Gaseous Diffusion Plant* (DOE/OR/07-1604&D1) (KYDEP 1997b);

- KYDEP Re: *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, McCracken County, Kentucky* (DOE/OR/07-1506&D1) (KYDEP 1998a).

- KYDEP Review of the *Remedial Investigation Report for the Waste Area Grouping 6 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1727&D1) (KYDEP 1999a);

- KYDEP Review of the *Remedial Investigation Report for the Waste Area Grouping 9 & 11, Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1785&D1) (KYDEP 1999b);

- KYDEP Review Comments for *Remedial Investigation Report for the Waste Area Grouping 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1777&D1) (KYDEP 1999c);

- KYDEP Additional Comments on the *Residual Risk Evaluation Report for Waste Area Grouping 23 and Solid Waste Management Unit 1 of Waste Area Grouping 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1781&D1) (KYDEP 1999d);

- KYDEP Response to *Waste Area Grouping 27 D1 Remedial Investigation Report* (DOE/OR/07-1777&D1) Comment Response Summary, Paducah Gaseous Diffusion Plant (KYDEP 1999e);

- KYDEP Review Comments on the D2 *Remedial Investigation Report for Waste Area Grouping 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1777&D2) (KYDEP 1999f);

- KYDEP Review Comments on the D2 *Remedial Investigation Report for Waste Area Grouping 6 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1727&D2) (KYDEP 1999g);

- KYDEP Review Comments on the D1 *Remedial Investigation Report for Waste Area Grouping 28 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1846&D1) (KYDEP 2000a).

3.3.1.3 Other materials

- Meeting Summary for the Risk Assessment/Risk Evaluation Meeting, February 7, 1996, in Atlanta, February 13, 1996, Conference Call (DOE 1996d);

- *Guidance for Conducting Risk Assessments and Related Risk Activities for the DOE-ORO Environmental Management Program* (Bechtel Jacobs 1999);

- Minutes and notes from meetings of the PGDP Core Team Human Health Risk Assessment Working Group (RAWG 2000a, 2000b, 2000c, 2000d, 2000e, and 2000f).

3.3.2 General Methods

As noted above, baseline risk assessments for PGDP will generally follow the methods outlined in EPA's RAGS (EPA 1989a) and Kentucky's *Risk Assessment Guidance* (KYDEP 1995). However, there have been specific issues that were agreed to in comment resolutions and meetings that provide additional detail. This section discusses some general issues that do not apply to specific sections of the baseline human health risk assessment but will be included in baseline risk assessments prepared for PGDP.

3.3.2.1 Format for the baseline human health risk assessment

The outline that will be followed when preparing baseline human health risk assessments for PGDP is provided in Appendix C of this document. This outline is consistent with that in RAGS, Part A and in KYDEP's *Risk Assessment Guidance* (KYDEP 1995) and includes all sections that must be in a complete baseline human health risk assessment. As such, some portions of the outline may not be applicable to some baseline human health risk assessments of limited scope. However, any baseline human health risk assessment prepared for PGDP will include the major and second headings in the order presented. Major headings that will appear in all baseline risk assessments are "Results of Previous Studies," "Identification of Chemicals of Potential Concern," "Exposure Assessment," "Toxicity Assessment," "Risk Characterization," "Uncertainty in the Risk Assessment," "Conclusions and Summary," and "Remedial Goal Options Development." In addition, each baseline human health risk assessment will contain introductory material that delineates the scope and objectives of the assessment.

Tables that will be presented in the risk assessment will include both the tables recommended in RAGS, Part D (EPA 1998a) and shorter summary tables. Generally, the large, complex RAGS, Part D tables will appear in an appendix to the risk assessment, and summary tables will appear in the body of the report.

3.3.2.2 Presentation of results from previous studies

In all baseline risk assessments prepared for PGDP, the results from previous risk and dose assessments and other risk evaluations that are relevant to the unit or area being assessed will be presented. These results will be included to allow for a comparison between results of earlier work and the results of the current baseline risk assessment. Differences seen will be discussed in the observations section of the current baseline risk assessment.

The format followed when presenting the results of the earlier risk and dose assessments will follow that which will be used for reporting previous studies in the RI work plan. This is discussed in detail in Sect. 3.1.2. For risk evaluations that are not risk assessments, results will be presented verbatim and without interpretation. Relevant results from these studies may also be used in the uncertainty discussion of the current baseline human health risk assessment.

3.3.3 Data Evaluation Methods

The primary purpose of this section of the baseline human health risk assessment will be to develop the list of COPCs used in the assessment. In this section, the sources of data, procedures to screen data, a summary of the results of the screening, and a final list of COPCs will be presented. Additionally, this section will provide site-specific characterization data used in the exposure assessment. Methods to complete each of these activities are presented in the following.

3.3.3.1 Sources of data

In this section, the sources of analytical data used in the assessment will be listed, and each data source will be described. In many cases, these descriptions will be by reference (e.g., background

concentration information); however, if references are not available, then narrative describing the source will be included.

All data describing a unit or area will be used in the baseline risk assessment. Data of known quality or data that provide definitive identification of the presence of a contaminant, even with uncertain concentration (e.g., data carrying a "J" qualifier code), will be used quantitatively in all risk assessments when developing representative concentrations at exposure points. Generally, quantitative information collected during the remedial investigation will be used without discussion; however, data collected as part of other projects, such as the monitoring programs at PGDP, will only be used quantitatively after determining if this information is consistent (i.e., reported concentration or activity is similar in magnitude to that collected during the remedial investigation) with that collected during the remedial investigation. Data of unknown or lesser quality will not be used quantitatively in the risk assessment. However, these data will be used qualitatively in the assessment, especially in the exposure assessment. If data from monitoring or similar programs are used quantitatively in the baseline risk assessment, the effect these data may have had on the calculation of exposure point concentrations and activities will be discussed as an uncertainty.

3.3.3.2 Procedures to screen or evaluate data to determine chemicals of potential concern

Data screening to develop the list of COPCs will be performed in the following seven steps.

Step 1: Evaluation of sample design and locations. Data will be examined to ensure that the samples from which data were derived were collected using sampling methods that are adequate to determine the nature and extent of contamination for the particular unit or area being assessed. Data not from the unit or area under investigation or not useful in determining contaminant migration from the unit or area will not be used quantitatively in the assessment because these data are not representative of the unit or area for which remedial actions are being considered. In particular, when considering groundwater sampling results, only data from samples collected from wells located in contaminant plumes will be used.

Step 2: Evaluation of sampling and analytical methods. Data will be examined to ensure that the sampling methods and analytical methods used in the laboratory are consistent with EPA-approved methods. Data not from EPA-approved methods will not be used quantitatively in the risk assessment but may be used qualitatively. Also in this step, groundwater and surface water data will be examined, and data from the analyses of filtered water will be deleted from the data set. Only results from unfiltered samples will be used quantitatively in baseline human risk assessments performed at PGDP. Note, filtered groundwater and surface water data may be used in the uncertainty section of the assessment when discussing data sources and their effects on risk estimates.

Step 3. Evaluation of sample quantitation limits. See Fig. 3.2 for an example of Step 3.

Chemicals. The sample quantitation limits for each analyte and sample will be examined to determine if these limits were below the concentration at which the analyte may pose an unacceptable risk or hazard to human health. If the maximum sample quantitation limit for an analyte over all samples within a medium is greater than the concentration that may pose an unacceptable risk or hazard to human health, and the analyte is not detected in any sample, then the data for that analyte will be deemed suspect. Data from these analytes will not be used quantitatively in the risk assessment, but the potential risk or hazard from exposure to media potentially containing these analytes will be examined qualitatively. In developing the qualitative assessment for these data, the maximum quantitation limit for the analyte in all samples from a medium will be compared to the appropriate no action residential PRG, if historical or process information indicates that the analyte could potentially be present. One-half the maximum quantitation limit for the analyte in all samples from a medium will be used in this comparison if historical or process information indicates that the analyte is not expected to be present.

Evaluation of Sample Quantitation Limits

Chemicals:

Consider the following results for Chemicals W, X, Y, and Z. Assume that Chemicals W and Y are site-related contaminants and that Chemicals X and Z are not site-related. Also, let the data qualifier (U) be defined as not detected at the sample quantitation limit (SQL).

Chemical	Sample 1	Sample 2	Sample 3	Sample 4	Screening Value
W	10U	10U	10U	10U	5
X	10U	10U	10U	10U	5
Y	10U	6	10U	10U	5
Z	1U	1U	1U	1U	5

Then, following the rules in Step 3 of the data evaluation process:

- Results for Chemical W are suspect because the maximum SQL over all results (10) is greater than the screening value (5), and Chemical W was not detected in any sample. Because Chemical W is site-related, the qualitative risk analysis of this chemical's potential effect would use the full SQL.
- Results for Chemical X are suspect because the maximum SQL over all results (10) is greater than the screening value (5), and Chemical X was not detected in any sample. Because Chemical X is not site-related, the qualitative risk analysis of this chemical's potential effect would use one-half the SQL.
- Results for Chemical Y are not suspect even though the maximum SQL exceeds the screening value because Chemical Y was detected in one sample.
- Results for Chemical Z are not suspect because the maximum SQL is less than the screening value.

Radionuclides:

Consider the following results for Radionuclides A, B, C, D, and E. Also, let the data qualifier (U) be defined as not detected at the minimum detectable activity (MDA). The error term is listed after the plus/minus sign.

Chemical	Sample 1	Sample 2	Sample 3	Sample 4	Screening Value
A	10U ±5	10U ±5	10U ±5	10U ±5	5
B	10 ±5	10U ±5	10U ±5	10U ±5	5
C	10U ±5	3 ±5	10U ±5	10U ±5	5
D	10U ±5	8 ±5	10U ±5	10U ±5	5
E	3 ±5	3 ±5	4 ±5	1 ±5	1

Then, following the rules in Step 3 of the data evaluation process:

- Results for Radionuclide A are suspect because the MDA used for all results (10) is greater than the screening value (5), and the radionuclide was not detected in any sample. Because Radionuclide A is site-related, the qualitative risk analysis of this chemical's potential effect would use the full MDA. The error term plays no role here because the radionuclide was listed as a nondetect.
- Results for Radionuclide B are not suspect even though the maximum MDA exceeds the screening value because the radionuclide was detected at a concentration greater than the error in at least one sample.
- Results for Radionuclide C are suspect. Although there is a detected value, the reported concentration is less than the error. Because the nondetect results for radionuclide have a maximum MDA greater than the screening value, this radionuclide would be evaluated qualitatively.
- Results for Radionuclide D are not suspect because there is a detect greater than the error term.
- Results for Radionuclide E are not suspect. However, this radionuclide would not be evaluated because each result is less than its respective error.

Note that other data qualifiers associated with the data must also be considered during data evaluation. Please see Step 4 of the data evaluation process.

Fig. 3.2. Example of Step 3 – Evaluation of Sample Quantitation Limits.

Radionuclides. The analysis for radionuclides will be performed in two steps. In the first step, the minimum detectable activities (MDA) for each analyte and sample will be examined to determine if these limits were below the concentration or activity at which the analyte may pose an unacceptable risk or dose. If the maximum MDA for an analyte over all samples within a medium is greater than the concentration or activity that may pose an unacceptable risk or dose to human health and the analyte is not detected in any samples, then the data for that analyte will be deemed suspect. Data from these analytes will not be used quantitatively in the risk assessment, but the potential risk or dose from exposure to media potentially containing these analytes will be examined qualitatively. In developing the qualitative assessment for these data, the maximum MDA for the radionuclide in all samples from a medium will be compared to the appropriate no action residential PRG. In the second step, the radionuclide error reported for each analyte in each sample will be compared to the reported value. If each reported radionuclide concentration is less than the error term, then the radionuclide will be assumed to not be detected and be removed from the data set. If any one value is greater than the error term, then the radionuclide will be assumed to be detected. [Note, in the latter case, all reported values, including negative values, will be used to derive the exposure point concentrations under current conditions after considering any other qualifiers attached to the data point.]

Step 4. Evaluation of data qualifiers and codes. Generally, the rules presented in RAGS, Part A, Exhibits 5.4 and 5.5 (EPA 1989a) will be used to evaluate all data qualifiers and codes attached to chemicals. However, data with a "B" qualifier (i.e., analyte also found in associated blank) will be examined by analyte to ensure that site-related analytes are not eliminated. For analytes known not to be site related, the "5 and 10X's Rule" described in RAGS, Part A (EPA 1989a) will be applied to the extent possible. In addition, the method used in data validation to examine blank contamination will be evaluated. If data validation qualified sample results as "U" (i.e., analyte not detected) instead of "B" when blank contamination was present, and the analyte passed the "5 and 10X's Rule," then the data will be reevaluated. Specifically, if chemical data is qualified "B," and the value is less than that defined by the "5 and 10X's Rule," then the data will be assumed to be a nondetect and the reported value will be used to derive the exposure point concentration.

Evaluation of radionuclide data will follow rules agreed upon by the Commonwealth of Kentucky Radiation Health Branch and DOE. The data assessment qualifiers that will appear and their description are as follows:

- **KYRHTAB-LT:** Kentucky Radiation Health and Toxic Agents Branch (KYRHTAB) has performed an independent data assessment and the results are less than the MDA or detection limit and should not be plotted.

- **KYRHTAB-50:** KYRHTAB has performed an independent data assessment and the radiation counting uncertainty is greater than 50% of the analytical results.

- **KYRHTAB-ER:** KYRHTAB has performed an independent data assessment and the data presents error problems (i.e., no counting uncertainty or zero counting uncertainty).

- **KYRHTAB-OK:** KYRHTAB has performed an independent data assessment and the data is acceptable for use.

Step 5. Elimination of analytes not detected. Generally, any analyte not detected in at least one sample from a medium will be deleted from the data set. However, if an analyte is suspected of being present at very low concentrations (i.e., below the quantitation limit) due to cross-media contamination or is suspected of being present due to historical or process information, the analyte may remain in the data set even though it was not detected. In this case, the concentrations or activities used to determine the representative concentration for the analyte will be the sample quantitation limits for the analyte in the

medium. For classes of analytes such as polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and dioxins/furans, if one compound is detected at a concentration greater than a screening value and is assumed to be a COPC, then others will be assumed to be present as well. The method used to analyze these classes of compounds is presented later in this section.

Step 6. Examination of toxicity of detected analytes. The maximum concentrations and activities of analytes remaining in the data set will be compared to no action residential use risk-based PRGs by medium. The PRGs used in this comparison will be the lesser of the lifetime excess cancer-based and child hazard-based no action values found in Appendix A. Those analytes with a maximum detected concentration less than each respective no action risk-based PRG will be eliminated from the data set unless the analyte has a bioaccumulation factor for fish equal to or greater than 100 (DOE 1996e). Note, the uncertainty introduced through the application of this screening procedure will be examined quantitatively in the uncertainty analysis portion of the baseline risk assessment. The derivation of the risk-based PRGs used in this comparison is described in Appendix B of this document.

Step 7. Examination of analyte concentrations of essential nutrients detected in site samples. Analytes not removed from the data set in previous steps will be examined to determine if any are essential nutrients. Seven analytes known to be essential nutrients and known to be toxic only at extremely high concentrations will be removed from the data set on the basis of regulatory guidance (EPA 1995a). These analytes are calcium, chloride, iodine, magnesium, potassium, sodium, and phosphorus. No other analytes known to be essential nutrients will be deleted from the data set on the basis of this screen. Any uncertainty regarding retention of essential nutrient in the list of COPCs will be discussed in the uncertainty section of the risk assessment.

Note that a comparison of analyte concentrations and activities detected in soil and groundwater samples to analyte concentrations and activities detected in background will not be performed as part of the development of the list of COPCs. However, to ensure that risk managers are made aware that some analytes not related to the unit or area under investigation are included in the main analysis of the risk assessment, a background screen will be performed as part of the uncertainty analysis. Only soil and groundwater results will be included in this analysis because only background for these media are available at PGDP. (Note, because surface water and sediment are transient media in which concentrations and activities can change rapidly, PGDP does not plan to develop surface water and sediment background. Currently, a comparison of concentrations and activities in upstream versus downstream samples is to be used to determine if a unit or area is releasing contaminants to the environment.) In the background screen for soil and groundwater, the maximum detected concentration or activity of the COPCs will be compared to the values presented in Tables A.12 and A.13. Analytes for which the maximum detected concentration or activity is less than background will be removed from the data set and the risks and hazards recalculated. Note, only background values for groundwater drawn from the RGA and McNairy Formation are currently available.

An additional activity that will be performed during the development of the list of COPCs is the derivation of concentrations of total cancerous PAHs, PCBs, and dioxins/furans (dioxins). Total PAHs, Total PCBs, and Total Dioxins will be derived to allow for the correct use of the toxicity screen described in Step 6 and to allow for correct calculation of ELCR from exposure to these organic compounds.

When deriving total PAHs, the toxicity equivalence factors (TEFs) presented in EPA 2000b will be used. These TEFs are presented in Table 3.1. Note that these TEFs will be applied to the concentrations of detected PAHs in each sample and that the total PAH concentration in a sample will be the sum of the products of each PAH and its TEF.

Table 3.1. Toxicity equivalency factors for PAH compounds and dioxins/furans

PAH Compound	Toxicity Equivalence Factor	Dioxin/Furan Compound	Toxicity Equivalence Factor
Benzo(a)pyrene	1.0	2,3,7,8-TCDD	1.0
Benzo(a)anthracene	0.1	2,3,7,8-PeCDD	0.5
Benzo(b)fluoranthene	0.1	2,3,7,8-HxCDD	0.1
Benzo(k)fluoranthene	0.01	2,3,7,8-HpCDD	0.01
Chrysene	0.001	OCDD	0.001
Dibenzo(a,h)anthracene	1.0	Other CDDs	0
Indeno(1,2,3-c,d)pyrene	0.1	2,3,7,8-TCDF	0.1
All other PAHs	0	1,2,3,7,8-PeCDF	0.05
		2,3,4,7,8-PeCDF	0.5
		2,3,7,8-HxCDF	0.1
		2,3,7,8-HpCDF	0.01
		OCDF	0.001
		Other CDFs	0

Notes: All TEFS from EPA 2000b.

When deriving total PCBs (if this analyte not reported in the data set), the detected concentrations of each PCB within a sample will be summed. Note that there are no TEFs to use when deriving total PCB.

When deriving total dioxin, the TEFs presented in EPA 2000b will be used. These TEFs are presented in Table 3.1. Note that these TEFs will be applied to both the concentrations of detected dioxins and furans and to one-half the sample quantitation limit of undetected dioxins and furans. The total dioxin concentration in a sample will be the sum of the products of each dioxin/furan and its TEF.

3.3.3.3 Presentation of data evaluation

A summary of the data evaluation will be provided in both narrative and tables. Tables from each step of the data evaluation process may be presented. As noted earlier, the data summary tables recommended on RAGS, Part D should appear in an appendix to the risk assessment. However, summary tables should appear in the main text of the assessment. At minimum, a table listing the COPCs for the assessment should appear in the main text. An example of the information that should appear in this summary table is in Exhibit 8.

Exhibit 8. List of chemicals of potential concern

Analyte	Frequency of Detection[1]
Site and Medium[2]	
Analyte # 1	
Analyte # 2	
.	.
.	.
.	.
Analyte # N	

[1]This value will be the number of samples in which the analyte was detected over the number of samples in which an analysis for the analyte was performed.
[2]A list of chemicals of potential concern will be presented for each site and medium combination.

3.3.3.4 Site-specific characterization information

Several pieces of site-specific characterization information are relevant to virtually all baseline human health risk assessments performed for PGDP because they explain resource use around PGDP. However, because this information is in the form of interviews and letters, it is generally not readily available. Therefore, this information is included in Appendix E of this document to provide a ready source of these materials. In Appendix E, the following documentation is presented.

- Letter and survey form used during the Phase I Site Investigation (CH2M Hill 1991) to determine groundwater use near PGDP;
- Summary of the interview with Mr. Kenny E. Perry, Agricultural Extension Agent, Ballard County, Kentucky, regarding agricultural practices in Ballard County held in February 1994;
- Summary of the interview with Mr. Douglas A. Wilson, Agricultural Extension Agent, McCracken County, Kentucky, regarding agricultural practices in McCracken County held in February 1994;
- Letter dated February 24, 1994, from Mr. Douglas A. Wilson, Agriculture Extension Agent, McCracken County, Kentucky, to Mr. Fred Dolislager, Risk Analyst, Oak Ridge National Laboratory, regarding area of crop land in McCracken County;
- Questionnaire dated October 26, 1995, sent to Mr. Charles Logsdon, Kentucky Department of Fish and Wildlife, by FMSM Engineers, Inc., regarding recreational use of Little and Big Bayou Creeks near PGDP;
- Facsimile dated November 8, 1995, sent to Mr. Stephen Scott, FMSM Engineers, Inc., containing responses from Mr. Charles Logsdon, Kentucky Department of Fish and Wildlife, to the aforementioned questionnaire;
- Letter dated April 5, 1994, from Kentucky Department of Fish and Wildlife to Mr. Fred Dolislager, Risk Analyst, Oak Ridge National Laboratory, containing annual harvests of geese, ducks, turkeys, and deer in McCracken and Ballard Counties, Kentucky; and,
- Reports entitled "Planning Issues for Superfund Site Remediation" and "Quantitative Decision Making in Superfund: A Data Quality Objectives Case Study" from *Hazardous Materials Control* regarding use of exposure units in risk calculations and remedial decisions.

3.3.4 Exposure Assessment Methods

The primary purpose of this section of the baseline human health risk assessment will be to report the results of the exposure assessment for each unit or area investigated. In this section, the exposure setting for each unit or area will be characterized, exposure pathways will be identified, exposure will be quantified (i.e., dose or intake calculated), and doses will be presented. Methods to complete each of these steps are discussed in the following sections.

3.3.4.1 Characterize the exposure setting

This section of the exposure assessment will describe the physical setting of each unit, including meteorology, climate, vegetation, soil type, surface hydrology, groundwater hydrology, and geology. In addition, the surrounding populations will be characterized as needed. Specific note will be given to determining if sensitive subpopulations may be present. In risk assessments in RI reports, the information

presented concerning climate, vegetation, soil type, surface hydrology, groundwater hydrology, and geology will be brief, and references will be to material presented in earlier sections of the remedial investigation report. (Note, a brief presentation of this material must be included in the baseline risk assessment because the FFA states that the baseline risk assessment is to be written as a stand-alone report.) In baseline risk assessments not in remedial investigation reports, the information presented concerning climate, vegetation, soil type, surface hydrology, groundwater hydrology, and geology will be more extensive.

Current and potential future land use and the time-frame for future use will also be discussed in this section of the exposure assessment. The most likely future land use will be determined using information in the most recent SMP; however, because future land use over time is uncertain, the use scenarios considered in the baseline risk assessment will not be governed by that information alone. Use scenarios that will be considered in all baseline risk assessments under future conditions are rural residential, recreational, industrial, and excavation.

Finally, this section of the baseline human health risk assessment will integrate the preceding information and declare the unit or area under investigation as either a source or integrator unit and identify exposure points. Definitions used to determine whether the area or unit is a source or integrator are as follows:

- Source unit: Those units or areas that may release contaminants to other units or areas.
- Integrator unit: Those units or sites that accumulate contaminants from source units or areas.

Generally, application of these definitions to units and areas to be investigated at PGDP shows that all areas on-site where contamination exists (e.g., the soil and other material at burial grounds, spill areas, and landfills) are source areas. Integrator units identified using these definitions are air, groundwater (e.g., RGA), and surface water (e.g., Big and Little Bayou Creek watersheds and the Ohio River).

Also in this section of the exposure assessment, exposure points will be evaluated. For source units, the exposure points that will be evaluated under current conditions are at the unit or area ("hot spots" may be evaluated separately) and at points downgradient to which contamination may migrate. The downgradient points include at the PGDP security fence (if applicable), at the PGDP facility property boundary (if applicable), and at Little Bayou Creek (if applicable). Note that for units or areas outside the controlled area at PGDP, exposure at the facility boundary will not be considered because it is not necessary for remedial decisions. For integrator units, exposure points that will be considered are those within the contaminated area (e.g., above the contaminated groundwater plume or along the contaminated ditch) and at areas downgradient. Generally, exposure points which consider migration from a source will consider the time of exposure. For example, for exposure to groundwater both at a source and at the facility boundary, risk or hazard from exposure to measured concentrations under current conditions and future conditions will be determined. In addition, risk or hazard from exposure to expected future concentrations or activities will be modeled to determine the risk or hazard that may occur under potential future conditions as contaminants migrate from the source to the underlying aquifer. Exposure to contaminants in or migrating to the surface water integrator unit will be handled similarly. The mechanism that will be used to determine the extent of modeling that will be used in a baseline human health risk assessment is discussed later.

3.3.4.2 Identification of exposure pathways

This section of the exposure assessment will delineate the pathways through which the receptors may be exposed under both current and future conditions. The goal of this material will be to provide a complete depiction of all exposure pathways for current and future uses. To achieve this goal, this section will present conceptual site models and supporting text. Also, in this section, each pathway will be described in terms of source, route of exposure, exposure point, and receptor. This format will be followed because all four must be present for a complete pathway to exist. Note, potential pathways not containing all four

items will be described as being incomplete, and text justifying their omission from the assessment will be provided. Potential pathways that will be considered in all assessments are described below.

Exposure assessments in baseline human health risk assessments completed in the past indicate that at least 24 exposure pathways should be considered as potential pathways in all assessments. These pathways are listed below. (Note, additional pathways, such as contact with buried waste, may be reasonable for some units or areas; these are not included.)

- Ingestion of groundwater as a drinking water source;
- Inhalation of volatile constituents emitted from groundwater during household use;
- Dermal contact with groundwater while showering;
- External exposure to ionizing radiation emitted by constituents in groundwater while showering;
- Inhalation of volatile constituents emitted from groundwater during irrigation;
- Incidental ingestion of soil;
- Dermal contact with soil;
- Inhalation of particulates emitted from soil;
- Inhalation of volatile constituents emitted from soil;
- External exposure to ionizing radiation emitted by constituents in soil;
- Incidental ingestion of surface water while swimming or wading in creeks or natural or man-made ponds;
- Dermal contact with surface water while swimming or wading in creeks or natural or man-made ponds;
- External exposure to ionizing radiation emitted by constituents in surface water while swimming or wading in creeks or natural or man-made ponds;
- Incidental ingestion of sediment while swimming or wading in creeks or natural or man-made ponds;
- Dermal contact with sediment while swimming or wading in creeks or natural or man-made ponds;
- External exposure to ionizing radiation emitted by constituents in sediment while swimming or wading in creeks or natural or man-made ponds;
- Consumption of fish taken from creeks or natural or man-made ponds;
- Consumption of vegetables and produce raised in contaminated soil;
- Consumption of irrigated vegetables;
- Consumption of beef from animals contaminated by consuming vegetation (pasture and concentrates) irrigated with contaminated water or grown on contaminated soil, by drinking contaminated water, or ingesting contaminated soil;

- Consumption of dairy products (i.e., milk) from animals contaminated by consuming vegetation (pasture and concentrates) irrigated with contaminated water or grown on contaminated soil, by drinking contaminated water, or ingesting contaminated soil;

- Consumption of pork from animals contaminated by consuming vegetation (concentrates) irrigated with contaminated water or grown on contaminated soil or by drinking contaminated water;

- Consumption of poultry products from animals drinking contaminated water; and,

- Consumption of game (i.e., deer, rabbits, and quail) contaminated by consuming contaminated vegetation or soil and ingesting water.

While these are the pathways that have been found to be reasonable in past assessments, not all may be reasonable, or complete, for future assessments; therefore, the decision on which pathways to quantify will be made on a project-specific basis. In any case, the rationale for the inclusion or exclusion of any of the pathways listed above will be included in the exposure assessment.

It is important to note that the pathways relating to livestock consumption are not reasonable for most source units. This is because most source units are too small to support livestock in addition to a homestead and garden. Generally, a source unit will be required to be larger than 2 acres to be considered for livestock production. (This assumes that a minimum of 2 acres is required for a home and associated garden.) Note, under this definition, all integrator unit assessments will contain an assessment of risk from consumption of livestock because the area they cover is greater than 2 acres. In assessments where livestock consumption is included, the range size for each beef or cow will be 2 acres per head (Morrison 1959).

Using the characterization information and pathway analysis, a conceptual site model will be developed for each unit or area. The format that will be used for the conceptual site models is that in Fig. 3.1. Note, when presenting the conceptual site models for multiple units or areas in a single baseline human health risk assessment, the units or areas may be grouped to reduce the number of figures that need to be presented.

3.3.4.3 Quantification of exposure

To quantify exposure, or dose, both the exposure point concentration and the exposure factors are required. Here, the exposure point concentration can be defined as the concentration or activity of the chemical of potential concern in the environmental medium ingested, inhaled, contacted, or consumed, and the exposure factor can be defined as the product of the exposure parameters describing the degree of exposure to the environmental medium in terms of duration or frequency of exposure and mass of the receptor.

Exposure point concentrations under current conditions of all COPCs for which environmental samples were taken will be determined using the following procedure.

1. If results from fewer than five samples are available, then the exposure point concentration will be the maximum detected concentration.

2. If results from more than five but fewer than ten samples are available, then the data will be assumed to be log normally distributed, and the exposure point concentration will be the lesser of the maximum detected concentration and the 95% upper confidence limit (UCL) on the mean of the log normal distribution.

3. If results from more than 10 samples are available, then a distribution check will be performed, and the exposure point concentration will be the lesser of the maximum detected concentration and the

95% UCL on the mean of the appropriate distribution. Data found to be not normally distributed will be assumed to be log normally distributed.

The distribution check will be performed using the Wilkes-Shapiro test in the Univariate Procedure in the Statistical Analysis System (SAS 1990).

The equations used to calculate the 95% UCL values are presented below. The equations were taken from *Supplemental Guidance to RAGS: Calculating the Concentration Term* (EPA 1992c). Equation 5 is used for normally distributed data, and Eq. 6 is used for log normally distributed data.

$$95\%\ \text{UCL} = \overline{X} + t(s/\sqrt{n}) \qquad \textbf{Eq. 5}$$

where: 95% UCL = upper confidence limit (95%) of the normal distribution
$\overline{X}$ = mean of all values, including nondetects
t = Student-t statistic (e.g., from standard statistical tables)
s = standard deviation of all values, including nondetects
n = number of observations

$$95\%\ \text{UCL} = e^{(\bar{x}+0.5s^2+sH\sqrt{n-1})} \qquad \textbf{Eq. 6}$$

where: 95% UCL = upper confidence limit (95%) of the log normal distribution
$\overline{X}$ = mean of transformed values, including nondetects
s = standard deviation of transformed values, including nondetects
H = H-statistic (e.g., from standard statistical tables)
n = number of observations

When applying these equations to soil, data will be segregated into depth intervals relevant to receptors. For all scenarios except the excavation worker, data from samples collected from 0 to 1 foot below ground surface will be used to estimate the exposure point concentration. For the excavation worker, data collected from 0 to 10 feet below ground surface will be used to estimate the exposure point concentration, unless site-specific information indicates that results from samples collected at deeper depths should be included in the derivation of the exposure point concentration.

When applying these equations to groundwater, data from samples from each potable aquifer (i.e., RGA and McNairy Formation) will be used. However, data will be summarized within and not over aquifers. Note, for the groundwater integrator investigations (e.g., that for the groundwater operable unit), the representative concentration for groundwater may be the average concentration of the samples taken from wells within the contaminant plume if data are sufficient. In addition, as with soil, the wells used in each calculation may be grouped so that risk or hazard at differing contaminant concentrations and in various areas may be estimated. Decisions concerning the method that will be used to estimate the concentration of COPCs for the groundwater integrator unit will be made on a case-by-case basis and be justified in the baseline risk assessment.

Risks from water drawn from the UCRS will not be presented in the main body of the risk assessment because this water source is not considered to be an aquifer due to low yield. However, risks from ingestion of water from this source will be considered at least qualitatively in the uncertainty section of the risk assessment.

Finally, for some samples, duplicate or split-sample analyses may be available. When calculating the representative concentration, the maximum value reported in the duplicate or split-sample analysis will be

used. Duplicate and split-sample results will not be averaged when calculating the representative concentration in baseline risk assessments performed for PGDP.

The exposure point concentrations and activities used for future conditions will depend on the time-frame for which risk or hazard is being quantified. At minimum, for all assessments for PGDP, risk, dose, and hazard to potential future users will be quantified using the current exposure point concentrations and activities. In addition, for those sites and areas where future concentrations or activities may increase, modeled concentrations will be used. To determine if modeling is needed, the maximum soil concentrations and activities at the source (over all depths) for each analyte will be compared to the appropriate groundwater protection PRG. If the maximum soil concentration exceeds the groundwater protection PRG, then future concentrations in groundwater and surface water (if appropriate) will be modeled. Models to be used to determine future concentrations and activities at the source in groundwater will be based upon the modeling matrix presented in Table 3.2.

Because all models contain significant uncertainty, the baseline risk assessment's analysis of off-site migration will also include risks calculated using current contaminant concentrations at source units in addition to modeled values. This analysis will be included in the uncertainty section of all baseline risk assessments that contain modeling.

In baseline risk assessments for the integrator units, analyte degradation, attenuation, and transformation will be considered when calculating future concentrations in addition to migration, if possible. The analysis of these factors will rely upon the analysis presented in earlier sections of the remedial investigation report.

The equations to be used to combine the representative concentrations and exposure factors to estimate dose will follow the general format presented in RAGS, Part A (EPA 1989a). This general equation is shown in Eq. 7. Specific equations are presented in Appendix D of this document. In this appendix, references are presented for each exposure parameter (e.g., CR, BW) included in the equation. Generally, these parameters were taken from guidance documents (e.g., EPA 1989a, KYDEP 1995) unless site-specific values are available. (Equations used to derive radionuclide dose are similar to those presented in Appendix D.)

$$\text{Intake} = C \times \frac{CR \times EFD}{BW} \times \frac{1}{AT} \qquad \textbf{Eq. 7}$$

where: Intake = The dose (mg/(kg × day)
C = The average concentration contacted over the exposure period. See Eqs. 7 and 8 and associated discussion.
CR = The contact rate or amount of contaminated medium contacted per unit time or event
EFD = The exposure frequency and duration describing how long and how often exposure occurs
BW = The average body weight of the receptor over the term of exposure
AT = The averaging time or period over which exposure is averaged

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In the material in Appendix D, equations that can be used to calculate the concentrations of COPCs in selected biota (e.g., vegetables, fish, game, and livestock) are also presented. Generally, for baseline human health risk assessments for source units inside the secure area at PGDP, concentrations of COPCs in biota will be estimated using these equations because biota sampling cannot be performed. (These biota are not present.) For assessments for source units outside the fence and for integrator unit baseline risk assessments, results from biota sampling may be available. In cases where this information is available, the exposure point concentration will be calculated using the methods presented in Eqs. 5 and 6 and discussed earlier. In cases where this information is not available, the equations presented in Appendix D will be used to estimate the concentrations in biota. (Note, because concentrations in biota can differ markedly with

Table 3.2. Modeling matrix for groundwater, surface water, and biota

	Values for Soil to Protect Groundwater	Model	Point of Exposure	Notes
INVESTIGATION DOCUMENTS	Tier 1 (Used at Core Team Meetings for scoping)	SSLs and/or RESRAD	At source unit	Value to be used for initial scoping by Core Team. Use DAF of 1 for SSLs until site-specific values are available. Groundwater Protection value based on residential use and targets of 1E-6, 0.1, and 1 for risk, hazard, and dose, respectively. If site-specific DAF values are used, then need to justify these values. The depth of water needs to be considered in the calculation.
	Tier 2 (Used at Core Team Meetings for scoping)	SESOIL and/or RESRAD	At source unit	Includes source delimitation. Value to be used during follow-up meetings by Core Team. Recognize SESOIL limitations when modeling inorganic COPCs-refine K_ds.
DECISION DOCUMENTS	Tier 3 (Enhanced modeling used in Decision Documents if needed)	SESOIL and RESRAD with AT123D (Use "RESRAD TRANS" when available)	At source unit and at Down-gradient points (Fence, property boundary, creek, river)	Uses source delimitation and refined K_ds from above. Use values from this effort to set initial clean-up goals. On the Terrace (southern portion of PGDP) different points of exposure will apply.
	Tier 4 (Enhanced modeling used in Decision and Design Documents if needed)	Source modeling and MODFLOW T	Down-gradient points	To be used to refine clean-up goals (if needed). Maybe especially important to set monitoring goals. On the Terrace (southern portion of PGDP) different points of exposure will apply.

Table 3.2 (continued)

	Values for Soil and Sediment to Protect Surface Water	Model	Point of Exposure	Notes
INVESTIGATION DOCUMENTS	Tier 1 (Used at Core Team Meetings for scoping)	SSLs and/or RESRAD	At source unit	Value to be used for initial scoping by Core Team. Use DAF of 1 for SSLs. Groundwater Protection value based on recreational use and targets of 1E-6, 0.1, and 1 for risk, hazard, and dose, respectively. If site-specific DAF values are used, then need to justify these values.
	Tier 2 (Used at Core Team Meetings for scoping)	MUSLE	At source unit	Includes source delimitation. Value to be used during follow-up meetings by Core Team.
DECISION DOCUMENTS	Tier 3 (Enhanced modeling used in Decision Documents if needed)	SWMM	At source unit and at Down-gradient points (Fence, creek)	Uses source delimitation from above. Initial clean-up goal calculations
	Tier 4 (Enhanced modeling used in Decision and Design Documents if needed)	Enhanced SWMM	Down-gradient points (Fence, creek)	To be used to refine clean-up goals (if needed). Maybe especially important to set monitoring goals.

Table 3.2 (continued)

	Values for Soil and Sediment to Protect Biota	Model	Point of Exposure	Notes
INVESTIGATION DOCUMENTS	Tier 1	NONE	NONE	The HHRAWG determined that development of screening values based on biota modeling would not be appropriate. Therefore, these values do not exist.
	Tier 2 (Used in Baseline Risk Assessments)	Those contained in current Methods Document, Appendix 4	At source unit	Includes source delimitation.
DECISION DOCUMENTS	Tier 3 (Enhanced modeling used in Decision Documents if needed)	Those contained in current Methods Document, Appendix 4 for biota and transport models presented earlier for receiving media.	At source unit and at Down-gradient points (Fence, creek)	Uses source delimitation from above. Initial clean-up goal calculations
	Tier 4 (Enhanced modeling used in Decision and Design Documents if needed)	Those contained in current Methods Document, Appendix 4 for biota and transport models presented earlier for receiving media.	At source unit and at Down-gradient points (Fence, creek)	To be used to refine clean-up goals (if needed). Maybe especially important to set monitoring goals.

time of sampling, tissue sampled, species sampled, age of animal, and other factors, the use of analytical results from biota sampling in the risk assessment may also give results that are very uncertain. Therefore, the uncertainty in the results calculated using biota analytical results will also be considered completely.)

3.3.4.4 Presentation of the results of the exposure assessment

Several figures and tables will be used to report the results of the exposure assessment in baseline human health risk assessments performed for PGDP. As noted earlier, conceptual site models for each unit or area under investigation will be presented, and tables presenting information in RAGS, Part D formatting will be prepared. In addition, this section will also present a summary of the decisions made concerning the selection of pathways to be quantified for each unit or area under investigation; the representative (i.e., exposure point) concentration of COPCs in each medium, including biota; any chemical-specific values used in the calculations; and the daily intakes resulting from the application of the exposure equations. This material will be taken from the larger RAGS, Part D tables. Formats to present this information are in Exhibits 9–12.

Exhibit 9. Summary of pathway analysis in the exposure assessment

Potentially Exposed Population	Exposure route, medium, and exposure point[1]	Pathway selected? (yes/no)	Reason for pathway selection or dismissal[2]
Time period[3]			
Population 1[4]			
	Pathway 1		
	Pathway 2		
	. . .	. . .	. . .
	Pathway N		

[1] Each of the pathways presented in this section will be included.
[2] A short statement drawn from the discussion in the text will be provided for the decision.
[3] Summary tables will be prepared for both the current or future time period. If multiple future time periods are assessed, a summary table will be included for each.
[4] The populations will be rural residential, recreational, industrial, and excavator. Only populations relevant to the time period will be included.

Exhibit 10. Presentation of representative exposure point concentrations[1]

Chemical of Potential Concern[2]	Medium 1[3]	Medium 2	. . .	Medium N
Unit or Area 1[4]				
Analyte 1			. . .	
Analyte 2			. . .	
. . .	. . .	. . .	. . .	. . .
Analyte N			. . .	

[1] A table will be made for each time period if models are used to estimate future representative concentrations.
[2] All chemicals of potential concern across all media will be presented for each unit or area.
[3] All media will be listed. The order will be groundwater, soil, sediment, surface water, and biota if possible.
[4] Each unit or area will be presented separately, but only one table will be used if possible.

Exhibit 11. Chemical-specific parameters

Chemical of Potential Concern[1]	Parameter 1[2]	Parameter 2	...	Parameter N
Analyte 1			...	
Analyte 2			...	
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
Analyte N			...	

[1] All chemicals of potential concern over all units or areas investigated will be presented. A separate list will not be presented for each unit unless unit-specific, chemical-specific parameters are used in the assessment.
[2] All chemical-specific parameters will be listed so that the calculations in the assessment can be duplicated by reviewers or users.

Exhibit 12. Daily intakes (dose) for Receptor 1[1]

Chemical of Potential Concern[2]	Pathway 1[3]	Pathway 2	...	Pathway N
Unit of Area 1[4]				
Analyte 1			...	
Analyte 2			...	
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
Analyte N			...	

[1] A separate table will be made for each receptor. If use patterns are assumed to differ between time periods, separate tables for each time period will also be provided.
[2] COPCs across all media will be listed for each unit or area.
[3] Each pathway included in the assessment will listed. The order followed will be groundwater pathways, soil pathways, surface water pathways, sediment pathways, and biota pathways, if possible.
[4] A separate presentation will be made for each unit or area; however, only one table will be used if possible.

3.3.5 Toxicity Assessment Methods

The primary purpose of this section of the baseline human health risk assessment will be to report the toxic effects of the chemicals of potential concern on exposed populations. In addition, this section will briefly describe the methods used by EPA, and in the toxicity assessment, to develop toxicity parameters, delineate the sources used to acquire the toxicity parameters, and present tables summarizing the toxicity information used in the risk assessment. In closing, this section will summarize the amount of toxicity information available on the COPCs in the risk assessment and discuss general toxicity assessment uncertainties. Requirements for each of these activities are discussed below.

3.3.5.1 Toxicity summaries

A toxicity summary for each COPC will be presented in the toxicity assessment. Each summary will contain a short description of the toxic effects of the chemical and the source of the toxicity values. Included in each description will be information on the effects associated with exposure to the chemical, the concentrations at which adverse effects are expected to occur in humans, a brief description of the data base used to derive each toxicity value, including the particular study from which the toxicity value used in risk characterization was derived, and the approval status of any toxicity values. Each toxicity summary will conclude with a listing of the toxicity values used in the risk assessment for administered and absorbed dose routes of exposure.

3.3.5.2 Sources of toxicity information

The sources that will be used in developing toxicity information for risk assessments performed for PGDP are listed below. These will be examined in the order presented.

- *Integrated Risk Information System* (IRIS) (EPA 2000c);
- *EPA National Center for Exposure Assessment*
- *Health Effects Assessment Summary Tables* (HEAST) (EPA 1996e)
- *EPA Region III Risk-based Concentration Table* (EPA 2000d);
- *EPA Region IX Risk-based Concentration Table* (EPA 2000e);
- EPA criteria documents;
- Agency for Toxic Substances and Disease Registry (ATSDR) toxicological profiles; and,
- Open literature.

When compiling toxicity information, provisional toxicity values and toxicity values withdrawn from IRIS or HEAST will be included, and provisional values will be clearly identified. **Note, toxicity values will not be developed for PGDP risk assessments without consultation with the regulatory agencies.**

Three additional issues will be addressed when reporting the sources of toxicity information. These are the use of toxicity values for chronic versus subchronic effects, the calculation of toxicity values for absorbed versus administered dose, and the use of oral administered dose toxicity values for the inhalation exposure route. Each of these is discussed below.

Generally, all risk assessments performed for PGDP will only use toxicity values for chronic exposure when characterizing risk. Although RAGS, Part A (EPA 1989a) states that toxicity values for subchronic exposure should be used for exposure durations less than 7 years in length, these will not be used because they are not available for many chemicals (in which case the chronic value should be used). The receptor groups that are affected by this decision are the child rural resident, the recreational user, and the excavation worker. In no case will toxicity values based on subchronic exposure be used for child or teen receptors. However, for excavation workers, toxicity values based in subchronic exposure may be used if the information provided through their use is useful in remedial action decision-making.

To properly characterize risk from absorbed dose (e.g., dose from dermal absorption across the skin), it is necessary to have toxicity values that are based on absorbed dose. Generally, all toxicity values in IRIS and HEAST are based on administered dose and cannot be used directly with the chronic daily absorbed doses calculated using the exposure equations in Appendix D. To convert administered dose toxicity values to absorbed dose toxicity values, the guidance provided in *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual. Supplemental Guidance, Dermal Risk Assessment, Interim Guidance* (EPA 1992b) will be used. The method delineated in this guidance is depicted in Eqs. 8 and 9. Equation 8 shows that the administered dose toxicity values for cancer effects (i.e., administered dose slope factor) is converted to an absorbed dose toxicity value (i.e., absorbed dose slope factor) by dividing by the chemical-specific gastrointestinal absorption efficiency of the respective chemical or compound. Equation 9 shows that the administered dose toxicity value for systemic toxicity [i.e., administered reference dose (RfD)] is converted to an absorbed dose toxicity value (i.e., absorbed RfD) by multiplying by the chemical-specific gastrointestinal absorption efficiency of the respective chemical or compound. For some chemicals and compounds, a chemical-specific gastrointestinal absorption efficiency is not available. For these chemicals and compounds, the following default chemical-specific gastrointestinal absorption efficiencies in EPA (1995a) will be used:

- 0.80 for volatile organic chemicals;
- 0.50 for semivolatile organic chemicals; and,
- 0.20 for inorganic chemicals.

$$Absorbed\ SF = \frac{Administered\ SF}{GI\ Efficiency} \qquad \textbf{Eq. 8}$$

where: Absorbed SF = The absorbed dose slope factor for cancer effects
Administered SF = The administered dose slope factor for cancer effects
GI Efficiency = The chemical-specific gastrointestinal absorption efficiency

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$$Absorbed\ RfD = Administered\ RfD \times GI\ Efficiency \qquad \textbf{Eq. 9}$$

where: Absorbed RfD = The absorbed reference dose for systemic toxicity
Administered RfD = The administered reference dose for systemic toxicity
GI Efficiency = The chemical-specific gastrointestinal absorption efficiency

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For many chemicals, toxicity information necessary to derive an inhalation exposure toxicity value is not available. To address this lack of information, inhalation toxicity values extrapolated from administered toxicity values (i.e., oral) taken from the EPA Region 9 and Region 3 sites (EPA 2000d and 2000e) will be used. The uncertainty section of the baseline human health risk assessment will discuss the effect that using extrapolated toxicity values had on the final risks and hazards derived in the assessment.

3.3.5.3 Tables summarizing the toxicity information

To facilitate review of the toxicity assessment, summary tables of toxicity information will be prepared following the examples in RAGS, Part D. Additional tables may be prepared for the main body of the risk assessment if these are needed to clarify the toxicity assessment process.

3.3.5.4 Summary of toxicity information available on the chemicals of potential concern

This section of the toxicity assessment will provide a listing of the chemical classes and the number of chemicals within each class which have toxicity information ordered by medium within unit or area under investigation. This summary will be presented to illustrate the total amount of toxicity information available to characterize risk in the following section.

3.3.6 Risk Characterization Methods

The primary purpose of this section of the baseline human health risk assessment will be to integrate the dose information developed in the exposure assessment with the effects information presented in the toxicity assessment to characterize the risk and hazard posed by environmental contamination at PGDP. In this section, the methods used to integrate the information to characterize risk and hazard and the tables and narrative summarizing the risk characterization for each exposure unit under each current and potential future use scenario will be presented. This section will conclude with a listing of use scenarios of concern for each location and a listing of COCs, POCs, and MOCs for each use scenario of concern.

3.3.6.1 Methods used to integrate dose and toxicity

In all baseline human health risk assessments performed for PGDP, the methods outlined in RAGS, Part A will be used to integrate dose and toxicity information and characterize risk. The following presents the equations that will be used for these calculations and describes the result of each equation. Note, in this presentation the calculations for systemic toxicity (i.e., hazard) and cancer risk are presented separately because they differ slightly. Also, note that the values for systemic toxicity are estimates of

whether the daily doses from each COPC, from each exposure pathway, and over all pathways and COPCs exceed that which may result in toxic effects in the receptor. However, the values for cancer risk are estimates of the excess cancer incidence that may result from exposure to each COPC, from each exposure pathway, and over all pathways.

Equations 10, 11, and 12 will be used to characterize the potential for systemic toxicity in all baseline human health risk assessments performed for PGDP. The result of Eq. 10 is a numeric estimate of the potential for systemic toxicity posed by a single chemical within a single pathway of exposure. The result of Eq. 11 is a numeric estimate of the potential for systemic toxicity posed by all chemicals reaching a receptor through a single pathway. The result of Eq. 12 is a numeric estimate of the potential for systemic toxicity posed to a receptor by exposure to all chemicals over all pathways. (This last value is often called an estimate "total noncarcinogenic risk.")

$$HQ_i = \frac{CDI_i}{RfD_i} \qquad \textbf{Eq. 10}$$

where: HQ_i = The hazard quotient, an estimate of the systemic toxicity posed by a single chemical
CDI_i = The estimate of chronic daily intake (or absorbed dose for some exposure routes) from the exposure assessment
RfD_i = The chronic reference dose for administered or absorbed dose as appropriate

$$HI_p = \sum_{i=1}^{n} HQ_i \qquad \textbf{Eq. 11}$$

where: HI_p = The pathway hazard index, an estimate of the systemic toxicity posed by all chemicals within a single pathway
HQ_i = The individual chemical hazard quotients for chemicals reaching the receptor through a single pathway (from Eq. 10)

$$HI_{total} = \sum_{p=1}^{n} HI_p \qquad \textbf{Eq. 12}$$

where: HI_{total} = The total hazard index, an estimate of the systemic toxicity posed by all chemicals over all pathways
HI_p = The pathway hazard indices from Eq. 11

Equations 13, 14, and 15 will be used to characterize the potential excess cancer incidence (i.e., excess lifetime cancer risk or ELCR) in all baseline human health risk assessments performed for PGDP. The result of Eq. 13 is an estimate of the increased cancer incidence (i.e., a probability) to a receptor that results from exposure to a single chemical (or radionuclide) within a single pathway. The result of Eq. 14 is an estimate of the increased cancer incidence (i.e., probability) that results from exposure to all chemicals (or radionuclides) reaching a receptor through a single pathway. The result of Eq. 15 is an estimate of the increased cancer incidence (i.e., probability) that results from exposure to all chemicals (or radionuclides) reaching a receptor over all pathways. (This last value is often called an estimate "total carcinogenic risk.")

$$ELCR_i = CDI_i \times SF_i \qquad \textbf{Eq. 13}$$

where: $ELCR_i$ = The chemical-specific excess cancer incidence
CDI_i = The estimate of chronic daily intake (or absorbed dose) from the exposure assessment
SF_i = The slope factor for administered or absorbed dose as appropriate

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$$ELCR_p = \sum_{i=1}^{n} ELCR_i \qquad \textbf{Eq. 14}$$

where: $ELCR_p$ = The pathway-specific excess cancer incidence
$ELCRi$ = The chemical-specific excess cancer incidence from Eq. 13

$$ELCR_{total} = \sum_{p=1}^{n} ELCR_p \qquad \textbf{Eq. 15}$$

where: $ELCR_{total}$ = The total excess cancer incidence posed by all chemicals over all pathways
$ELCR_p$ = The pathway-specific excess cancer incidence from Eq. 14

3.3.6.2 Presentation of risk characterization

In the baseline human health risk assessment, risk will be characterized for each exposure unit under each current and potential future use scenario. The results of the characterization will be presented in both tables and as narrative. The tables that will be used for each time, exposure unit, and receptor combination will be the two-way table presented in RAGS, Part D. The narrative that explains this table, which may include summary tables, will present the exposure unit, the receptor, HI_{total} (from Eq. 12) or $ELCR_{total}$ (from Eq. 15), the primary pathways contributing to HI_{total} or $ELCR_{total}$ (i.e., "driving pathways"), and the primary chemicals contributing to HI_{total} or $ELCR_{total}$ (i.e., "driving chemicals"). An example of a narrative description of risk taken from DOE 1996f is presented below.

Exhibit 13 summarizes the hazard indices for exposure routes for the current industrial worker over all locations. As shown in this exhibit, the total scenario hazard index (i.e., Location Total in Exhibit 13) is greater than 1 for the WAG 6 area and Sectors 5, 6, 7, and 9. The scenario total hazard indices for the WAG 6 area and Sector 7 are very large due to the presence of lead at concentrations greater than background. However, even if hazard from lead is not considered, the total location HI is greater than 1 (see footnote b). For each location, the driving exposure route is dermal contact with soil, which accounts for more than 95% of the total hazard index. Also, for each location, the inhalation exposure route contributes insignificantly to the location total hazard index.

Exhibit 14 summarizes the contaminants contributing more than 1% of the total systemic toxicity for the current industrial worker over all locations for those locations where the total systemic toxicity for the location exceeds 1. As shown in this exhibit, in each case, metals are the primary driving contaminants; however, PCBs and PAHs are minor contributors for Sector 6. Note, when contribution from lead is considered (Sector 7 and the WAG 6 area), it contributes more than 99% of the total hazard.

In the tables prepared for risk characterization, all COPCs will be listed even those which do not have a value. Also, these tables will present the total chemical-specific hazard (or risk) over all pathways, the total pathway-specific hazard (or risk) over all chemicals, and the total hazard or risk over all pathways and chemicals.

Exhibit 13. Exposure route summary for the current use scenario–systemic toxicity[a]

Scenario and Location	Exposure Routes for Soil			Location Total
	Incidental Ingestion	Dermal Contact	Inhalation of Vapors/Particles	
		Current industrial worker		
WAG 6 Area	39.1	1,120	<0.1	**1,160** [b]
% of Total	3%	97%	<1%	
Sector 1	NA	NA	NA	**NV**
% of Total	NV	NV	NV	
Sector 2	<0.1	0.4	NV	**0.4**
% of Total	1%	99%	NV	
Sector 3	<0.1	0.3	<0.1	**0.3**
% of Total	2%	98%	<1%	
Sector 4	<0.1	1.0	<0.1	**1.0**
% of Total	1%	99%	<1%	
Sector 5	<0.1	1.7	<0.1	**1.8**
% of Total	2%	98%	<1%	
Sector 6	<0.1	1.2	<0.1	**1.2**
% of Total	5%	95%	<1%	
Sector 7	63.7	1,830	<0.1	**1,890** [b]
% of Total	3%	97%	<1%	
Sector 8	<0.1	1.0	<0.1	**1.0**
% of Total	<1%	99%	<1%	
Sector 9	<0.1	1.3	NV	**1.3**
% of Total	1%	99%	NV	

NA indicates that the scenario is not applicable for this location.
NV indicates that a value is not available.

[a] Current convention is to use one significant digit for presentation of hazard indices. Three significant digits are used here when the hazard index is greater than 0.1 to enable the reader to match the numbers reported in the exhibit with those in its associated risk characterization table. Additionally, use of three significant digits, when the exposure route's value is greater than 0.1, allows the reader to sum the route values and check the location total.

[b] These very large values are the result of the retention of lead as a COPC at a value only slightly greater than background (42 mg/kg versus 36 mg/kg) and the use of a provisional reference dose provided in comments by KDEP. The scenario totals without lead are 1.84 and 1.64 for the WAG 6 area and Sector 7, respectively.

Exhibit 14. Driving contaminants' summary for current use scenario-systemic toxicity

Scenario and Location	Driving Contaminants Over All Exposure Routes	Location Total
	Current industrial worker	
WAG 6 Area	lead (>99%) [a]	**1,160**
Sector 1	HI < 1	**NV**
Sector 2	HI < 1	**0.4**
Sector 3	HI < 1	**0.3**
Sector 4	HI < 1	**1.0**
Sector 5	iron (47%); chromium (26%); antimony (22%); uranium (3%)	**1.8**
Sector 6	chromium (22%); antimony (22%); arsenic (20%); PCB (13%); aluminum (13%); pyrene (2%); fluoranthene (1%)	**1.2**
Sector 7	lead (>99%)[b]	**1,890**
Sector 8	HI < 1	**1.0**
Sector 9	antimony (58%); aluminum (23%); chromium (17%); uranium (2%)	**1.3**

NA indicates that the scenario is not applicable for this location.
NV indicates that a value is not available.
HI<1 indicates that total scenario hazard index is less than 1; therefore, analytes are not listed.

[a] Without lead as a COPC, the location total hazard index is 1.84. The contaminants contributing more than 1% of this value are: iron (29%); vanadium (23%); antimony (17%); chromium (14%); aluminum (7%); arsenic (5%); PCBs (2%); uranium (1%); and cadmium (1%).

[b] Without lead as a COPC, the location total hazard index is 1.64. The contaminants contributing more than 1% of this value are: iron (36%); vanadium (30%); chromium (26%); and antimony (6%).

3.3.6.3 Risk characterization for lead

Risk characterization for lead is a special case. Although it is known that exposure to lead can result in systemic toxic effects and possibly cancer, the approved toxicity values required to estimate potential for systemic toxicity and carcinogenesis are not available. However, both a biokinetic model and screening values (state and federal) are available. Therefore, the risk characterization for lead will be composed of the following components.

- Results of EPA's Integrated Exposure Uptake Biokinetic Model (EPA 2000f);
- Comparison of representative concentrations to the EPA screening levels (400 mg/kg in soil and sediment and 15 µg/l in groundwater and surface water) (EPA 1995a); and
- Comparison of representative concentrations to Kentucky action levels (50 mg/kg in soil and sediment and 15 µg/l in groundwater and surface water) (KYDEP 2000b).

Note that results for both the child and worker Integrated Exposure Uptake Biokinetic Model should be presented.

3.3.6.4 Selection of use scenarios, pathways, contaminants, and media of concern

Use scenarios, pathways, contaminants, and media of concern will be identified for each unit or area under investigation. If any unit or area is divided into exposure units during the exposure assessment, use scenarios, pathways, contaminants, and media of concern will be identified for each exposure unit.

In identifying use scenarios, pathways, contaminants, and media of concern, specific rules will be followed. The rule for each item of concern is discussed below.

- **Identification of use scenarios of concern.** To determine use scenarios of concern or the basis of risk, risk characterization results for total systemic toxicity (HI_{total}) and total risk ($ELCR_{total}$) will be compared to benchmarks of 1.0 and 1×10^{-6}, respectively. Use scenarios with HI_{total} or $ELCR_{total}$ exceeding either of these benchmarks will be deemed use scenarios of concern. Note, the results in the narrative provided in Sect. 3.3.6.2 indicate the teen recreational use scenario is a use scenario of concern for SWMU 8a ($HI_{total} = 71.5$). This value would be found in the lower right hand corner of a two-way table prepared under RAGS, Part D format.
- **Identification of POCs.** To determine POCs, risk characterization results for pathway hazard (HI_p) and risk ($ELCR_p$) over all chemicals *within a use scenarios of concern* will be compared to benchmarks of 0.1 and 1×10^{-6}, respectively. Pathways within a use scenario of concern exceeding either of these benchmarks will be deemed POCs for the use scenario of concern. Note, the results in the narrative provided in Sect. 3.3.6.2 indicate that the POCs for the teen recreational user are dermal contact with surface water ($HI_p = 2.0$), dermal contact with leachate ($HI_p = 0.6$), ingestion of fish ($HI_p = 60.5$), ingestion of sediment ($HI_p = 0.1$), dermal contact with sediment ($HI_p = 8.2$), and ingestion of venison ($HI_p = 0.2$). These values would be found along the bottom margin of a two-way table prepared under RAGS, Part D format.
- **Identification of contaminants of concern (COCs).** To determine COCs, risk characterization results for chemical hazard (HQ_i) and risk ($ELCR_i$) over all pathways *within a use scenario of concern* will be compared to benchmarks of 0.1 and 1×10^{-6}, respectively. Chemicals of potential concern within a use scenario of concern exceeding either of these benchmarks will be deemed COCs for the use scenario of concern. [Note, for dioxins and furans, PAHs, and PCBs, the total risk over all congeners (for dioxins and furans) or compounds (for PAHs and PCBs) will be used when determining if these are COC.] The

results in the narrative provided in Sect. 3.3.6.2 indicates that the COCs for the teen recreational user are aluminum ($HQ_i = 0.2$), antimony ($HQ_i = 6.1$), arsenic ($HQ_i = 0.2$), cadmium ($HQ_i = 0.6$), iron ($HQ_i = 9.4$), manganese (($HQ_i = 48.4$), strontium ($HQ_i = 0.1$), vanadium ($HQ_i = 4.7$), and zinc ($HQ_i = 1.7$). These values would be found along the right margin of a two-way table prepared under RAGS, Part D format.

- **Identification of media of concern (MOCs).** To determine MOCs, the POCs are reviewed, and those media in these pathways are deemed to be MOC. This is equivalent to screening the total risk and hazard posed by chemicals of potential concern in the various media against benchmarks of 0.1 and 1×10^{-6}. For the results presented in the narrative in Sect. 3.3.6.2, the MOCs are surface water, leachate, fish, sediment, and venison.

Identification of scenarios of concern, POCs, COCs, and MOCs in Dose Assessment. For dose assessment, a scenario of concern will be one that has a total dose exceeding the PGDP *de minimis* dose of 1 mrem/year. A COC will be one that has a contaminant-specific dose exceeding 1 mrem/year. A POC will be an exposure route that has a route-specific dose exceeding 1 mrem/year. An MOC will be those media appearing in any POC.

3.3.6.5 Consideration of COPCs for which risk cannot be estimated

For some COPCs, information is insufficient to allow for risk characterization. Generally, risk cannot be characterized for these chemicals because toxicity values are not available. When this occurs in risk assessments performed for PGDP, these COPCs will be deemed COCs during risk characterization, and they will be reported along with the COCs chosen by the rules outlined above.

3.3.6.6 Summary of risk characterization

To provide a single table summary of risk characterization for each unit or area under investigation, a summary table will be prepared and included as a summary of risk characterization in all baseline human health risk assessments. This table will follow the format shown in Exhibit 15 and list the risk and hazard posed within each use scenario of concern, the percent contribution of each POC to HI_{total} and $ELCR_{total}$, and the percent contribution of each COC to HI_{total} and $ELCR_{total}$. A similar table will be prepared to summarize the results of the dose assessment if one is included in the baseline risk assessment.

Exhibit 15. Summary of risk characterization

Use scenario[1]	Total ELCR[2]	COCs[3]	% Total ELCR[4]	POCs[5]	% Total ELCR[6]	Total HI[7]	COCs	% Total HI[8]	POCs	% Total HI[9]
# 1										
# 2										
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
# N										

[1] All use scenarios will be listed.
[2] These values will be those found at the lower right of each unit's two-way table for the scenario of interest.
[3] These will be the contaminants of concern (COCs) selected applying the rules listed earlier.
[4] This will be calculated by dividing the chemical-specific ELCR (i.e., $ELCR_i$) by the total ELCR (i.e., $ELCR_{total}$).
[5] These will be the pathways of concern (POCs) selected applying the rules listed earlier.
[6] This will be calculated by dividing the pathway-specific ELCR (i.e., $ELCR_p$) by the total ELCR (i.e., $ELCR_{total}$).
[7] These values will be those found at the lower right of each units two-way table for the scenario of interest.
[8] This will be calculated by dividing the chemical-specific hazard quotient (i.e., HQ_i) by the total HI (i.e., HI_{total}).
[9] This will be calculated by dividing the pathway-specific HI (i.e., HI_p) by the total HI (i.e., HI_{total}).

3.3.7 Consideration of Uncertainty in the Risk Assessment

Uncertainties are associated with each of the steps of the baseline risk assessment. Following a general discussion of uncertainties in risk assessment, this section presents the uncertainties that will be addressed in baseline human health risk assessments prepared for PGDP and provides a format for summarizing this information (when a qualitative uncertainty analysis or sensitivity analysis is performed).

The potential effect of the uncertainties on the final risk characterization must be considered when interpreting the results of the risk characterization because the uncertainties directly affect the final risk estimates. Types of uncertainties that must be considered can be divided into four broad categories. These are uncertainties associated with data and data evaluation (i.e., identification of chemicals of potential concern), exposure assessment, toxicity assessment, and risk characterization. Specific uncertainties under each of these broad categories that will be addressed in baseline human health risk assessments completed for PGDP are listed in the following material.

The exact method that will be used to present the uncertainty analysis in all baseline risk assessments cannot be included here. This is due, in large part, to the fact that the rigor of the uncertainty analysis will depend upon the unit or area under investigation, the decisions that must be made for the unit or area, and the uncertainties affecting the risk estimates. However, at minimum all baseline risk assessments will contain a qualitative uncertainty analysis that will include a quantitative sensitivity analysis of salient uncertainties. In the qualitative uncertainty analysis, the magnitude of the uncertainty on the risk characterization will be categorized as small, moderate, or large. Uncertainties categorized as small will be those that should not cause the risk estimates to vary by more than one order of magnitude; uncertainties categorized as moderate will be those that may cause the risk estimates to vary by between one and two orders of magnitude; and, uncertainties categorized as large will be those that may cause the risk estimates to vary by more than two orders of magnitude.

In the qualitative uncertainty analysis, note will be made that the uncertainties listed and evaluated are neither independent nor mutually exclusive. Therefore, it will be noted that the total effect of all uncertainties upon the risk estimates is not the sum of the estimated effects of each uncertainty evaluated.

3.3.7.1 Uncertainties in data, data evaluation, and identification of COPCs

- Retention of common laboratory contaminants in the list of chemicals of potential concern;
- Retention of infrequently detected analytes (i.e., detected in less than 10% of the samples analyzed) in the list of chemicals of potential concern;
- Lack of consideration in temporal patterns when selecting chemicals of potential concern;
- Spatial distribution and number of sampling locations (representativeness);
- Quantitation limits for some analytes exceeding their respective human health risk-based screening criteria (i.e., PRGs);
- Use of historical data in addition to data collected as part of the RI field investigation;
- Removal of analytes from the list of chemicals of potential concern on the basis of a comparison to background concentrations;

- Removal of analytes from the list of chemicals of potential concern on the basis of comparison to concentrations found in associated blanks;
- Removal of analytes from the list of chemicals of potential concern on the basis of a toxicity screen;
- Characterization of exposure point concentrations for environmental media under current conditions;
- Consideration of temporal changes in analyte concentrations and activities;
- Use of results from analyses of unfiltered groundwater samples versus filtered groundwater samples; and
- Use of results from analyses of unfiltered surface water samples versus filtered surface water samples.

3.3.7.2 Uncertainties in exposure assessment

- Incorporation of biota fate and transport modeling into risk and hazard estimates (if this type of modeling was performed);
- Uncertainties in modeled concentrations, including the consideration of solubility as defined by differences between contaminant concentrations in filtered and unfiltered water samples;
- Use of reasonable maximum exposure parameters versus average parameters for all exposure routes and associated pathways;
- General issues in the development of conceptual site models;
- Consideration of livestock scenarios;
- Summation of risk and hazard across units or areas under investigation; and
- Use of default values when estimating dermal absorbed dose (especially from soil and sediment)—defaults from KYDEP (1995) versus EPA (1995a).

3.3.7.3 Uncertainties in toxicity assessment

- Use of provisional or withdrawn toxicity values;
- Extrapolation of oral administered dose toxicity values to inhalation dose toxicity values;
- Derivation of absorbed dose toxicity values from oral administered dose toxicity values;
- Lack of toxicity information, toxicity values, or both for some chemicals of potential concern; and,
- Use of chronic exposure toxicity values for exposures that are subchronic.

3.3.7.4 Uncertainties in risk characterization

- Combination of chemical-specific risk and hazard estimates ($ELCR_i$ and HQ_i, respectively) to derive pathway-specific and use scenario risk and hazard estimates ($ELCR_p$ and $ELCR_{total}$ and HI_p and HI_{total}, respectively) (i.e., effect of chemical mixtures);
- Combination of risk estimates from chemical and radioisotope exposure; and
- Summing cancer risks across pathways and across target organs.

(Note that uncertainties regarding the test time uncertainties are discussed in the accompanying text box.)

3.3.7.5 Summary of qualitative uncertainty analysis

Because uncertainties in the baseline risk assessment must be addressed when screening potential remedial actions and selecting the final action, the effect of all uncertainties upon the risk and hazard estimates will be summarized in a single table. Note, the following table, Exhibit 16, is most useful when summarizing a qualitative uncertainty analysis; other formats may be used for a quantitative uncertainty analysis.

In addition to the summary table, a narrative discussing the joint effects of the various uncertainties upon the risk characterization results will be prepared. In this narrative, the focus will be on the risks posed to receptors under the most likely future use and on how the uncertainties affect the identification of COCs. The narrative will address each of the COCs individually. The overall goal of the narrative will be to reduce to a manageable number the list of COCs for the most likely use scenario.

3.3.8 Remedial Goal Option Derivation Methods

This section of the baseline human health risk assessment will delineate the methods used to derive and present RGOs. It is important to note that RGOs are not clean-up goals but are site-specific, risk- or dose-based criteria which may be used to guide the development of clean-up goals (i.e., remediation levels) by risk managers. Remediation levels are developed as part of the risk analysis in the feasibility study (EPA 2000b).

3.3.8.1 Calculation of remedial goal options

Guidance in EPA (2000b) directs that multiple RGOs must be calculated for each COC identified in a baseline human health risk assessment. To do this, the goals are calculated by rearranging the exposure equations quantified in the risk assessment so that they solve for a concentration

Uncertainty in combining chemical-specific risk and hazard estimates and pathway-specific risk and hazard estimates

The primary uncertainty in the risk characterization guidance contained in this document is the method used to combine HQs and chemical-specific ELCRs across pathways and to combine pathway HIs and ELCRs to calculate total HI and ELCR. The method to be used to calculate pathway HIs and ELCRs follows EPA protocols (EPA 1989a). This method calls for the simple addition of HQs and chemical-specific ELCRs to calculate pathway HIs and ELCRs, respectively, and assumes that all effects between chemicals are additive. As explained in EPA 1989a, this assumption is made because information concerning the effects of chemical mixtures is lacking.

The following limitations of this approach for systemic toxicity effects are reported by EPA:

- Little is known about the effects of chemical mixtures; although additivity is assumed, the interaction of multiple chemicals could possibly be synergistic or antagonistic.
- The RfDs and RfCs do not have equal accuracy or precision and are not based on the same severity of effects.
- Dose additivity is most properly applied to compounds that induce the same effect by the same mechanism of action. While the approach recommended by EPA is a useful screening-level approach, the cumulative systemic toxicity could be overestimated for chemicals that act by different mechanisms and/or on different target organs.

The following limitations of this approach for chemical carcinogenesis are reported by EPA:

- Cancer risks (i.e., ELCRs) are based on slope factors that represent an upper 95th percentile estimate of potency; the upper 95th percentiles of probability distributions are not strictly additive. Summing these risks can result in an overly conservative estimate of lifetime ELCR.
- Cancer risks may not be additive. By analogy to systemic toxicity effects, the endpoints may differ, and mechanisms of effect may vary.
- Not all slope factors contain the same weight-of-evidence for human carcinogenicity. EPA recognizes this by placing weight-of-evidence classifications on all slope factors. Those contaminants with a weight-of-evidence classification of A should probably receive more attention in the selection of a remedial design than contaminants with a B or C classification. Similarly, a contaminant with a B classification should probably receive greater attention than one with a C classification. The simple combination of ELCRs does not take this hierarchy into account.

Uncertainty in combining risk estimated for chemical exposure to those for risk estimated for radioisotope exposure

Uncertainty associated with adding risks from chemical exposure to those from exposure to radionuclides arises from two sources. First, the slope factors used to characterize the risk from chemicals are derived differently from the slope factors used to characterize risk from radionuclides. This difference results in estimates of chemical exposure risks that may be considered to be upper-bound risk estimates and estimates of radionuclide exposure risks that may be considered to be central tendency (i.e., "best") estimates; therefore, combining chemical exposure and radionuclide exposure risk estimates to estimate total risk for a land use scenario may place too much emphasis on chemical exposure risk. Second, the mechanism by which chemicals may cause cancer varies from the mechanism by which radionuclides may cause cancer. This difference in mechanism of action inflates the uncertainties that assume cancer risks are additive.

Exhibit 16. Summary of uncertainty analysis

Description of Uncertainty	Estimated Effect[1]		
	Small	Moderate	Large
Uncertainties related to data, data evaluation, and identification of chemicals of potential concern[2]			
Data uncertainty 1			
Data uncertainty 2			
.	.	.	.
.	.	.	.
.	.	.	.
Data uncertainty n			

[1] Definitions of effects are:

- Small – Uncertainty should not cause the risk or hazard estimate to vary by more than one order of magnitude;
- Moderate – Uncertainty may cause the risk or hazard estimate to vary by between one and two orders of magnitude; and,
- Large – Uncertainty may cause the risk or hazard estimate to vary by more than two orders of magnitude.

[2] A similar heading will appear for each of the major portions of the baseline human health risk assessment. The other headings are "Uncertainties related to exposure assessment," "Uncertainties related to toxicity assessment," and "Uncertainties related to risk characterization."

or activity in a medium that results in a specific "target risk," "target hazard," or "target dose." Target risks that will be used to derive RGOs at PGDP are 1×10^{-4}, 1×10^{-5}, and 1×10^{-6}. Target hazards that will be used to derive RGOs are 3, 1, and 0.1. Target doses for all media but groundwater are 1, 15, and 25 mrem/year. For groundwater, the dose targets are 1, 4, 15, and 25 mrem/year. As noted above, a RGO must be developed for each contaminant of concern. Because the selection of a COC is medium and use scenario specific, RGOs will be developed for each COC identified for each use scenario of concern at a unit or area. Also, because RGOs must be medium-specific, exposure routes which integrate contaminant contributions from more than one medium (e.g., consumption of vegetables) will be segregated so that each medium contributing to the exposure route is evaluated separately. This will be done by assuming that the concentration or activity of contaminants in the medium not under evaluation is zero.

In addition to calling for the development of RGOs, EPA (2000b) provides two methods that may be used to develop these values. The first involves physically rearranging and combining all the exposure equations utilized to determine risk or hazard and using the rearranged equation to calculate the RGO. The second simply uses ratios of concentrations or activities and level of risk, hazard, or dose to derive the RGO. Although the first method is of greater utility because the rearranged equation can be used to directly solve for RGOs, its use involves rearranging a large complex equation in which the chance for error abounds, especially if the estimated contaminant concentrations at the exposure point rely on fate and transport modeling. Similarly, although the second method is simpler mathematically, it can result in an incorrect solution if risk, hazard, or dose determined for contaminants of concern at the source in the baseline human health risk assessment is not linearly and directly related to the concentration or activity of the contaminants of concern at the exposure point. Fortunately, the concentration or activity in each of the exposure equations that will be used in baseline human health risk assessments at PGDP (see Appendix D) is linearly and directly related to the resulting risk, hazard, or dose. Therefore, the second method will be used in risk assessments at PGDP and is presented in Eqs. 16 and 17. Note, if additional exposure equations beyond those in App. D are used in an assessment performed for PGDP, these equations will be checked to ensure that the concentration or activity of contaminants of concern is directly and linearly related to risk or hazard as well.

$$\frac{Conc_{observed}}{ELCR_{derived}} = \frac{RGO}{Target\ ELCR} \qquad \textbf{Eq. 16}$$

where: $Conc_{observed}$ = The representative exposure point concentration for the contaminant of concern
$ELCR_{derived}$ = The chemical-specific ELCR of a COC due to exposure to a single medium across all exposure routes
RGO = The remedial goal option
Target Risk = Either 1×10^{-4}, 1×10^{-5}, or 1×10^{-6}

$$\frac{Conc_{observed}}{HI_{derived}} = \frac{RGO}{Target\ HI} \qquad \textbf{Eq. 17}$$

where: $Conc_{observed}$ = The representative exposure point concentration for the contaminant of concern
HI = The chemical-specific HI of a COC due to exposure to a single medium across all exposure routes
RGO = The remedial goal option
Target Hazard = Either 3, 1, or 0.1

As noted above, dose-based RGOs will be calculated using similar methods. The targets to be used for all media except groundwater are 1, 15, and 25 mrem/year. For groundwater, the dose targets are 1, 4, 15, and 25 mrem/year.

3.3.8.2 Presentation of remedial goal options

As noted above, RGOs must be calculated for each COC within each MOC for each use scenario of concern identified in the baseline human health risk assessment. Therefore, many RGOs will be developed in most risk assessments considering multiple units or areas. To simplify the consideration of the RGOs by users of the risk assessment, the format in Exhibit 17 will be used to present the RGOs in all baseline human heath risk assessments prepared for PGDP. Note, the use of this format will result in the preparation of a single table containing all contaminants of concern within each medium of concern for each use scenario of concern. Therefore, this table, or relevant potions of it, can be used directly in the feasibility study.

Exhibit 17. Presentation of remedial goal options[1]

Contaminant of concern	Rep. conc.[2]	Regulatory Value[3]	ELCR at conc.[4]	HI at conc.[5]	RGO at HI=0.1	RGO at HI=1	RGO at HI=3	RGO at ELCR= 1×10^{-6}	RGO at ELCR= 1×10^{-5}	RGO at ELCR= 1×10^{-4}	Units
Scenario and medium[6]											
# 1[7]											
# 2											
.	.		.	.	.	.	.	.	.	.	.
.	.		.	.	.	.	.	.	.	.	.
.	.		.	.	.	.	.	.	.	.	.
# N											

[1] A separate table will be made for each unit or area under investigation.
[2] This will be the representative concentration used in the calculation of risk or hazard in the baseline human health risk assessment.
[3] Regulatory values may not be available for some media.
[4] This will be the chemical-specific, medium-specific ELCR presented in the baseline human health risk assessment for the scenario of concern.
[5] This will be the chemical-specific, medium-specific ELCR presented in the baseline human health risk assessment for the scenario of concern.
[6] Each MOC within a scenario of concern will be presented. The current use scenario RGOs will be presented first followed by the options for the most likely future use. The options for the least likely future use will appear last. Also, for the ground and surface water RGO tables, the appropriate MCLs will be listed.
[7] All COCs should be listed, including those that could not be evaluated quantitatively.

A separate table following a similar format will be prepared for dose-based RGOs.

4. RISK ANALYSES IN THE PREPARATION OF REMEDY SELECTION DOCUMENTS

As noted in RAGS, Part C (EPA 1991b) and in *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Documents* (EPA 1999c), risk analyses are an integral part of the remedy selection documents [e.g., feasibility study (FS), PRAP, and ROD]. Risk evaluations begin in the development and screening stage of the FS, extend through the detailed analysis of alternatives in the FS, and are reported in varying level of detail in the PRAP and ROD. The primary goal of risk analyses here is to provide risk managers with the information needed to choose between specific remedial alternatives and to verify that a cleanup goal was achieved. Generally, if a piece of risk information is not needed to choose among alternatives or to verify cleanup, it does not need to be generated. However, it should be noted that it is not uncommon for additional risk analyses to occur after the completion and signing of a ROD (e.g., during the design and implementation of the chosen remedy and after the implementation is complete). Generally, additional analyses occur because additional information relevant to the chosen remedy is required. Because the need for and form of these analyses is determined on a project-specific basis, the analyses that may occur after the completion of the FS are not discussed in detail here. However, the information provided in Sects. 2 and 3 should be used to guide any additional work to ensure technical adequacy.

4.1 RISK ANALYSES DURING THE FEASIBILITY STUDY

Risk analyses impact four significant portions of the feasibility study. These are the reporting of baseline or screening risk assessment results (including any dose assessment), the evaluation of the risk analyses to determine the need for remedial action, the identification and screening of technologies and alternatives, and the detailed analysis of alternatives. These are discussed in Sect. 4.1.1, 4.1.2, 4.1.3, and 4.1.4, respectively.

4.1.1 Presentation of Risk Assessment Results in the Feasibility Study

As noted in the outline presented in Appendix C of this document, if properly presented, Sect. 7, Summary and Conclusions, of the baseline human health risk assessment can be copied directly to the FS report. Additionally, following guidance in EPA 1999c, the "RAGS, Part D" tables, or relevant parts of them, can be inserted directly into the FS. The material placed in the FS will contain a summary of the methods used to identify the chemicals of potential concern and to complete the exposure assessment, toxicity assessment, and risk characterization, including the identification of significant uncertainties affecting the risk results. In addition, the risk characterization summary tables (i.e., Exhibit 15) and the relevant portions of the remedial goal option summary tables (i.e., Exhibit 17) can be transported directly to the FS report. Therefore, electronic copies of this material will be made available to the authors of the FS report to simplify the reporting of this information and ensure consistency between the RI and FS reports.

It should be noted that for some FS reports recalculation of risk or dose estimates or remedial goal options may be required. Situations in which risk estimates may need to be recalculated for the FS report include:

- the time between the completion of the RI report and the preparation of the FS report is such that additional information not considered in the RI report becomes available (e.g., additional samples or updated toxicity values);
- significant errors are identified in the risk assessment subsequent to its approval (e.g., computational errors); and

- more advanced modeling indicates that risk or dose from migration, degradation, or transformation of contaminants is of greater concern than thought during the completion of the RI report.

Remedial goal options may need to be recalculated based on the above considerations or when the calculations of the RGOs in the RI report include exposure routes subsequently deemed improbable (e.g., consumption of fish from an industrial lagoon).

If additional risk assessment computations are required in the FS, then these computations will follow the methods outlined in Sect. 3. Most importantly, the exposure equations presented in App. D will be used for all baseline risk computations that appear in the FS report, and the methods presented in Section 3.3.8 for remedial goal option development will be followed.

In all FS reports, the summary of the risk assessment results will be followed by an evaluation of these results. This evaluation will consider the risk estimates, their basis, and the uncertainties deemed relevant to selection of a remedy. This evaluation will provide the focus for RAO development later in the FS report. The information that follows identifies typical decisions made when determining the need for remedial action in the FS report.

4.1.2 Risk Management Decisions to Identify the Need for Remedial Action

The evaluation of risks in the FS report focuses on those issues that are important in making decisions about whether remedial action is necessary. Several parameters in the baseline human health risk assessment are examined and may be modified in the FS report based upon site-specific conditions at the unit being evaluated. Modifications to baseline human health risk assessment parameters are designed to reduce uncertainties in the baseline human health risk assessment and focus the need for remediation on actual risks in areas where risks are significant. For example, the majority of the contaminated source areas at the PGDP are located within the plant's security fence. This area is patrolled regularly with many areas posted and/or roped off as contaminated areas (e.g., radiation ropes). In addition, workers at the PGDP must undergo extensive training prior to initial entry into the facility and must maintain the training through annual refresher courses. There are also numerous standard operating procedures at the PGDP that regulate employee safety (e.g., wearing safety goggles). Finally, water used by workers at the PGDP is pumped in from the Ohio River and treated prior to use. Residents living above the contaminated portion of the RGA are supplied with an alternate water source; therefore, there currently is no contact with contaminated RGA water. These types of controls and procedures are important factors that must be considered when assessing risks to current workers at the PGDP and may be used to evaluate potential future receptors for informational purposes. The text that follows identifies typical decisions made to determine the need for remedial action. However, note that **when such information is considered, management controls limiting exposure will automatically become a part of any remedial decision**.

The use of a default surface area for an industrial worker may be examined in the FS report if controls or procedures applicable to the unit result in a reduction in surface area available for contact. As shown in Appendix D, the default surface area factor used for the industrial worker in baseline risk assessments is 0.43 m^2. This value does not take into account the aforementioned controls and procedures designed to protect current workers. Consequently, it is appropriate in the FS report to replace 0.43 m^2 with a value that takes into account the personal protective equipment that a current worker may wear when in a contaminated area. An example is a worker that wears coveralls during grass mowing activities. For this worker, a smaller surface area is appropriate because the legs are covered.

Dermal absorption factors used to modify oral toxicity values to an absorbed dose value contain moderate uncertainty in most baseline human health risk assessments prepared for the PGDP. Generally, to ensure that risks are not underestimated and to be consistent with agreements made at technical

meetings with the regulatory agencies, the baseline human health risk assessments use default dermal absorption factors that are not likely to be exceeded by chemical-specific dermal absorption factors that may be derived in the future. These default values, which estimate the percentage of contaminant in soil or sediment crossing the skin and entering the body, are 5 percent for inorganic chemicals, 10 percent for semivolatile organic compounds, and 25 percent for volatile organic compounds. The risk assessment typically addresses dermal absorption as an uncertainty by comparing baseline risks to risks using EPA Region IV default factors. These factors are 0.1 percent for inorganic chemicals and 1 percent for organic chemicals. To focus on those risks that are important for decision-making purposes, the FS report will consider the results of the use of both EPA's default dermal absorption factors and the PGDP defaults.

The use of groundwater drawn from below the plant area as a drinking water source for current industrial workers and residents must be evaluated in the FS report. The evaluation in the baseline human health risk assessment is performed to allow for the possibility that future industrial workers or residents may come into contact with contaminated RGA groundwater. As mentioned previously, the PGDP pumps its water from the Ohio River for use at the plant and DOE currently supplies water to the affected community. Consequently, contact with contaminated RGA groundwater is currently controlled, and this pathway will be removed from consideration for current industrial workers and current off-site residents when discussing uncertainties in the risk management section of the FS report. This will allow decision-makers to determine the extent to which the DOE is affecting current industrial workers and current off-site residents under existing conditions.

The use of unfiltered water when evaluating potential future groundwater use also must be evaluated when determining COCs for decision making in the FS report. In the baseline human health risk assessment, all analyte concentrations in water come from the analyses of unfiltered or total samples. The use of data from analyses of total or unfiltered samples is consistent with current EPA guidance (EPA 1989a) but introduces an uncertainty. The amount of uncertainty is difficult to quantify, but is typically small if the wells where the samples were collected were developed properly. The uncertainty section of the baseline human health risk assessment will identify whether this uncertainty is small, moderate, or large for the investigation. If the uncertainty is small, it will probably not be necessary to re-evaluate the risk assessment results. If, however, the uncertainty is moderate to large, the FS will evaluate the uncertainty in more detail.

Another moderate uncertainty in the baseline human health risk assessment is the use of reasonable maximum exposure scenarios. Under reasonable maximum exposure scenarios, the default frequency of exposure for an industrial worker is 8 hours per day for 250 days per year (a total of 2000 hours per year). This uncertainty typically is addressed quantitatively in the uncertainty section of the risk assessment based upon the controls and procedures in place at the unit, and the quantitative uncertainty analysis is used as a basis for estimating risk to a current worker in the FS report. For example, for some units at the PGDP, grass mowing is the only activity that takes place. In this case, the exposure frequency used in the calculations in the uncertainty analysis are based upon the frequency of these grass mowing activities which may be a small fraction of the default exposure frequency (i.e., less than 10% of the default value of 2000 hours). Similarly, exposures under restricted use for future industrial workers are considered when evaluating potential future land use.

4.1.2.1 Land Use Considerations for Determining Appropriate Response Actions to Protect Future Potential Receptors

Land use is an important consideration when determining appropriate response actions based upon potential future receptors. Uncertainties associated with future land use is largely due to the inability to predict if existing controls will be in place in the future. Consequently, the results of the baseline human health risk assessment will not be modified when determining potential risks to future receptors. The alternatives developed in the FS report will have to ensure protection of potential future receptors.

Protection may be accomplished through continuation of existing controls in some instances. Consequently, potential future scenarios will be evaluated in the risk management section of the FS report to supply decision-makers with the information needed to choose appropriate remedial actions. The information that follows provides examples of scenarios that may be evaluated for future receptors in the risk management section of the FS report.

Site-specific exposures for current industrial workers and the inability to predict potential future exposures have been discussed earlier. For a future industrial worker, the risks to a default industrial worker as determined in the baseline human health risk assessment will be used when estimating risks to determine the need for action. This evaluation includes potential risks as a result of contact with contaminated RGA groundwater, which also is a possibility in the future. Additional evaluations that will be included in the risk management section for the future industrial worker may include an evaluation of the continuation of existing institutional controls (i.e., controls and procedures that limit access and an alternative water source); continuation of controls and procedures (i.e., continuation of current industrial scenario) assuming contact with contaminated RGA groundwater (i.e., no separate water source); and default exposure (i.e., no controls or procedures) without contact with contaminated RGA groundwater (i.e., assuming a separate water supply).

Quantitative uncertainties associated with a future excavation worker scenario will be evaluated in the baseline human health risk assessment because the default parameters are considered conservative. An example of a conservative use of default parameters would be in an area where there are several burial pits within a larger SWMU. If the baseline risk assessment considered excavation of the entire SWMU, a quantitative uncertainty analysis may be performed to account for removal of one or more of the individual pits. For decision-making purposes in the FS, the default worker would be evaluated when determining risks; however, additional evaluations for individual pits would be included with and without personal protective equipment. (The baseline human health risk assessment assumes that the worker does not wear personal protective equipment.) Note that controls and procedures currently in place at the PGDP address risks under a current excavation scenario.

Future on-site recreational users and residential users will be assessed in the FS report based upon the results of the baseline human heath risk assessment. Additional evaluations in the FS report will include on-site recreational users and residents with an alternate water supply (i.e., continued supply from the Ohio River). The risk manager will assume that no controls would be in place to restrict a future on-site recreational user or resident from contact with surface contamination.

Modeling during the baseline human health risk assessment typically involves a large amount of uncertainty. For this reason, modeling parameters may be re-evaluated during the preparation of the FS report as discussed in the modeling matrix presented in Table 3.2. A primary reason for an adjustment in modeling parameters is to address uncertainty in the source term calculations. By their nature, the source terms in the RI report are designed to ensure that the volume of the contaminated material is not underestimated. Therefore, re-evaluation of the modeling parameters for those contaminants identified as being of concern is appropriate when determining the need for action. Other reasons for reevalation of modeling results include selection of the appropriate points of exposure for calculation of cleanup goals and variation in models and modeling parameters (see Table 3.2).

4.1.2.2 Identification of Use Scenarios, Pathways, Contaminants, and Media of Concern for Decision-Making Purposes

Following evaluation of the results and uncertainties in the baseline human health risk assessment and finalization of risk management decisions, a list of use scenarios, pathways, contaminants, and media

of concern for decision-making purposes will be developed. This section presents the approach to be used in the FS report for identifying each item of concern.

The culmination of the risk management process is the identification of use scenarios, pathways, contaminants, and media of concern for decision-making purposes. In the FS report each item of concern will be identified based on the guidance presented in Sect. 3.3.6.4.

4.1.3 Risk Analyses during the Identification and Screening of Technologies and Alternatives

During the identification and screening stage of the FS, a range of remedial alternatives is identified, and each alternative is evaluated with respect to effectiveness, implement ability, and cost (EPA 1991c). As part of the evaluation of effectiveness, human health risks to the community (e.g., short- and long-term health risks from releases during remediation and after remediation, respectively) and remediation workers (i.e., short-term health risks during remedial activities) will be considered. At PGDP, this evaluation will be performed qualitatively to be consistent with guidance in RAGS, Part C.

4.1.4 Risk Analyses during the Detailed Analysis of Alternatives

The overall objective of the detailed analysis of alternatives is to obtain and present the information needed by risk managers to select a remedial alternative for a site (EPA 1991c). Risk analysis impacts three of the selection criteria against which alternatives are evaluated: long-term effectiveness, short-term effectiveness, and overall protection of human health and the environment.

Generally, the human health risk analyses performed during the FS follow the same procedures as the baseline human health risk assessment. However, unlike the baseline human health risk assessment, where the goal is to estimate the risk posed by environmental contamination, the goal of the FS risk analyses are to determine to what extent the various remedial alternatives reduce risk, so that unacceptable levels of risk are not posed by residual environmental contamination.

Consistent with RAGS, Part C, at PGDP the risk analyses performed during the detailed analysis of alternatives may be either qualitative or quantitative. In most cases a qualitative analysis will be sufficient as indicated in RAGS, Part C. However, a quantitative analysis may be required in some cases. The decision of whether a qualitative or quantitative analysis of alternatives is needed will be made utilizing the guidance in RAGS, Part C. In this guidance, EPA notes that the type of analysis that is required depends on (1) whether the relative short-term or long-term effectiveness is an important consideration in selecting the alternative and (2) the "perceived risk" associated with the alternative. In RAGS, Part C, EPA defines "perceived risk" as that leading to the belief by site engineers, risk assessors, and neighboring communities, including workers, that an alternative may either not be adequately protective or lead to increased risk. Specific parameters that will be taken into account at PGDP when examining "perceived risk" and determining if a quantitative analysis is required include the following (adapted from RAGS, Part C):

- proximity of populations to the unit or area;
- presence of highly or acutely toxic chemicals;
- technologies with high release potential, either planned or unplanned;
- high uncertainties in the nature of releases;
- multiple contaminants or exposure routes or both affecting the same receptor;

- releases from neighboring units or areas, including uncontrolled releases from units or areas not yet addressed;
- releases that occur over a long period; and
- level of community concern.

4.1.4.1 Qualitative risk evaluations

As noted above a qualitative analysis will be sufficient for most units or areas. In this type of analysis, the risk evaluation will qualitatively evaluate each alternative against the RAOs defined during the FS. In all cases, the qualitative analysis will evaluate whether the alternative can reduce exposure to probable and potential receptor populations to acceptable levels. In many evaluations, this will involve qualitatively determining if an alternative is effective in reducing contaminant concentrations at a unit or area to the remedial level [i.e., the RGO or other numeric standard selected as the clean-up criteria]. In other cases, this will involve determining if an alternative is effective in changing activity patterns of receptors so that the rate of contact by receptors to the contaminated materials are reduced, resulting in a lowered exposure. Finally, the qualitative risk evaluation in the detailed analysis of alternatives for PGDP will examine the potential for an alternative to produce new contaminants that were not at a unit or area during the RI.

In developing the risk evaluation portion of the qualitative detailed analysis of alternatives, several sources of information will be used. These are listed below (adapted from RAGS, Part C) and include information from the baseline or screening risk assessment (as modified during the risk management to determine the need for action), treatability studies, and results at other sites. Material from the risk assessment includes:

- the exposure setting, including exposed populations and future land use;
- the exposure pathways, including sources of contamination, contaminants of concern, fate and transport of chemicals (i.e., migration, degradation, and transformation), and exposure points;
- general exposure considerations, including rate of contact, exposure frequency, and exposure duration;
- exposure concentrations, including temporal effects;
- estimates of chemical intake and uptake;
- toxicity information, including uncertainty in toxicity values; and
- methods used to quantify risks from exposure to media containing multiple chemicals and radionuclides.

Material found in treatability studies that will be used in the qualitative risk evaluation include:

- effectiveness at reducing potential for exposure, either through reduction in contaminant concentrations and activities or through making the medium containing the contaminant unavailable for contact;
- potential for short-term emissions; and
- potential for production of new contaminants.

Materials found when examining results from other sites that will be used in the qualitative risk evaluation include:

- actual contaminant reductions achieved,
- conditions in which the technology was not effective, and
- actual release rates of current or new contaminants.

4.1.4.2 Quantitative risk evaluations

Methods for quantitative risk evaluations have not yet been developed for PGDP. These will be included when they become available. However, it is anticipated that these methods will follow, in large part, the guidance and requirements for quantitative risk evaluations during the detailed analysis of alternatives in RAGS, Part C and the more detailed guidance presented in Sect. 3 of this report.

4.2 RISK ANALYSES AFTER THE FEASIBILITY STUDY

After the FS is completed, a remedy is proposed in the PRAP and documented in the ROD. Following this, the remedy is designed and implemented and, depending on the remedy, the site is either deleted or is placed within the group for which five-year reviews are required. This section discusses the risk evaluation activities that will occur during and after the preparation of the PRAP. The material presented here was taken in large part from RAGS, Part C (EPA 1991c).

4.2.1 Risk Evaluation for the Proposed Remedial Action Plan

Generally, no new risk evaluations will take place during the preparation of the PRAP. The material presented in the PRAP should be taken entirely from the supporting FS. This includes a summary of site risks, the site COCs, and, if applicable, the cleanup goals or a description of the basis for them (i.e., risk or dose target). Consistent with EPA 1999c, the material presented in the *Summary of Site Risks* section of the PRAP will primarily be presented as narrative and limited to approximately three paragraphs. Key information from the baseline risk assessment (or its equivalent screening assessment from scoping activities) that will be presented includes:

- major COCs in each medium,
- land- and groundwater-use assumptions,
- potentially exposed populations under current and future use scenarios,
- major pathways and routes of exposure, and
- summary of risk characterization.

The risk section of the PRAP will conclude with the following text taken from EPA 1999c.

> It is the lead agency's current judgement that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants form this site. These pollutants or contaminants may present an imminent and substantial endangerment to public health or welfare.

If new information becomes available during the public comment period, then additional analysis of the alternatives, or possibly the baseline risks, may be needed. Note that these analyses will encompass all alternatives and be performed qualitatively to the extent possible.

4.2.2 Risk Evaluation for the ROD

The primary risk evaluation-related activities that will occur during the ROD will be to document the results of the risk assessment and the risk evaluation portions of the comparison of alternatives performed in the FS and to document the derivation of the chemical-specific remediation levels (i.e., target cleanup levels). Consistent with RAGS, Part C, the appropriate risk assessment materials will be discussed in relation to three of the nine CERCLA criteria: long-term effectiveness, short-term effectiveness, and overall protection of human health and the environment. The discussion of overall protection of human health and the environment will consider, to the extent possible, any residual risks that may remain after the alternative is implemented. Specific information to be presented includes:

- the chemical-specific remediation levels to be attained at the conclusion of the response action,
- the corresponding chemical-specific risk levels,
- the points of compliance for the media being addressed, and
- the lead agency's basis for the remediation levels (e.g., risk calculation, ARARs, background, etc.).

To the extent possible, the *Summary of Site Risks* section of the ROD will be presented following the outline contained in EPA 1999c. Therefore, this material will include:

- a statement of basis for taking action and
- a brief summary of the relevant portions of the risk assessment.

Additionally, this section will focus on the "risk drivers" as defined in the FS and the exposure scenarios and pathways driving the need for action. The conceptual site model (which should be presented in the *Summary of Site Characteristics* section of the ROD) will be used to support the presentation of site risks.

The standard language to be used for the statement of basis for action is that which also appears in the PRAP. However, for the ROD, this statement will appear at the beginning of the site risk summary instead of at the end.

In most cases, the tabular information that appears in the ROD will be drawn directly from the RAGS, Part D formatted tables presented in the baseline risk assessment. However, additional tables or tables of a slightly different format may be used to explain the risk assessment results as needed. Note that the primary purpose for including the RAGS, Part D tables in an appendix of the baseline risk assessment is to streamline the preparation of these tables for the FS and ROD.

4.2.3 Risk Analyses for Residual Risks

As noted in RAGS, Part C, analyses to examine residual risks may be required for some locations after implementation of a remedy. Additionally, as discussed in the SMP, after completion of all investigations and remedial actions at PGDP, the FFA requires that PGDP determine the residual risks remaining at the facility. The methods to be used to complete the analyses of residual risks at most units will be qualitative. However, if quantitative, these analyses will be consistent with the methods in either Sect 2. or that in Sect. 3 of this document. Additionally, any quantitative analyses will be consistent with Sect. 3.3.4 of RAGS, Part C. Generally, these analyses will determine the risks remaining after remediation due to contamination remaining at or migrating from multiple sources. In these analyses, the measured concentrations and activities of contaminants remaining at the various sources units and in the integrator unit will be used. The remediation levels in the ROD for the various source units and areas in the integrator units will not be used in these analyses.

Other issues that will be considered when evaluating residual risk will be:

- the concentrations and activities of "new" analytes formed as a result of remedial activities or because of natural processes,
- changes in land use or proposed future use since the completion of the baseline risk assessment,
- updated toxicity values, and
- reduction of migration because of engineered controls and expected future performance of these controls.

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APPENDIX A

Screening Levels

(Current as of December 12, 2001)

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Screening Levels

This appendix presents lists of values that can be used during screening and baseline human health risk assessments at the PGDP. These values include risk- and dose-based values for soil, sediment, groundwater and surface water; background values for soil and groundwater; and regulatory values. All information is current as of the production date of this document, and all values were calculated using the best available information. Methods used to derive the risk- and dose-based values are presented in App. B.

Please consider the following notes before using the values presented in this appendix.

1. Action values are the lesser of a hazard-based value calculated using a target HI of 3 and a cancer-based value calculated using a target ELCR of 1E-04. Additionally, these values use exposure parameters which differ from those listed with the exposure equations in App. D. Please see App. B for a listing of these exposure parameters. Because the action values are not calculated using PGDP default exposure parameters, these values should be used as benchmarks only. Cumulative risk calculations should not be based upon these values.

2. No action values are the lesser of a hazard-based value calculated using a target HI of 0.1 and a cancer-based value calculated using a target ELCR of 1E-06. These values were calculated using the exposure parameters listed with the exposure equations in App. D. These parameters are also listed in App. B. Because the no action values are consistent with the PGDP default exposure parameters, these values can be used to derive cumulative risk estimates in additions to their use as benchmarks.

3. Background values for soil and groundwater presented in this appendix are provisional. These values are subject to change.

4. Soil screening levels for chemicals for protection of groundwater were derived using information presented in the EPA SSL website. The SSL values based upon a DAF of 1 should be considered to be "no action values." "Action" SSLs have not been selected to date for the PGDP.

5. Regulatory values are for planning purposes only. A qualified regulatory specialist should be consulted before using these values for other purposes.

6. Chemical-specific notes for risk-based and dose-based screening values:

   a) General – Several screening values for soil/sediment (especially those on the action level tables) are listed with a value of 100,000 mg/kg. This value was assigned to the chemical because the screening value derived for the contaminant exceeded the upper limit value deemed reasonable by the PGDP Risk Assessment Working Group. Therefore, the screening value was reduced to an upper limit value (100,000 mg/kg). If the chemical's environmental concentration exceeds the upper limit value, then additional risk evaluations for the chemical should be performed before accepting the results of a simple comparison

   b) Chromium - The screening value for Chromium VI presented in these tables should only be used if the comparison is to a Chromium VI result. For a 'Total Chromium' result, the screening value listed for 'Total Chromium' should be used. The cancer-based screening value for Total Chromium was derived using the cancer slope factor for Chromium VI reported in EPA's IRIS database. Please see the toxicity value tables for additional information regarding this value.

c) Lead – The screening values for lead were selected by the PGDP Risk Assessment Working Group. These values were not derived using the methods presented in App. B.

d) Phosphorous – The screening values listed in the tables is for the munition white phosphorous. This screening value should not be used for phosphorous commonly found in the environment.

e) Thallium – Thallium metal does not have a toxicity value. Therefore, screening values could not be derived. The Risk Assessment Working Group has agreed to screen thallium results against the screening values derived for thallium chloride.

f) Carcinogenic polynuclear aromatic hydrocarbons (cPAHs) – (These organic compounds include benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.) The Risk Assessment Working Group has determined that these compounds should be evaluated as a group using the PAH (Total) screening values. Please see the main text of the methods document for guidance on deriving total PAH concentration from results for individual compounds.

g) Polychlorinated biphenyls (PCBs) – (These organic compounds include those listed as Aroclors in the screening tables.) The Risk Assessment Working Group has determined that the cancer effects of these organic compound mixtures should be evaluated as a group using the PCB (Total) screening values. (The screening value associated with the highest risk value is to be used.) Please see the main text of the methods document for guidance on deriving total PCB concentration from results for individual mixtures.

h) Dioxins/Furans – (These organic compounds include the following chlorinated dioxins and furans: 2,3,7,8-TCDD; 1,2,3,7,8-PeCDD; 2,3,4,7,8-PeCDD; 2,3,5,7,8-PeCDD; 2,3,6,7,8-PeCDD; 1,2,3,4,7,8-HxCDD; 1,2,3,5,7,8-HxCDD, 1,2,3,6,7,8-HxCDD; 2,3,4,5,7,8-HxCDD; 2,3,4,6,7,8-HxCDD; 2,3,5,6,7,8-HxCDD; 1,2,3,4,5,7,8-HpCDD; 1,2,3,4,6,7,8-HpCDD; 2,3,4,5,6,7,8-HpCDD; OCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF; 2,3,4,7,8-PeCDF; 1,2,3,4,7,8-HxCDF; 1,2,3,5,7,8-HxCDF, 1,2,3,6,7,8-HxCDF; 2,3,4,5,7,8-HxCDF; 2,3,4,6,7,8-HxCDF; 2,3,5,6,7,8-HxCDF; 1,2,3,4,5,7,8-HpCDF; 1,2,3,4,6,7,8-HpCDF; 2,3,4,5,6,7,8-HpCDF; and OCDF.) The Risk Assessment Working Group has determined that these organic compounds should be evaluated as a group using the Dioxins/Furans (Total) screening values. Please see the main text of the methods document for guidance on deriving the total dioxin/furan concentration from results for individual compounds.

i) Radionuclides – For Cs-137, Np-237, Ra-226, Rn-222, Sr-90, Th-228, U-235, and U-238, only screening values derived considering the contribution from short-lived decay products should be used. These screening values are listed with a "+D" in the following tables.

j) Radionuclides – Scoping evaluations must include the following dose levels: (1) 1 mrem/year (walk away); (2) 15 mrem/year; and (3) 25 mrem/year should be addressed for all media and exposure scenarios. Additionally, 4 mrem/year should be considered for ground water (GW).

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Table A.1. Soil/Sediment Action Levels for Significant COPCs at the PGDP

(Values calculated in 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
			Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
7440360	Antimony (metallic)	mg/kg	2.21E+03		2.21E+03	4.63E+02		4.63E+02	1.51E+03		1.51E+03	1.99E+02		1.99E+02
7440382	Arsenic, Inorganic	mg/kg	2.34E+03	1.22E+04	2.34E+03	1.52E+03	3.15E+02	3.15E+02	7.53E+03	3.14E+02	3.14E+02	6.70E+02	3.14E+02	3.14E+02
7440417	Beryllium and compounds	mg/kg	8.42E+03	1.00E+05	8.42E+03	1.28E+03	1.00E+05	1.28E+03	3.97E+03	1.00E+05	3.97E+03	5.47E+02	1.00E+05	5.47E+02
7440439	Cadmium (Diet)	mg/kg	8.02E+02	1.00E+05	8.02E+02	7.05E+01	1.00E+05	7.05E+01	2.09E+02	1.00E+05	2.09E+02	3.01E+01	1.00E+05	3.01E+01
16065831	Chromium (III) (Insoluble Salts)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
7440473	Chromium (Total)	mg/kg	1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05	
18540299	Chromium VI (particulates)	mg/kg	1.65E+04	1.00E+05	1.65E+04	3.47E+03	1.00E+05	3.47E+03	1.13E+04	1.00E+05	1.13E+04	1.49E+03	1.00E+05	1.49E+03
7440508	Copper	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.76E+04		7.76E+04
7439896	Iron	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
7439921	Lead And Compounds	mg/kg			1.25E+03			1.25E+03			4.00E+02			4.00E+02
7439965	Manganese	mg/kg	1.00E+05		1.00E+05	4.64E+04		4.64E+04	1.00E+05		1.00E+05	2.01E+04		2.01E+04
7439976	Mercury, Inorganic Salts	mg/kg	2.12E+03		2.12E+03	8.25E+02		8.25E+02	3.12E+03		3.12E+03	3.58E+02		3.58E+02
7439987	Molybdenum	mg/kg	3.90E+04		3.90E+04	2.50E+04		2.50E+04	1.00E+05		1.00E+05	1.10E+04		1.10E+04
7440020	Nickel Soluble Salts	mg/kg	1.00E+05		1.00E+05	9.30E+04		9.30E+04	1.00E+05		1.00E+05	4.09E+04		4.09E+04
7782492	Selenium	mg/kg	3.91E+04		3.91E+04	2.56E+04		2.56E+04	1.00E+05		1.00E+05	1.13E+04		1.13E+04
7440224	Silver	mg/kg	3.80E+04		3.80E+04	2.07E+04		2.07E+04	9.15E+04		9.15E+04	9.09E+03		9.09E+03
7791120	Thallium Chloride	mg/kg	6.11E+02		6.11E+02	3.43E+02		3.43E+02	1.54E+03		1.54E+03	1.50E+02		1.50E+02
7440611	Uranium (Soluble Salts)	mg/kg	4.74E+03		4.74E+03	3.34E+03		3.34E+03	1.77E+04		1.77E+04	1.48E+03		1.48E+03
7440622	Vanadium, Metallic	mg/kg	2.95E+04		2.95E+04	4.47E+03		4.47E+03	1.39E+04		1.39E+04	1.91E+03		1.91E+03
7440666	Zinc (Metallic)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
83329	Acenaphthene	mg/kg	1.00E+05		1.00E+05	6.67E+04		6.67E+04	1.00E+05		1.00E+05	3.15E+04		3.15E+04
208968	Acenaphthylene	mg/kg												
107131	Acrylonitrile	mg/kg	8.09E+02	1.04E+04	8.09E+02	7.12E+01	4.56E+01	4.56E+01	2.74E+02	4.86E+01	4.86E+01	4.18E+01	4.86E+01	4.18E+01
120127	Anthracene	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
12674112	Aroclor 1016	mg/kg	3.50E+02	5.83E+03	3.50E+02	6.37E+01	4.25E+01	4.25E+01	2.03E+02	2.83E+01	2.83E+01	2.73E+01	2.83E+01	2.73E+01
11104282	Aroclor 1221	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
11141165	Aroclor 1232	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
53469219	Aroclor 1242	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
12672296	Aroclor 1248	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
11097691	Aroclor 1254	mg/kg	1.00E+02	5.83E+03	1.00E+02	1.82E+01	4.25E+01	1.82E+01	5.80E+01	2.83E+01	2.83E+01	7.81E+00	2.83E+01	7.81E+00
11096825	Aroclor 1260	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
56553	Benz[a]anthracene	mg/kg		1.98E+04	1.98E+04		2.08E+02	2.08E+02		1.46E+02	1.46E+02		1.46E+02	1.46E+02
71432	Benzene	mg/kg	9.00E+02	4.11E+04	9.00E+02	7.45E+01	1.47E+02	7.45E+01	2.86E+02	1.61E+02	1.61E+02	4.40E+01	1.61E+02	4.40E+01
50328	Benzo[a]pyrene	mg/kg		1.98E+03	1.98E+03		2.08E+01	2.08E+01		1.46E+01	1.46E+01		1.46E+01	1.46E+01
205992	Benzo[b]fluoranthene	mg/kg		1.98E+04	1.98E+04		2.08E+02	2.08E+02		1.46E+02	1.46E+02		1.46E+02	1.46E+02
207089	Benzo[k]fluoranthene	mg/kg		1.00E+05	1.00E+05		2.08E+03	2.08E+03		1.46E+03	1.46E+03		1.46E+03	1.46E+03
56235	Carbon Tetrachloride	mg/kg	2.76E+02	1.62E+04	2.76E+02	2.31E+01	5.77E+01	2.31E+01	8.87E+01	6.28E+01	6.28E+01	1.36E+01	6.28E+01	1.36E+01
67663	Chloroform	mg/kg	4.62E+01	1.55E+04	4.62E+01	3.70E+00	4.99E+01	3.70E+00	1.42E+01	5.49E+01	1.42E+01	2.19E+00	5.49E+01	2.19E+00
218019	Chrysene	mg/kg		1.00E+05	1.00E+05		2.08E+04	2.08E+04		1.46E+04	1.46E+04		1.46E+04	1.46E+04
53703	Dibenz[a,h]anthracene	mg/kg		1.98E+03	1.98E+03		2.08E+01	2.08E+01		1.46E+01	1.46E+01		1.46E+01	1.46E+01
75354	Dichloroethylene, 1,1-	mg/kg	2.51E+03	3.41E+03	2.51E+03	2.07E+02	1.21E+01	1.21E+01	7.96E+02	1.32E+01	1.32E+01	1.22E+02	1.32E+01	1.32E+01
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/kg	6.46E+04		6.46E+04	2.66E+04		2.66E+04	1.00E+05		1.00E+05	1.16E+04		1.16E+04
156592	Dichloroethylene, 1,2-cis-	mg/kg	5.44E+03		5.44E+03	4.63E+02		4.63E+02	1.78E+03		1.78E+03	2.73E+02		2.73E+02
156605	Dichloroethylene, 1,2-trans-	mg/kg	8.83E+03		8.83E+03	7.43E+02		7.43E+02	2.86E+03		2.86E+03	4.38E+02		4.38E+02
1746016	Dioxins/Furans (Total)	mg/kg		8.08E-02	8.08E-02		6.19E-04	6.19E-04		4.15E-04	4.15E-04		4.15E-04	4.15E-04
100414	Ethylbenzene	mg/kg	1.00E+05	1.00E+05		2.32E+04	2.12E+03	2.12E+03	8.95E+04	2.34E+03	2.34E+03	1.34E+04	2.34E+03	2.34E+03
206440	Fluoranthene	mg/kg	1.00E+05		1.00E+05	6.50E+04		6.50E+04	1.00E+05		1.00E+05	2.80E+04		2.80E+04
86737	Fluorene	mg/kg	1.00E+05		1.00E+05	7.09E+04		7.09E+04	1.00E+05		1.00E+05	3.25E+04		3.25E+04
37871004	HpCDD, 2,3,7,8-	mg/kg		8.08E+00	8.08E+00		6.19E-02	6.19E-02		4.15E-02	4.15E-02		4.15E-02	4.15E-02
38998753	HpCDF, 2,3,7,8-	mg/kg		1.05E+01	1.05E+01		1.40E-01	1.40E-01		1.04E-01	1.04E-01		1.04E-01	1.04E-01
34465468	HxCDD, 2,3,7,8-	mg/kg		8.08E-01	8.08E-01		6.19E-03	6.19E-03		4.15E-03	4.15E-03		4.15E-03	4.15E-03
55684941	HxCDF, 2,3,7,8-	mg/kg		1.05E+00	1.05E+00		1.40E-02	1.40E-02		1.04E-02	1.04E-02		1.04E-02	1.04E-02
193395	Indeno[1,2,3-cd]pyrene	mg/kg		1.98E+04	1.98E+04		2.08E+02	2.08E+02		1.46E+02	1.46E+02		1.46E+02	1.46E+02
91203	Naphthalene	mg/kg	9.09E+03		9.09E+03	7.66E+02		7.66E+02	2.95E+03		2.95E+03	4.51E+02		4.51E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.1. Soil/Sediment Action Levels for Significant COPCs at the PGDP

(Values calculated in 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
			Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
7440360	Antimony (metallic)	mg/kg	3.44E+02		3.44E+02	3.19E+02		3.19E+02	4.69E+01		4.69E+01
7440382	Arsenic, Inorganic	mg/kg	2.59E+03	3.14E+02	3.14E+02	6.05E+02	3.50E+01	3.50E+01	6.51E+01	3.50E+01	3.50E+01
7440417	Beryllium and compounds	mg/kg	8.84E+02	1.00E+05	8.84E+02	9.73E+02	1.00E+05	9.73E+02	1.58E+02	1.00E+05	1.58E+02
7440439	Cadmium (Diet)	mg/kg	4.53E+01	1.00E+05	4.53E+01	6.08E+01	1.00E+05	6.08E+01	1.15E+01	1.00E+05	1.15E+01
16065831	Chromium (III) (Insoluble Salts)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.19E+04		7.19E+04
7440473	Chromium (Total)	mg/kg	1.00E+05	1.00E+05		1.00E+05	1.00E+05		7.19E+04	1.00E+05	7.19E+04
18540299	Chromium VI (particulates)	mg/kg	2.58E+03	1.00E+05	2.58E+03	2.39E+03	4.43E+04	2.39E+03	3.52E+02	4.43E+04	3.52E+02
7440508	Copper	mg/kg	1.00E+05		1.00E+05	7.26E+04		7.26E+04	7.90E+03		7.90E+03
7439896	Iron	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.05E+04		6.05E+04
7439921	Lead And Compounds	mg/kg			4.00E+02			4.00E+02			4.00E+02
7439965	Manganese	mg/kg	3.91E+04		3.91E+04	2.79E+04		2.79E+04	3.70E+03		3.70E+03
7439976	Mercury, Inorganic Salts	mg/kg	7.97E+02		7.97E+02	4.38E+02		4.38E+02	5.37E+01		5.37E+01
7439987	Molybdenum	mg/kg	4.17E+04		4.17E+04	1.00E+04		1.00E+04	1.08E+03		1.08E+03
7440020	Nickel Soluble Salts	mg/kg	1.00E+05		1.00E+05	3.88E+04		3.88E+04	4.24E+03		4.24E+03
7782492	Selenium	mg/kg	4.47E+04		4.47E+04	1.01E+04		1.01E+04	1.09E+03		1.09E+03
7440224	Silver	mg/kg	2.71E+04		2.71E+04	9.17E+03		9.17E+03	1.03E+03		1.03E+03
7791120	Thallium Chloride	mg/kg	4.65E+02		4.65E+02	1.49E+02		1.49E+02	1.66E+01		1.66E+01
7440611	Uranium (Soluble Salts)	mg/kg	6.83E+03		6.83E+03	1.26E+03		1.26E+03	1.33E+02		1.33E+02
7440622	Vanadium, Metallic	mg/kg	3.09E+03		3.09E+03	3.41E+03		3.41E+03	5.54E+02		5.54E+02
7440666	Zinc (Metallic)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.22E+04		6.22E+04
83329	Acenaphthene	mg/kg	6.43E+04		6.43E+04	4.38E+04		4.38E+04	6.68E+03		6.68E+03
208968	Acenaphthylene	mg/kg									
107131	Acrylonitrile	mg/kg	1.23E+02	4.86E+01	4.86E+01	5.04E+01	1.20E+01	1.20E+01	1.02E+01	1.20E+01	1.02E+01
120127	Anthracene	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.98E+04		4.98E+04
12674112	Aroclor 1016	mg/kg	4.58E+01	2.83E+01	2.83E+01	4.60E+01	1.05E+01	1.05E+01	7.08E+00	1.05E+01	7.08E+00
11104282	Aroclor 1221	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
11141165	Aroclor 1232	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
53469219	Aroclor 1242	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
12672296	Aroclor 1248	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
11097691	Aroclor 1254	mg/kg	1.31E+01	2.83E+01	1.31E+01	1.31E+01	1.05E+01	1.05E+01	2.02E+00	1.05E+01	2.02E+00
11096825	Aroclor 1260	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
56553	Benz[a]anthracene	mg/kg		1.46E+02	1.46E+02		4.24E+01	4.24E+01		4.24E+01	4.24E+01
71432	Benzene	mg/kg	1.30E+02	1.61E+02	1.30E+02	5.30E+01	4.08E+01	4.08E+01	1.09E+01	4.08E+01	1.09E+01
50328	Benzo[a]pyrene	mg/kg		1.46E+01	1.46E+01		4.24E+00	4.24E+00		4.24E+00	4.24E+00
205992	Benzo[b]fluoranthene	mg/kg		1.46E+02	1.46E+02		4.24E+01	4.24E+01		4.24E+01	4.24E+01
207089	Benzo[k]fluoranthene	mg/kg		1.46E+03	1.46E+03		4.24E+02	4.24E+02		4.24E+02	4.24E+02
56235	Carbon Tetrachloride	mg/kg	4.01E+01	6.28E+01	4.01E+01	1.64E+01	1.60E+01	1.60E+01	3.36E+00	1.60E+01	3.36E+00
67663	Chloroform	mg/kg	6.49E+00	5.49E+01	6.49E+00	2.64E+00	1.42E+01	2.64E+00	5.48E-01	1.42E+01	5.48E-01
218019	Chrysene	mg/kg		1.46E+04	1.46E+04		4.24E+03	4.24E+03		4.24E+03	4.24E+03
53703	Dibenz[a,h]anthracene	mg/kg		1.46E+01	1.46E+01		4.24E+00	4.24E+00		4.24E+00	4.24E+00
75354	Dichloroethylene, 1,1-	mg/kg	3.62E+02	1.32E+01	1.32E+01	1.47E+02	3.36E+00	3.36E+00	3.03E+01	3.36E+00	3.36E+00
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/kg	2.67E+04		2.67E+04	1.37E+04		1.37E+04	1.66E+03		1.66E+03
156592	Dichloroethylene, 1,2-cis-	mg/kg	8.06E+02		8.06E+02	3.29E+02		3.29E+02	6.71E+01		6.71E+01
156605	Dichloroethylene, 1,2-trans-	mg/kg	1.30E+03		1.30E+03	5.28E+02		5.28E+02	1.08E+02		1.08E+02
1746016	Dioxins/Furans (Total)	mg/kg		4.15E-04	4.15E-04		1.49E-04	1.49E-04		1.49E-04	1.49E-04
100414	Ethylbenzene	mg/kg	3.89E+04	2.34E+03	2.34E+03	1.61E+04	6.01E+02	6.01E+02	3.10E+03	6.01E+02	6.01E+02
206440	Fluoranthene	mg/kg	5.18E+04		5.18E+04	4.11E+04		4.11E+04	5.66E+03		5.66E+03
86737	Fluorene	mg/kg	7.01E+04		7.01E+04	4.23E+04		4.23E+04	5.82E+03		5.82E+03
37871004	HpCDD, 2,3,7,8-	mg/kg		4.15E-02	4.15E-02		1.49E-02	1.49E-02		1.49E-02	1.49E-02
38998753	HpCDF, 2,3,7,8-	mg/kg		1.04E-01	1.04E-01		2.48E-02	2.48E-02		2.48E-02	2.48E-02
34465468	HxCDD, 2,3,7,8-	mg/kg		4.15E-03	4.15E-03		1.49E-03	1.49E-03		1.49E-03	1.49E-03
55684941	HxCDF, 2,3,7,8-	mg/kg		1.04E-02	1.04E-02		2.48E-03	2.48E-03		2.48E-03	2.48E-03
193395	Indeno[1,2,3-cd]pyrene	mg/kg		1.46E+02	1.46E+02		4.24E+01	4.24E+01		4.24E+01	4.24E+01
91203	Naphthalene	mg/kg	1.33E+03		1.33E+03	5.45E+02		5.45E+02	1.11E+02		1.11E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action va[illegible]s of hazard- and cancer-based value.

Table A.1. Soil/Sediment Action Levels for Significant COPCs at the PGDP

(Values calculated in 12/12/2001 and are based on best available information.)

			Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
3268879	OCDD	mg/kg		8.08E+01	8.08E+01		6.19E-01	6.19E-01		4.15E-01	4.15E-01		4.15E-01	4.15E-01
39001020	OCDF	mg/kg		1.05E+02	1.05E+02		1.40E+00	1.40E+00		1.04E+00	1.04E+00		1.04E+00	1.04E+00
36088229	PeCDD, 2,3,7,8-	mg/kg		1.62E-01	1.62E-01		1.24E-03	1.24E-03		8.29E-04	8.29E-04		8.29E-04	8.29E-04
57117416	PeCDF, 1,2,3,7,8-	mg/kg		2.11E-01	2.11E-01		2.81E-03	2.81E-03		2.09E-03	2.09E-03		2.09E-03	2.09E-03
57117314	PeCDF, 2,3,4,7,8-	mg/kg		2.11E+00	2.11E+00		2.81E-02	2.81E-02		2.09E-02	2.09E-02		2.09E-02	2.09E-02
85018	Phenanthrene	mg/kg												
1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		1.00E+05	1.00E+05		1.21E+03	1.21E+03		8.07E+02	8.07E+02		8.07E+02	8.07E+02
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		1.98E+03	1.98E+03		2.08E+01	2.08E+01		1.46E+01	1.46E+01		1.46E+01	1.46E+01
129000	Pyrene	mg/kg	1.00E+05		1.00E+05	4.87E+04		4.87E+04	1.00E+05		1.00E+05	2.10E+04		2.10E+04
1746016	TCDD, 2,3,7,8-	mg/kg		8.08E-02	8.08E-02		6.19E-04	6.19E-04		4.15E-04	4.15E-04		4.15E-04	4.15E-04
51207319	TCDF, 2,3,7,8-	mg/kg		1.05E+00	1.05E+00		1.40E-02	1.40E-02		1.04E-02	1.04E-02		1.04E-02	1.04E-02
127184	Tetrachloroethylene	mg/kg	4.01E+04	1.00E+05	4.01E+04	5.84E+03	1.46E+03	1.46E+03	2.26E+04	1.48E+03	1.48E+03	3.25E+03	1.48E+03	1.48E+03
79016	Trichloroethylene	mg/kg	3.49E+03	1.00E+05	3.49E+03	2.98E+02	7.43E+02	2.98E+02	1.14E+03	7.70E+02	7.70E+02	1.73E+02	7.70E+02	1.73E+02
75014	Vinyl Chloride	mg/kg	4.73E+03	6.92E+03	4.73E+03	4.59E+02	4.14E+01	4.14E+01	1.77E+03	4.29E+01	4.29E+01	2.67E+02	4.29E+01	4.29E+01
1330207	Xylene, Mixture	mg/kg	1.00E+05		1.00E+05	2.20E+04		2.20E+04	8.48E+04		8.48E+04	1.30E+04		1.30E+04
108383	Xylene, m-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.86E+04		8.86E+04
95476	Xylene, o-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.92E+04		8.92E+04
106423	Xylene, p-	mg/kg												
14596102	Am-241	pCi/g		4.02E+04	4.02E+04		5.16E+02	5.16E+02		1.16E+03	1.16E+03		1.16E+03	1.16E+03
10198400	Co-60	pCi/g		5.51E+02	5.51E+02		1.77E+00	1.77E+00		3.67E+00	3.67E+00		3.67E+00	3.67E+00
10045973	Cs-137+D	pCi/g		2.65E+03	2.65E+03		8.58E+00	8.58E+00		1.78E+01	1.78E+01		1.78E+01	1.78E+01
13994202	Np-237+D	pCi/g		7.58E+03	7.58E+03		2.71E+01	2.71E+01		5.65E+01	5.65E+01		5.65E+01	5.65E+01
13981163	Pu-238	pCi/g		3.83E+04	3.83E+04		1.17E+03	1.17E+03		3.10E+03	3.10E+03		3.10E+03	3.10E+03
15117483	Pu-239	pCi/g		3.77E+04	3.77E+04		1.15E+03	1.15E+03		3.03E+03	3.03E+03		3.03E+03	3.03E+03
14119336	Pu-240	pCi/g		3.76E+04	3.76E+04		1.15E+03	1.15E+03		3.05E+03	3.05E+03		3.05E+03	3.05E+03
13982633	Ra-226+D	pCi/g		7.63E+02	7.63E+02		2.56E+00	2.56E+00		5.34E+00	5.34E+00		5.34E+00	5.34E+00
14859677	Rn-222+D	pCi/g		1.06E+12	1.06E+12		3.39E+09	3.39E+09		7.06E+09	7.06E+09		7.06E+09	7.06E+09
10098972	Sr-90+D	pCi/g		5.99E+04	5.99E+04		7.44E+02	7.44E+02		1.67E+03	1.67E+03		1.67E+03	1.67E+03
14133767	Tc-99	pCi/g		1.34E+06	1.34E+06		3.62E+04	3.62E+04		9.26E+04	9.26E+04		9.26E+04	9.26E+04
14274829	Th-228+D	pCi/g		8.25E+02	8.25E+02		2.80E+00	2.80E+00		5.84E+00	5.84E+00		5.84E+00	5.84E+00
14269637	Th-230	pCi/g		5.12E+04	5.12E+04		1.49E+03	1.49E+03		3.90E+03	3.90E+03		3.90E+03	3.90E+03
N2608	Th-232	pCi/g		4.50E+04	4.50E+04		1.35E+03	1.35E+03		3.57E+03	3.57E+03		3.57E+03	3.57E+03
13966295	U-234	pCi/g		6.58E+04	6.58E+04		1.98E+03	1.98E+03		5.22E+03	5.22E+03		5.22E+03	5.22E+03
15117961	U-235+D	pCi/g		1.05E+04	1.05E+04		3.95E+01	3.95E+01		8.26E+01	8.26E+01		8.26E+01	8.26E+01
24678828	U-238+D	pCi/g		2.72E+04	2.72E+04		1.71E+02	1.71E+02		3.64E+02	3.64E+02		3.64E+02	3.64E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.1. Soil/Sediment Action Levels for Significant COPCs at the PGDP

(Values calculated in 12/12/2001 and are based on best available information.)

			Teen Recreational User			Adult Resident			Child Resident		
Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
3268879	OCDD	mg/kg		4.15E-01	4.15E-01		1.49E-01	1.49E-01		1.49E-01	1.49E-01
39001020	OCDF	mg/kg		1.04E+00	1.04E+00		2.48E-01	2.48E-01		2.48E-01	2.48E-01
36088229	PeCDD, 2,3,7,8-	mg/kg		8.29E-04	8.29E-04		2.99E-04	2.99E-04		2.99E-04	2.99E-04
57117416	PeCDF, 1,2,3,7,8-	mg/kg		2.09E-03	2.09E-03		4.96E-04	4.96E-04		4.96E-04	4.96E-04
57117314	PeCDF, 2,3,4,7,8-	mg/kg		2.09E-02	2.09E-02		4.96E-03	4.96E-03		4.96E-03	4.96E-03
85018	Phenanthrene	mg/kg									
1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		8.07E+02	8.07E+02		3.00E+02	3.00E+02		3.00E+02	3.00E+02
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		1.46E+01	1.46E+01		4.24E+00	4.24E+00		4.24E+00	4.24E+00
129000	Pyrene	mg/kg	3.89E+04		3.89E+04	3.09E+04		3.09E+04	4.25E+03		4.25E+03
1746016	TCDD, 2,3,7,8-	mg/kg		4.15E-04	4.15E-04		1.49E-04	1.49E-04		1.49E-04	1.49E-04
51207319	TCDF, 2,3,7,8-	mg/kg		1.04E-02	1.04E-02		2.48E-03	2.48E-03		2.48E-03	2.48E-03
127184	Tetrachloroethylene	mg/kg	9.21E+03	1.48E+03	1.48E+03	3.86E+03	3.34E+02	3.34E+02	6.78E+02	3.34E+02	3.34E+02
79016	Trichloroethylene	mg/kg	4.86E+02	7.70E+02	4.86E+02	2.13E+02	2.08E+02	2.08E+02	4.34E+01	2.08E+02	4.34E+01
75014	Vinyl Chloride	mg/kg	7.83E+02	4.29E+01	4.29E+01	3.21E+02	9.96E+00	9.96E+00	6.34E+01	9.96E+00	9.96E+00
1330207	Xylene, Mixture	mg/kg	3.86E+04		3.86E+04	1.57E+04		1.57E+04	3.24E+03		3.24E+03
108383	Xylene, m-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.16E+04		2.16E+04
95476	Xylene, o-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.17E+04		2.17E+04
106423	Xylene, p-	mg/kg									
14596102	Am-241	pCi/g		1.16E+03	1.16E+03		8.36E+01	8.36E+01		8.36E+01	8.36E+01
10198400	Co-60	pCi/g		3.67E+00	3.67E+00		2.63E-01	2.63E-01		2.63E-01	2.63E-01
10045973	Cs-137+D	pCi/g		1.78E+01	1.78E+01		1.28E+00	1.28E+00		1.28E+00	1.28E+00
13994202	Np-237+D	pCi/g		5.65E+01	5.65E+01		4.05E+00	4.05E+00		4.05E+00	4.05E+00
13981163	Pu-238	pCi/g		3.10E+03	3.10E+03		2.27E+02	2.27E+02		2.27E+02	2.27E+02
15117483	Pu-239	pCi/g		3.03E+03	3.03E+03		2.22E+02	2.22E+02		2.22E+02	2.22E+02
14119336	Pu-240	pCi/g		3.05E+03	3.05E+03		2.23E+02	2.23E+02		2.23E+02	2.23E+02
13982633	Ra-226+D	pCi/g		5.34E+00	5.34E+00		3.82E-01	3.82E-01		3.82E-01	3.82E-01
14859677	Rn-222+D	pCi/g		7.06E+09	7.06E+09		1.51E+09	1.51E+09		1.51E+09	1.51E+09
10098972	Sr-90+D	pCi/g		1.67E+03	1.67E+03		1.20E+02	1.20E+02		1.20E+02	1.20E+02
14133767	Tc-99	pCi/g		9.26E+04	9.26E+04		6.74E+03	6.74E+03		6.74E+03	6.74E+03
14274829	Th-228+D	pCi/g		5.84E+00	5.84E+00		4.18E-01	4.18E-01		4.18E-01	4.18E-01
14269637	Th-230	pCi/g		3.90E+03	3.90E+03		2.85E+02	2.85E+02		2.85E+02	2.85E+02
N2608	Th-232	pCi/g		3.57E+03	3.57E+03		2.61E+02	2.61E+02		2.61E+02	2.61E+02
13966295	U-234	pCi/g		5.22E+03	5.22E+03		3.81E+02	3.81E+02		3.81E+02	3.81E+02
15117961	U-235+D	pCi/g		8.26E+01	8.26E+01		5.91E+00	5.91E+00		5.91E+00	5.91E+00
24678828	U-238+D	pCi/g		3.64E+02	3.64E+02		2.61E+01	2.61E+01		2.61E+01	2.61E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action val ‘s of hazard- and cancer-based value.

Table A.2 Groundwater Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

			Adult Resident			Child Resident		
Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action
7440360	Antimony (metallic)	mg/L	4.02E-02		4.02E-02	1.69E-02		1.69E-02
7440382	Arsenic, Inorganic	mg/L	3.27E-02	3.50E-03	3.50E-03	1.36E-02	3.50E-03	3.50E-03
7440417	Beryllium and compounds	mg/L	1.85E-01		1.85E-01	7.93E-02		7.93E-02
7440439	Cadmium (Water)	mg/L	4.63E-02		4.63E-02	1.98E-02		1.98E-02
16065831	Chromium (III) (Insoluble Salts)	mg/L	1.21E+02		1.21E+02	5.28E+01		5.28E+01
7440473	Chromium (Total)	mg/L	1.21E+02		1.21E+02	5.28E+01		5.28E+01
18540299	Chromium VI (chromic acid mists)	mg/L	3.01E-01		3.01E-01	1.27E-01		1.27E-01
7440508	Copper	mg/L	4.03E+00		4.03E+00	1.67E+00		1.67E+00
7439896	Iron	mg/L	3.25E+01		3.25E+01	1.35E+01		1.35E+01
7439921	Lead And Compounds	mg/L			3.00E-02			3.00E-02
7439965	Manganese	mg/L	2.51E+00		2.51E+00	1.05E+00		1.05E+00
7439976	Mercury, Inorganic Salts	mg/L	3.20E-02		3.20E-02	1.33E-02		1.33E-02
7439987	Molybdenum	mg/L	5.45E-01		5.45E-01	2.26E-01		2.26E-01
7440020	Nickel Soluble Salts	mg/L	2.18E+00		2.18E+00	9.02E-01		9.02E-01
7782492	Selenium	mg/L	5.45E-01		5.45E-01	2.26E-01		2.26E-01
7440224	Silver	mg/L	5.42E-01		5.42E-01	2.25E-01		2.25E-01
7791120	Thallium Chloride	mg/L	8.68E-03		8.68E-03	3.60E-03		3.60E-03
7440611	Uranium (Soluble Salts)	mg/L	6.56E-02		6.56E-02	2.72E-02		2.72E-02
7440622	Vanadium, Metallic	mg/L	6.49E-01		6.49E-01	2.78E-01		2.78E-01
7440666	Zinc (Metallic)	mg/L	3.26E+01		3.26E+01	1.35E+01		1.35E+01
83329	Acenaphthene	mg/L	1.39E+00		1.39E+00	4.07E-01		4.07E-01
208968	Acenaphthylene	mg/L						
107131	Acrylonitrile	mg/L	2.22E-02	4.26E-03	4.26E-03	5.11E-03	4.26E-03	4.26E-03
120127	Anthracene	mg/L	8.70E+00		8.70E+00	2.30E+00		2.30E+00
12674112	Aroclor 1016	mg/L	2.96E-03	5.28E-03	2.96E-03	1.40E-03	5.28E-03	1.40E-03
11104282	Aroclor 1221	mg/L		1.12E-02	1.12E-02		1.12E-02	1.12E-02
11141165	Aroclor 1232	mg/L		1.28E-02	1.28E-02		1.28E-02	1.28E-02
53469219	Aroclor 1242	mg/L		1.23E-02	1.23E-02		1.23E-02	1.23E-02
12672296	Aroclor 1248	mg/L		7.75E-03	7.75E-03		7.75E-03	7.75E-03
11097691	Aroclor 1254	mg/L	1.28E-03	7.93E-03	1.28E-03	5.82E-04	7.93E-03	5.82E-04
11096825	Aroclor 1260	mg/L		4.28E-03	4.28E-03		4.28E-03	4.28E-03
56553	Benz[a]anthracene	mg/L		1.32E-03	1.32E-03		1.32E-03	1.32E-03
71432	Benzene	mg/L	6.54E-02	3.85E-02	3.85E-02	1.51E-02	3.85E-02	1.51E-02
50328	Benzo[a]pyrene	mg/L		9.51E-05	9.51E-05		9.51E-05	9.51E-05
205992	Benzo[b]fluoranthene	mg/L		9.51E-04	9.51E-04		9.51E-04	9.51E-04
207089	Benzo[k]fluoranthene	mg/L		1.68E-02	1.68E-02		1.68E-02	1.68E-02
56235	Carbon Tetrachloride	mg/L	2.31E-02	1.81E-02	1.81E-02	5.70E-03	1.81E-02	5.70E-03
67663	Chloroform	mg/L	4.15E-03	2.18E-02	4.15E-03	8.62E-04	2.18E-02	8.62E-04
218019	Chrysene	mg/L		1.32E-01	1.32E-01		1.32E-01	1.32E-01
53703	Dibenz[a,h]anthracene	mg/L		4.56E-05	4.56E-05		4.56E-05	4.56E-05
75354	Dichloroethylene, 1,1-	mg/L	3.01E-01	4.70E-03	4.70E-03	7.38E-02	4.70E-03	4.70E-03
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	3.02E-01		3.02E-01	7.40E-02		7.40E-02
156592	Dichloroethylene, 1,2-cis-	mg/L	3.34E-01		3.34E-01	8.20E-02		8.20E-02
156605	Dichloroethylene, 1,2-trans-	mg/L	6.72E-01		6.72E-01	1.64E-01		1.64E-01
1746016	Dioxins/Furans (Total)	mg/L		6.09E-09	6.09E-09		6.09E-09	6.09E-09
100414	Ethylbenzene	mg/L	5.68E+00	4.68E-01	4.68E-01	1.69E+00	4.68E-01	4.68E-01
206440	Fluoranthene	mg/L	1.41E+00		1.41E+00	6.79E-01		6.79E-01
86737	Fluorene	mg/L	1.05E+00		1.05E+00	2.92E-01		2.92E-01
37871004	HpCDD, 2,3,7,8-	mg/L		5.45E-07	5.45E-07		5.45E-07	5.45E-07
38998753	HpCDF, 2,3,7,8-	mg/L		3.51E-06	3.51E-06		3.51E-06	3.51E-06
34465468	HxCDD, 2,3,7,8-	mg/L		3.51E-07	3.51E-07		3.51E-07	3.51E-07
55684941	HxCDF, 2,3,7,8-	mg/L		3.51E-07	3.51E-07		3.51E-07	3.51E-07
193395	Indeno[1,2,3-cd]pyrene	mg/L		6.31E-04	6.31E-04		6.31E-04	6.31E-04
91203	Naphthalene	mg/L	4.08E-02		4.08E-02	8.55E-03		8.55E-03
3268879	OCDD	mg/L		1.91E-06	1.91E-06		1.91E-06	1.91E-06
39001020	OCDF	mg/L		2.03E-06	2.03E-06		2.03E-06	2.03E-06
36088229	PeCDD, 2,3,7,8-	mg/L		2.50E-08	2.50E-08		2.50E-08	2.50E-08
57117416	PeCDF, 1,2,3,7,8-	mg/L		1.48E-08	1.48E-08		1.48E-08	1.48E-08
57117314	PeCDF, 2,3,4,7,8-	mg/L		1.29E-07	1.29E-07		1.29E-07	1.29E-07
85018	Phenanthrene	mg/L						
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		7.93E-03	7.93E-03		7.93E-03	7.93E-03
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		4.53E-02	4.53E-02		4.53E-02	4.53E-02
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		9.51E-05	9.51E-05		9.51E-05	9.51E-05
129000	Pyrene	mg/L	1.14E+00		1.14E+00	5.47E-01		5.47E-01
1746016	TCDD, 2,3,7,8-	mg/L		6.09E-09	6.09E-09		6.09E-09	6.09E-09
51207319	TCDF, 2,3,7,8-	mg/L		1.60E-07	1.60E-07		1.60E-07	1.60E-07
127184	Tetrachloroethylene	mg/L	6.07E-01	5.82E-02	5.82E-02	2.53E-01	5.82E-02	5.82E-02
79016	Trichloroethylene	mg/L	1.90E-01	1.73E-01	1.73E-01	4.79E-02	1.73E-01	4.79E-02
75014	Vinyl Chloride	mg/L	2.63E-01	3.50E-03	3.50E-03	9.18E-02	3.50E-03	3.50E-03
1330207	Xylene, Mixture	mg/L	9.22E+00		9.22E+00	1.96E+00		1.96E+00
108383	Xylene, m-	mg/L	5.41E+01		5.41E+01	1.32E+01		1.32E+01
95476	Xylene, o-	mg/L	5.41E+01		5.41E+01	1.32E+01		1.32E+01
106423	Xylene, p-	mg/L						
14596102	Am-241	pCi/L		3.71E+01	3.71E+01		3.71E+01	3.71E+01
10198400	Co-60	pCi/L		2.46E+02	2.46E+02		2.46E+02	2.46E+02
10045973	Cs-137+D	pCi/L		1.27E+02	1.27E+02		1.27E+02	1.27E+02

Hazard-based value calculated using target HI of 3.
Cancer-based value calculated using target ELCR of 1E-04.
Action value is the less of the hazard-and cancer-based value.

Table A.2 Groundwater Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

			Adult Resident			Child Resident		
Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action
13994202	Np-237+D	pCi/L		5.73E+01	5.73E+01		5.73E+01	5.73E+01
13981163	Pu-238	pCi/L		2.95E+01	2.95E+01		2.95E+01	2.95E+01
15117483	Pu-239	pCi/L		2.86E+01	2.86E+01		2.86E+01	2.86E+01
14119336	Pu-240	pCi/L		2.86E+01	2.86E+01		2.86E+01	2.86E+01
13982633	Ra-226+D	pCi/L		1.00E+01	1.00E+01		1.00E+01	1.00E+01
14859677	Rn-222+D	pCi/L		8.66E+01	8.66E+01		8.66E+01	8.66E+01
10098972	Sr-90+D	pCi/L		5.22E+01	5.22E+01		5.22E+01	5.22E+01
14133767	Tc-99	pCi/L		1.40E+03	1.40E+03		1.40E+03	1.40E+03
14274829	Th-228+D	pCi/L		1.29E+01	1.29E+01		1.29E+01	1.29E+01
14269637	Th-230	pCi/L		4.24E+01	4.24E+01		4.24E+01	4.24E+01
N2608	Th-232	pCi/L		3.82E+01	3.82E+01		3.82E+01	3.82E+01
13966295	U-234	pCi/L		5.46E+01	5.46E+01		5.46E+01	5.46E+01
15117961	U-235+D	pCi/L		5.38E+01	5.38E+01		5.38E+01	5.38E+01
24678828	U-238+D	pCi/L		4.43E+01	4.43E+01		4.43E+01	4.43E+01

Hazard-based value calculated using target HI of 3.
Cancer-based value calculated using target ELCR of 1E-04.
Action value is the less of the hazard-and cancer-based value.

Table A.3. Surface Water Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

			Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
7440360	Antimony (metallic)	mg/L	8.91E-01		8.91E-01	2.19E-01		2.19E-01	2.74E-01		2.74E-01	4.88E-01		4.88E-01
7440382	Arsenic, Inorganic	mg/L	1.37E+01	7.11E+01	1.37E+01	3.37E+00	7.00E-01	7.00E-01	2.08E+00	1.80E-01	1.80E-01	7.50E+00	4.09E-01	4.09E-01
7440417	Beryllium and compounds	mg/L	2.23E+00		2.23E+00	5.48E-01		5.48E-01	7.03E-01		7.03E-01	1.22E+00		1.22E+00
7440439	Cadmium (Water)	mg/L	5.57E-01		5.57E-01	1.37E-01		1.37E-01	1.76E-01		1.76E-01	3.05E-01		3.05E-01
16065831	Chromium (III) (Insoluble Salts)	mg/L	8.36E+02		8.36E+02	2.06E+02		2.06E+02	2.67E+02		2.67E+02	4.57E+02		4.57E+02
7440473	Chromium (Total)	mg/L	8.36E+02		8.36E+02	2.06E+02		2.06E+02	2.67E+02		2.67E+02	4.57E+02		4.57E+02
18540299	Chromium VI (chromic acid mists)	mg/L	6.68E+00		6.68E+00	1.65E+00		1.65E+00	2.05E+00		2.05E+00	3.66E+00		3.66E+00
7440508	Copper	mg/L	1.24E+03		1.24E+03	3.04E+02		3.04E+02	2.19E+02		2.19E+02	6.77E+02		6.77E+02
7439896	Iron	mg/L	5.01E+03		5.01E+03	1.23E+03		1.23E+03	1.15E+03		1.15E+03	2.74E+03		2.74E+03
7439921	Lead And Compounds	mg/L			3.00E-02			3.00E-02			3.00E-02			3.00E-02
7439965	Manganese	mg/L	1.07E+02		1.07E+02	2.63E+01		2.63E+01	3.12E+01		3.12E+01	5.85E+01		5.85E+01
7439976	Mercury, Inorganic Salts	mg/L	2.34E+00		2.34E+00	5.76E-01		5.76E-01	6.35E-01		6.35E-01	1.28E+00		1.28E+00
7439987	Molybdenum	mg/L	2.12E+02		2.12E+02	5.21E+01		5.21E+01	3.35E+01		3.35E+01	1.16E+02		1.16E+02
7440020	Nickel Soluble Salts	mg/L	6.02E+02		6.02E+02	1.48E+02		1.48E+02	1.12E+02		1.12E+02	3.29E+02		3.29E+02
7782492	Selenium	mg/L	2.45E+02		2.45E+02	6.03E+01		6.03E+01	3.59E+01		3.59E+01	1.34E+02		1.34E+02
7440224	Silver	mg/L	1.00E+02		1.00E+02	2.47E+01		2.47E+01	2.17E+01		2.17E+01	5.49E+01		5.49E+01
7791120	Thallium Chloride	mg/L	1.78E+00		1.78E+00	4.39E-01		4.39E-01	3.72E-01		3.72E-01	9.75E-01		9.75E-01
7440611	Uranium (Soluble Salts)	mg/L	5.68E+01		5.68E+01	1.40E+01		1.40E+01	5.51E+00		5.51E+00	3.11E+01		3.11E+01
7440622	Vanadium, Metallic	mg/L	7.80E+00		7.80E+00	1.92E+00		1.92E+00	2.46E+00		2.46E+00	4.27E+00		4.27E+00
7440666	Zinc (Metallic)	mg/L	6.68E+03		6.68E+03	1.65E+03		1.65E+03	1.40E+03		1.40E+03	3.66E+03		3.66E+03
83329	Acenaphthene	mg/L	8.29E+00		8.29E+00	2.04E+00		2.04E+00	2.68E+00		2.68E+00	4.54E+00		4.54E+00
208968	Acenaphthylene	mg/L												
107131	Acrylonitrile	mg/L	6.37E+01	2.75E+02	6.37E+01	1.57E+01	2.71E+00	2.71E+00	8.01E+00	5.61E-01	5.61E-01	3.48E+01	1.58E+00	1.58E+00
120127	Anthracene	mg/L	1.15E+02		1.15E+02	2.84E+01		2.84E+01	3.71E+01		3.71E+01	6.32E+01		6.32E+01
12674112	Aroclor 1016	mg/L	8.88E-03	7.40E-01	8.88E-03	2.19E-03	7.29E-03	2.19E-03	2.87E-03	4.97E-03	2.87E-03	4.86E-03	4.26E-03	4.26E-03
11104282	Aroclor 1221	mg/L		6.36E+00	6.36E+00		6.26E-02	6.26E-02		4.13E-02	4.13E-02		3.66E-02	3.66E-02
11141165	Aroclor 1232	mg/L		4.18E+01	4.18E+01		4.11E-01	4.11E-01		2.24E-01	2.24E-01		2.40E-01	2.40E-01
53469219	Aroclor 1242	mg/L		1.58E+01	1.58E+01		1.56E-01	1.56E-01		9.71E-02	9.71E-02		9.09E-02	9.09E-02
12672296	Aroclor 1248	mg/L		1.58E+00	1.58E+00		1.56E-02	1.56E-02		1.06E-02	1.06E-02		9.09E-03	9.09E-03
11097691	Aroclor 1254	mg/L	5.73E-03	1.67E+00	5.73E-03	1.41E-03	1.65E-02	1.41E-03	1.84E-03	1.12E-02	1.84E-03	3.14E-03	9.61E-03	3.14E-03
11096825	Aroclor 1260	mg/L		5.32E-01	5.32E-01		5.24E-03	5.24E-03		3.58E-03	3.58E-03		3.06E-03	3.06E-03
56553	Benz[a]anthracene	mg/L		1.36E-01	1.36E-01		1.34E-03	1.34E-03		9.18E-04	9.18E-04		7.84E-04	7.84E-04
71432	Benzene	mg/L	1.54E+01	2.18E+02	1.54E+01	3.80E+00	2.15E+00	2.15E+00	4.44E+00	1.24E+00	1.24E+00	8.45E+00	1.26E+00	1.26E+00
50328	Benzo[a]pyrene	mg/L		9.20E-03	9.20E-03		9.06E-05	9.06E-05		6.20E-05	6.20E-05		5.29E-05	5.29E-05
205992	Benzo[b]fluoranthene	mg/L		9.20E-02	9.20E-02		9.06E-04	9.06E-04		6.20E-04	6.20E-04		5.29E-04	5.29E-04
207089	Benzo[k]fluoranthene	mg/L		1.84E+00	1.84E+00		1.81E-02	1.81E-02		1.24E-02	1.24E-02		1.06E-02	1.06E-02
56235	Carbon Tetrachloride	mg/L	2.30E+00	5.91E+01	2.30E+00	5.67E-01	5.82E-01	5.67E-01	6.90E-01	3.56E-01	3.56E-01	1.26E+00	3.40E-01	3.40E-01
67663	Chloroform	mg/L	2.50E+01	9.58E+02	2.50E+01	6.16E+00	9.43E+00	6.16E+00	7.64E+00	5.92E+00	5.92E+00	1.37E+01	5.51E+00	5.51E+00
218019	Chrysene	mg/L		1.36E+01	1.36E+01		1.34E-01	1.34E-01		9.18E-02	9.18E-02		7.84E-02	7.84E-02
53703	Dibenz[a,h]anthracene	mg/L		4.09E-03	4.09E-03		4.03E-05	4.03E-05		2.76E-05	2.76E-05		2.35E-05	2.35E-05
75354	Dichloroethylene, 1,1-	mg/L	1.13E+02	4.87E+01	4.87E+01	2.77E+01	4.79E-01	4.79E-01	2.79E+01	2.26E-01	2.26E-01	6.16E+01	2.80E-01	2.80E-01
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	7.29E+02		7.29E+02	1.80E+02		1.80E+02	7.87E+01		7.87E+01	3.99E+02		3.99E+02
156592	Dichloroethylene, 1,2-cis-	mg/L	1.11E+02		1.11E+02	2.74E+01		2.74E+01	2.83E+01		2.83E+01	6.10E+01		6.10E+01
156605	Dichloroethylene, 1,2-trans-	mg/L	2.03E+03		2.03E+03	4.99E+02		4.99E+02	1.87E+02		1.87E+02	1.11E+03		1.11E+03
1746016	Dioxins/Furans (Total)	mg/L		6.19E-07	6.19E-07		6.09E-09	6.09E-09		4.17E-09	4.17E-09		3.56E-09	3.56E-09
100414	Ethylbenzene	mg/L	1.46E+02		1.46E+02	3.59E+01		3.59E+01	4.57E+01		4.57E+01	7.99E+01		7.99E+01
206440	Fluoranthene	mg/L	3.84E+00		3.84E+00	9.45E-01		9.45E-01	1.24E+00		1.24E+00	2.10E+00		2.10E+00
86737	Fluorene	mg/L	8.91E+00		8.91E+00	2.19E+00		2.19E+00	2.87E+00		2.87E+00	4.88E+00		4.88E+00
37871004	HpCDD, 2,3,7,8-	mg/L		5.42E-05	5.42E-05		5.33E-07	5.33E-07		3.65E-07	3.65E-07		3.12E-07	3.12E-07
38998753	HpCDF, 2,3,7,8-	mg/L								2.89E-04	2.89E-04			
34465468	HxCDD, 2,3,7,8-	mg/L								2.89E-05	2.89E-05			
55684941	HxCDF, 2,3,7,8-	mg/L								2.89E-05	2.89E-05			
193395	Indeno[1,2,3-cd]pyrene	mg/L		5.81E-02	5.81E-02		5.72E-04	5.72E-04		3.92E-04	3.92E-04		3.34E-04	3.34E-04
91203	Naphthalene	mg/L	2.58E+01		2.58E+01	6.36E+00		6.36E+00	8.11E+00		8.11E+00	1.41E+01		1.41E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using a target ELCR of 1E-4.
Action value is the less of the hazard- and cancer-based value.

Table A.3. Surface Water Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

			Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
7440360	Antimony (metallic)	mg/L	1.32E-01		1.32E-01	9.36E-02		9.36E-02	2.22E-01		2.22E-01	1.40E-01		1.40E-01
7440382	Arsenic, Inorganic	mg/L	6.03E-01	1.80E-01	1.80E-01	1.44E+00	4.09E-01	4.09E-01	1.46E+00	1.80E-01	1.80E-01	2.15E+00	4.09E-01	4.09E-01
7440417	Beryllium and compounds	mg/L	3.52E-01		3.52E-01	2.34E-01		2.34E-01	5.75E-01		5.75E-01	3.50E-01		3.50E-01
7440439	Cadmium (Water)	mg/L	8.81E-02		8.81E-02	5.85E-02		5.85E-02	1.44E-01		1.44E-01	8.74E-02		8.74E-02
16065831	Chromium (III) (Insoluble Salts)	mg/L	1.37E+02		1.37E+02	8.77E+01		8.77E+01	2.20E+02		2.20E+02	1.31E+02		1.31E+02
7440473	Chromium (Total)	mg/L	1.37E+02		1.37E+02	8.77E+01		8.77E+01	2.20E+02		2.20E+02	1.31E+02		1.31E+02
18540299	Chromium VI (chromic acid mists)	mg/L	9.93E-01		9.93E-01	7.02E-01		7.02E-01	1.67E+00		1.67E+00	1.05E+00		1.05E+00
7440508	Copper	mg/L	6.79E+01		6.79E+01	1.30E+02		1.30E+02	1.57E+02		1.57E+02	1.94E+02		1.94E+02
7439896	Iron	mg/L	4.15E+02		4.15E+02	5.26E+02		5.26E+02	8.62E+02		8.62E+02	7.87E+02		7.87E+02
7439921	Lead And Compounds	mg/L			3.00E-02			3.00E-02			3.00E-02			3.00E-02
7439965	Manganese	mg/L	1.42E+01		1.42E+01	1.12E+01		1.12E+01	2.49E+01		2.49E+01	1.68E+01		1.68E+01
7439976	Mercury, Inorganic Salts	mg/L	2.66E-01		2.66E-01	2.46E-01		2.46E-01	4.97E-01		4.97E-01	3.67E-01		3.67E-01
7439987	Molybdenum	mg/L	9.84E+00		9.84E+00	2.22E+01		2.22E+01	2.35E+01		2.35E+01	3.32E+01		3.32E+01
7440020	Nickel Soluble Salts	mg/L	3.54E+01		3.54E+01	6.31E+01		6.31E+01	8.05E+01		8.05E+01	9.44E+01		9.44E+01
7782492	Selenium	mg/L	1.02E+01		1.02E+01	2.57E+01		2.57E+01	2.49E+01		2.49E+01	3.85E+01		3.85E+01
7440224	Silver	mg/L	7.54E+00		7.54E+00	1.05E+01		1.05E+01	1.61E+01		1.61E+01	1.57E+01		1.57E+01
7791120	Thallium Chloride	mg/L	1.26E-01		1.26E-01	1.87E-01		1.87E-01	2.74E-01		2.74E-01	2.80E-01		2.80E-01
7440611	Uranium (Soluble Salts)	mg/L	1.39E+00		1.39E+00	5.96E+00		5.96E+00	3.67E+00		3.67E+00	8.91E+00		8.91E+00
7440622	Vanadium, Metallic	mg/L	1.23E+00		1.23E+00	8.19E-01		8.19E-01	2.01E+00		2.01E+00	1.22E+00		1.22E+00
7440666	Zinc (Metallic)	mg/L	4.73E+02		4.73E+02	7.02E+02		7.02E+02	1.03E+03		1.03E+03	1.05E+03		1.05E+03
83329	Acenaphthene	mg/L	1.39E+00		1.39E+00	8.70E-01		8.70E-01	2.21E+00		2.21E+00	1.30E+00		1.30E+00
208968	Acenaphthylene	mg/L												
107131	Acrylonitrile	mg/L	2.17E+00	5.61E-01	5.61E-01	6.68E+00	1.58E+00	1.58E+00	5.47E+00	5.61E-01	5.61E-01	9.99E+00	1.58E+00	1.58E+00
120127	Anthracene	mg/L	1.91E+01		1.91E+01	1.21E+01		1.21E+01	3.05E+01		3.05E+01	1.81E+01		1.81E+01
12674112	Aroclor 1016	mg/L	1.49E-03	4.97E-03	1.49E-03	9.33E-04	4.26E-03	9.33E-04	2.37E-03	4.97E-03	2.37E-03	1.39E-03	4.26E-03	1.39E-03
11104282	Aroclor 1221	mg/L		4.13E-02	4.13E-02		3.66E-02	3.66E-02		4.13E-02	4.13E-02		3.66E-02	3.66E-02
11141165	Aroclor 1232	mg/L		2.24E-01	2.24E-01		2.40E-01	2.40E-01		2.24E-01	2.24E-01		2.40E-01	2.40E-01
53469219	Aroclor 1242	mg/L		9.71E-02	9.71E-02		9.09E-02	9.09E-02		9.71E-02	9.71E-02		9.09E-02	9.09E-02
12672296	Aroclor 1248	mg/L		1.06E-02	1.06E-02		9.09E-03	9.09E-03		1.06E-02	1.06E-02		9.09E-03	9.09E-03
11097691	Aroclor 1254	mg/L	9.52E-04	1.12E-02	9.52E-04	6.01E-04	9.61E-03	6.01E-04	1.52E-03	1.12E-02	1.52E-03	8.99E-04	9.61E-03	8.99E-04
11096825	Aroclor 1260	mg/L		3.58E-03	3.58E-03		3.06E-03	3.06E-03		3.58E-03	3.58E-03		3.06E-03	3.06E-03
56553	Benz[a]anthracene	mg/L		9.18E-04	9.18E-04		7.84E-04	7.84E-04		9.18E-04	9.18E-04		7.84E-04	7.84E-04
71432	Benzene	mg/L	1.98E+00	1.24E+00	1.24E+00	1.62E+00	1.26E+00	1.26E+00	3.53E+00	1.24E+00	1.24E+00	2.42E+00	1.26E+00	1.26E+00
50328	Benzo[a]pyrene	mg/L		6.20E-05	6.20E-05		5.29E-05	5.29E-05		6.20E-05	6.20E-05		5.29E-05	5.29E-05
205992	Benzo[b]fluoranthene	mg/L		6.20E-04	6.20E-04		5.29E-04	5.29E-04		6.20E-04	6.20E-04		5.29E-04	5.29E-04
207089	Benzo[k]fluoranthene	mg/L		1.24E-02	1.24E-02		1.06E-02	1.06E-02		1.24E-02	1.24E-02		1.06E-02	1.06E-02
56235	Carbon Tetrachloride	mg/L	3.23E-01	3.56E-01	3.23E-01	2.42E-01	3.40E-01	2.42E-01	5.56E-01	3.56E-01	3.56E-01	3.62E-01	3.40E-01	3.40E-01
67663	Chloroform	mg/L	3.66E+00	5.92E+00	3.66E+00	2.63E+00	5.51E+00	2.63E+00	6.18E+00	5.92E+00	5.92E+00	3.93E+00	5.51E+00	3.93E+00
218019	Chrysene	mg/L		9.18E-02	9.18E-02		7.84E-02	7.84E-02		9.18E-02	9.18E-02		7.84E-02	7.84E-02
53703	Dibenz[a,h]anthracene	mg/L		2.76E-05	2.76E-05		2.35E-05	2.35E-05		2.76E-05	2.76E-05		2.35E-05	2.35E-05
75354	Dichloroethylene, 1,1-	mg/L	1.07E+01	2.26E-01	2.26E-01	1.18E+01	2.80E-01	2.80E-01	2.13E+01	2.26E-01	2.26E-01	1.77E+01	2.80E-01	2.80E-01
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	2.04E+01		2.04E+01	7.65E+01		7.65E+01	5.28E+01		5.28E+01	1.14E+02		1.14E+02
156592	Dichloroethylene, 1,2-cis-	mg/L	1.11E+01		1.11E+01	1.17E+01		1.17E+01	2.18E+01		2.18E+01	1.75E+01		1.75E+01
156605	Dichloroethylene, 1,2-trans-	mg/L	4.69E+01		4.69E+01	2.13E+02		2.13E+02	1.24E+02		1.24E+02	3.18E+02		3.18E+02
1746016	Dioxins/Furans (Total)	mg/L		4.17E-09	4.17E-09		3.56E-09	3.56E-09		4.17E-09	4.17E-09		3.56E-09	3.56E-09
100414	Ethylbenzene	mg/L	2.26E+01		2.26E+01	1.53E+01		1.53E+01	3.73E+01		3.73E+01	2.29E+01		2.29E+01
206440	Fluoranthene	mg/L	6.45E-01		6.45E-01	4.03E-01		4.03E-01	1.02E+00		1.02E+00	6.02E-01		6.02E-01
86737	Fluorene	mg/L	1.49E+00		1.49E+00	9.36E-01		9.36E-01	2.37E+00		2.37E+00	1.40E+00		1.40E+00
37871004	HpCDD, 2,3,7,8-	mg/L		3.65E-07	3.65E-07		3.12E-07	3.12E-07		3.65E-07	3.65E-07		3.12E-07	3.12E-07
38998753	HpCDF, 2,3,7,8-	mg/L		2.89E-04	2.89E-04					2.89E-04	2.89E-04			
34465468	HxCDD, 2,3,7,8-	mg/L		2.89E-05	2.89E-05					2.89E-05	2.89E-05			
55684941	HxCDF, 2,3,7,8-	mg/L		2.89E-05	2.89E-05					2.89E-05	2.89E-05			
193395	Indeno[1,2,3-cd]pyrene	mg/L		3.92E-04	3.92E-04		3.34E-04	3.34E-04		3.92E-04	3.92E-04		3.34E-04	3.34E-04
91203	Naphthalene	mg/L	4.04E+00		4.04E+00	2.71E+00		2.71E+00	6.63E+00		6.63E+00	4.05E+00		4.05E+00

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using a target ELCR of 1E-4.
Action valu less of the hazard- and cancer-based value.

Table A.3. Surface Water Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

			Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
3268879	OCDD	mg/L		1.70E-04	1.70E-04		1.67E-06	1.67E-06		1.15E-06	1.15E-06		9.77E-07	9.77E-07
39001020	OCDF	mg/L		1.81E-04	1.81E-04		1.78E-06	1.78E-06		1.22E-06	1.22E-06		1.04E-06	1.04E-06
36088229	PeCDD, 2,3,7,8-	mg/L		3.27E-06	3.27E-06		3.22E-08	3.22E-08		2.20E-08	2.20E-08		1.88E-08	1.88E-08
57117416	PeCDF, 1,2,3,7,8-	mg/L		1.58E-06	1.58E-06		1.55E-08	1.55E-08		1.06E-08	1.06E-08		9.06E-09	9.06E-09
57117314	PeCDF, 2,3,4,7,8-	mg/L		1.33E-05	1.33E-05		1.31E-07	1.31E-07		8.98E-08	8.98E-08		7.67E-08	7.67E-08
85018	Phenanthrene	mg/L												
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		1.67E+00	1.67E+00		1.65E-02	1.65E-02		1.12E-02	1.12E-02		9.61E-03	9.61E-03
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		9.55E+00	9.55E+00		9.40E-02	9.40E-02		6.38E-02	6.38E-02		5.49E-02	5.49E-02
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		9.20E-03	9.20E-03		9.06E-05	9.06E-05		6.20E-05	6.20E-05		5.29E-05	5.29E-05
129000	Pyrene	mg/L	3.24E+00		3.24E+00	7.97E-01		7.97E-01	1.05E+00		1.05E+00	1.77E+00		1.77E+00
1746016	TCDD, 2,3,7,8-	mg/L		6.19E-07	6.19E-07		6.09E-09	6.09E-09		4.17E-09	4.17E-09		3.56E-09	3.56E-09
51207319	TCDF, 2,3,7,8-	mg/L		2.48E-05	2.48E-05		2.44E-07	2.44E-07		1.66E-07	1.66E-07		1.42E-07	1.42E-07
127184	Tetrachloroethylene	mg/L	3.01E+00	1.35E+01	3.01E+00	7.41E-01	1.33E-01	1.33E-01	9.68E-01	9.02E-02	9.02E-02	1.65E+00	7.77E-02	7.77E-02
79016	Trichloroethylene	mg/L	6.27E+00	2.22E+02	6.27E+00	1.54E+00	2.18E+00	1.54E+00	1.98E+00	1.44E+00	1.44E+00	3.43E+00	1.27E+00	1.27E+00
75014	Vinyl Chloride	mg/L	4.58E+01	2.54E+01	2.54E+01	1.13E+01	2.50E-01	2.50E-01	1.08E+01	1.10E-01	1.10E-01	2.51E+01	1.46E-01	1.46E-01
1330207	Xylene, Mixture	mg/L	2.16E+03		2.16E+03	5.31E+02		5.31E+02	6.81E+02		6.81E+02	1.18E+03		1.18E+03
108383	Xylene, m-	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	7.03E+02		7.03E+02	1.22E+03		1.22E+03
95476	Xylene, o-	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	7.03E+02		7.03E+02	1.22E+03		1.22E+03
106423	Xylene, p-	mg/L												
14596102	Am-241	pCi/L								4.11E+03	4.11E+03			
10198400	Co-60	pCi/L								2.72E+04	2.72E+04			
10045973	Cs-137+D	pCi/L								1.41E+04	1.41E+04			
13994202	Np-237+D	pCi/L								6.34E+03	6.34E+03			
13981163	Pu-238	pCi/L								3.26E+03	3.26E+03			
15117483	Pu-239	pCi/L								3.17E+03	3.17E+03			
14119336	Pu-240	pCi/L								3.17E+03	3.17E+03			
13982633	Ra-226+D	pCi/L								1.11E+03	1.11E+03			
14859677	Rn-222+D	pCi/L												
10098972	Sr-90+D	pCi/L								5.78E+03	5.78E+03			
14133767	Tc-99	pCi/L								1.55E+05	1.55E+05			
14274829	Th-228+D	pCi/L								1.42E+03	1.42E+03			
14269637	Th-230	pCi/L								4.70E+03	4.70E+03			
N2608	Th-232	pCi/L								4.23E+03	4.23E+03			
13966295	U-234	pCi/L								6.04E+03	6.04E+03			
15117961	U-235+D	pCi/L								5.95E+03	5.95E+03			
24678828	U-238+D	pCi/L								4.91E+03	4.91E+03			

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using a target ELCR of 1E-4.
Action value is the less of the hazard- and cancer-based value.

Table A.3. Surface Water Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

			Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
3268879	OCDD	mg/L		1.15E-06	1.15E-06		9.77E-07	9.77E-07		1.15E-06	1.15E-06		9.77E-07	9.77E-07
39001020	OCDF	mg/L		1.22E-06	1.22E-06		1.04E-06	1.04E-06		1.22E-06	1.22E-06		1.04E-06	1.04E-06
36088229	PeCDD, 2,3,7,8-	mg/L		2.20E-08	2.20E-08		1.88E-08	1.88E-08		2.20E-08	2.20E-08		1.88E-08	1.88E-08
57117416	PeCDF, 1,2,3,7,8-	mg/L		1.06E-08	1.06E-08		9.06E-09	9.06E-09		1.06E-08	1.06E-08		9.06E-09	9.06E-09
57117314	PeCDF, 2,3,4,7,8-	mg/L		8.98E-08	8.98E-08		7.67E-08	7.67E-08		8.98E-08	8.98E-08		7.67E-08	7.67E-08
85018	Phenanthrene	mg/L												
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		1.12E-02	1.12E-02		9.61E-03	9.61E-03		1.12E-02	1.12E-02		9.61E-03	9.61E-03
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		6.38E-02	6.38E-02		5.49E-02	5.49E-02		6.38E-02	6.38E-02		5.49E-02	5.49E-02
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		6.20E-05	6.20E-05		5.29E-05	5.29E-05		6.20E-05	6.20E-05		5.29E-05	5.29E-05
129000	Pyrene	mg/L	5.44E-01		5.44E-01	3.40E-01		3.40E-01	8.63E-01		8.63E-01	5.08E-01		5.08E-01
1746016	TCDD, 2,3,7,8-	mg/L		4.17E-09	4.17E-09		3.56E-09	3.56E-09		4.17E-09	4.17E-09		3.56E-09	3.56E-09
51207319	TCDF, 2,3,7,8-	mg/L		1.66E-07	1.66E-07		1.42E-07	1.42E-07		1.66E-07	1.66E-07		1.42E-07	1.42E-07
127184	Tetrachloroethylene	mg/L	5.00E-01	9.02E-02	9.02E-02	3.16E-01	7.77E-02	7.77E-02	7.98E-01	9.02E-02	9.02E-02	4.72E-01	7.77E-02	7.77E-02
79016	Trichloroethylene	mg/L	9.95E-01	1.44E+00	9.95E-01	6.58E-01	1.27E+00	6.58E-01	1.62E+00	1.44E+00	1.44E+00	9.83E-01	1.27E+00	9.83E-01
75014	Vinyl Chloride	mg/L	3.97E+00	1.10E-01	1.10E-01	4.81E+00	1.46E-01	1.46E-01	8.13E+00	1.10E-01	1.10E-01	7.18E+00	1.46E-01	1.46E-01
1330207	Xylene, Mixture	mg/L	3.42E+02		3.42E+02	2.26E+02		2.26E+02	5.57E+02		5.57E+02	3.39E+02		3.39E+02
108383	Xylene, m-	mg/L	3.52E+02		3.52E+02	2.34E+02		2.34E+02	5.75E+02		5.75E+02	3.50E+02		3.50E+02
95476	Xylene, o-	mg/L	3.52E+02		3.52E+02	2.34E+02		2.34E+02	5.75E+02		5.75E+02	3.50E+02		3.50E+02
106423	Xylene, p-	mg/L												
14596102	Am-241	pCi/L		4.11E+03	4.11E+03					4.11E+03	4.11E+03			
10198400	Co-60	pCi/L		2.72E+04	2.72E+04					2.72E+04	2.72E+04			
10045973	Cs-137+D	pCi/L		1.41E+04	1.41E+04					1.41E+04	1.41E+04			
13994202	Np-237+D	pCi/L		6.34E+03	6.34E+03					6.34E+03	6.34E+03			
13981163	Pu-238	pCi/L		3.26E+03	3.26E+03					3.26E+03	3.26E+03			
15117483	Pu-239	pCi/L		3.17E+03	3.17E+03					3.17E+03	3.17E+03			
14119336	Pu-240	pCi/L		3.17E+03	3.17E+03					3.17E+03	3.17E+03			
13982633	Ra-226+D	pCi/L		1.11E+03	1.11E+03					1.11E+03	1.11E+03			
14859677	Rn-222+D	pCi/L												
10098972	Sr-90+D	pCi/L		5.78E+03	5.78E+03					5.78E+03	5.78E+03			
14133767	Tc-99	pCi/L		1.55E+05	1.55E+05					1.55E+05	1.55E+05			
14274829	Th-228+D	pCi/L		1.42E+03	1.42E+03					1.42E+03	1.42E+03			
14269637	Th-230	pCi/L		4.70E+03	4.70E+03					4.70E+03	4.70E+03			
N2608	Th-232	pCi/L		4.23E+03	4.23E+03					4.23E+03	4.23E+03			
13966295	U-234	pCi/L		6.04E+03	6.04E+03					6.04E+03	6.04E+03			
15117961	U-235+D	pCi/L		5.95E+03	5.95E+03					5.95E+03	5.95E+03			
24678828	U-238+D	pCi/L		4.91E+03	4.91E+03					4.91E+03	4.91E+03			

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using a target ELCR of 1E-4.
Action val · less of the hazard- and cancer-based value.

Table A.4. Soil/Sediment No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
7440360	Antimony (metallic)	mg/kg	4.92E-01		4.92E-01	3.79E-01		3.79E-01	1.12E+00		1.12E+00	1.61E-01		1.61E-01
7440382	Arsenic, Inorganic	mg/kg	5.21E+00	3.24E-01	3.24E-01	8.41E+00	5.23E-01	5.23E-01	2.66E+01	3.46E-01	3.46E-01	3.60E+00	3.46E-01	3.46E-01
7440417	Beryllium and compounds	mg/kg	1.26E+00	7.39E+04	1.26E+00	9.48E-01	5.47E+04	9.48E-01	2.80E+00	6.02E+04	2.80E+00	4.04E-01	6.02E+04	4.04E-01
7440439	Cadmium (Diet)	mg/kg	1.52E+01	1.00E+05	1.52E+01	2.13E+01	7.53E+04	2.13E+01	6.62E+01	8.30E+04	6.62E+01	9.12E+00	8.30E+04	9.12E+00
16065831	Chromium (III) (Insoluble Salts)	mg/kg	4.76E+02		4.76E+02	3.56E+02		3.56E+02	1.05E+03		1.05E+03	1.52E+02		1.52E+02
7440473	Chromium (Total)	mg/kg	4.76E+02	1.48E+04	4.76E+02	3.56E+02	1.09E+04	3.56E+02	1.05E+03	1.20E+04	1.05E+03	1.52E+02	1.20E+04	1.52E+02
18540299	Chromium VI (particulates)	mg/kg	3.69E+00	2.11E+03	3.69E+00	2.84E+00	1.56E+03	2.84E+00	8.40E+00	1.72E+03	8.40E+00	1.21E+00	1.72E+03	1.21E+00
7440508	Copper	mg/kg	4.27E+02		4.27E+02	4.93E+02		4.93E+02	1.50E+03		1.50E+03	2.11E+02		2.11E+02
7439896	Iron	mg/kg	2.17E+03		2.17E+03	2.07E+03		2.07E+03	6.21E+03		6.21E+03	8.83E+02		8.83E+02
7439921	Lead And Compounds	mg/kg			5.00E+01			5.00E+01			5.00E+01			5.00E+01
7439965	Manganese	mg/kg	5.66E+01		5.66E+01	4.52E+01		4.52E+01	1.34E+02		1.34E+02	1.93E+01		1.93E+01
7439976	Mercury, Inorganic Salts	mg/kg	1.17E+00		1.17E+00	9.82E-01		9.82E-01	2.92E+00		2.92E+00	4.19E-01		4.19E-01
7439987	Molybdenum	mg/kg	6.60E+01		6.60E+01	8.30E+01		8.30E+01	2.55E+02		2.55E+02	3.55E+01		3.55E+01
7440020	Nickel Soluble Salts	mg/kg	2.16E+02		2.16E+02	2.42E+02		2.42E+02	7.34E+02		7.34E+02	1.03E+02		1.03E+02
7782492	Selenium	mg/kg	7.13E+01		7.13E+01	9.49E+01		9.49E+01	2.93E+02		2.93E+02	4.06E+01		4.06E+01
7440224	Silver	mg/kg	4.12E+01		4.12E+01	4.11E+01		4.11E+01	1.24E+02		1.24E+02	1.75E+01		1.75E+01
7791120	Thallium Chloride	mg/kg	7.11E-01		7.11E-01	7.27E-01		7.27E-01	2.19E+00		2.19E+00	3.10E-01		3.10E-01
7440611	Uranium (Soluble Salts)	mg/kg	1.13E+01		1.13E+01	2.02E+01		2.02E+01	6.50E+01		6.50E+01	8.69E+00		8.69E+00
7440622	Vanadium, Metallic	mg/kg	4.40E+00		4.40E+00	3.32E+00		3.32E+00	9.82E+00		9.82E+00	1.42E+00		1.42E+00
7440666	Zinc (Metallic)	mg/kg	2.66E+03		2.66E+03	2.73E+03		2.73E+03	8.23E+03		8.23E+03	1.16E+03		1.16E+03
83329	Acenaphthene	mg/kg	3.50E+02		3.50E+02	3.16E+02		3.16E+02	9.55E+02		9.55E+02	1.37E+02		1.37E+02
208968	Acenaphthylene	mg/kg												
107131	Acrylonitrile	mg/kg	2.29E+00	2.48E-01	2.48E-01	1.83E+00	2.16E-01	2.16E-01	6.57E+00	1.67E-01	1.67E-01	9.86E-01	1.67E-01	1.67E-01
120127	Anthracene	mg/kg	3.34E+03		3.34E+03	3.79E+03		3.79E+03	1.16E+04		1.16E+04	1.63E+03		1.63E+03
12674112	Aroclor 1016	mg/kg	8.41E-01	1.68E-01	1.68E-01	9.95E-01	1.99E-01	1.99E-01	3.04E+00	1.27E-01	1.27E-01	4.26E-01	1.27E-01	1.27E-01
11104282	Aroclor 1221	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
11141165	Aroclor 1232	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
53469219	Aroclor 1242	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
12672296	Aroclor 1248	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
11097691	Aroclor 1254	mg/kg	2.40E-01	1.68E-01	1.68E-01	2.84E-01	1.99E-01	1.99E-01	8.69E-01	1.27E-01	1.27E-01	1.22E-01	1.27E-01	1.22E-01
11096825	Aroclor 1260	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
56553	Benz[a]anthracene	mg/kg		2.32E-01	2.32E-01		2.12E-01	2.12E-01		1.33E-01	1.33E-01		1.33E-01	1.33E-01
71432	Benzene	mg/kg	2.99E+00	1.40E+00	1.40E+00	2.29E+00	1.13E+00	1.13E+00	8.59E+00	1.05E+00	1.05E+00	1.31E+00	1.05E+00	1.05E+00
50328	Benzo[a]pyrene	mg/kg		2.32E-02	2.32E-02		2.12E-02	2.12E-02		1.33E-02	1.33E-02		1.33E-02	1.33E-02
205992	Benzo[b]fluoranthene	mg/kg		2.32E-01	2.32E-01		2.12E-01	2.12E-01		1.33E-01	1.33E-01		1.33E-01	1.33E-01
207089	Benzo[k]fluoranthene	mg/kg		2.32E+00	2.32E+00		2.12E+00	2.12E+00		1.33E+00	1.33E+00		1.33E+00	1.33E+00
56235	Carbon Tetrachloride	mg/kg	8.54E-01	5.10E-01	5.10E-01	6.57E-01	4.08E-01	4.08E-01	2.42E+00	3.63E-01	3.63E-01	3.67E-01	3.63E-01	3.63E-01
67663	Chloroform	mg/kg	1.66E-01	6.37E-01	1.66E-01	1.23E-01	4.73E-01	1.23E-01	4.71E-01	5.00E-01	4.71E-01	7.24E-02	5.00E-01	7.24E-02
218019	Chrysene	mg/kg		2.32E+01	2.32E+01		2.12E+01	2.12E+01		1.33E+01	1.33E+01		1.33E+01	1.33E+01
53703	Dibenz[a,h]anthracene	mg/kg		2.32E-02	2.32E-02		2.12E-02	2.12E-02		1.33E-02	1.33E-02		1.33E-02	1.33E-02
75354	Dichloroethylene, 1,1-	mg/kg	8.40E+00	1.19E-01	1.19E-01	6.40E+00	9.59E-02	9.59E-02	2.41E+01	9.05E-02	9.05E-02	3.68E+00	9.05E-02	9.05E-02
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/kg	6.82E+01		6.82E+01	6.60E+01		6.60E+01	1.98E+02		1.98E+02	2.82E+01		2.82E+01
156592	Dichloroethylene, 1,2-cis-	mg/kg	1.71E+01		1.71E+01	1.34E+01		1.34E+01	4.94E+01		4.94E+01	7.48E+00		7.48E+00
156605	Dichloroethylene, 1,2-trans-	mg/kg	2.84E+01		2.84E+01	2.20E+01		2.20E+01	8.20E+01		8.20E+01	1.25E+01		1.25E+01
1746016	Dioxins/Furans (Total)	mg/kg		3.49E-06	3.49E-06		6.19E-06	6.19E-06		4.15E-06	4.15E-06		4.15E-06	4.15E-06
100414	Ethylbenzene	mg/kg	4.91E+02	2.87E+01	2.87E+01	4.29E+02	2.12E+01	2.12E+01	1.45E+03	2.34E+01	2.34E+01	2.14E+02	2.34E+01	2.34E+01
206440	Fluoranthene	mg/kg	2.42E+02		2.42E+02	2.21E+02		2.21E+02	6.60E+02		6.60E+02	9.42E+01		9.42E+01
86737	Fluorene	mg/kg	3.38E+02		3.38E+02	3.39E+02		3.39E+02	1.03E+03		1.03E+03	1.46E+02		1.46E+02
37871004	HpCDD, 2,3,7,8-	mg/kg		3.49E-04	3.49E-04		6.19E-04	6.19E-04		4.15E-04	4.15E-04		4.15E-04	4.15E-04
38998753	HpCDF, 2,3,7,8-	mg/kg		3.49E-04	3.49E-04		6.19E-04	6.19E-04		4.15E-04	4.15E-04		4.15E-04	4.15E-04
34465468	HxCDD, 2,3,7,8-	mg/kg		3.49E-05	3.49E-05		6.19E-05	6.19E-05		4.15E-05	4.15E-05		4.15E-05	4.15E-05
55684941	HxCDF, 2,3,7,8-	mg/kg		3.49E-05	3.49E-05		6.19E-05	6.19E-05		4.15E-05	4.15E-05		4.15E-05	4.15E-05
193395	Indeno[1,2,3-cd]pyrene	mg/kg		2.32E-01	2.32E-01		2.12E-01	2.12E-01		1.33E-01	1.33E-01		1.33E-01	1.33E-01
91203	Naphthalene	mg/kg	3.04E+01		3.04E+01	2.36E+01		2.36E+01	8.89E+01		8.89E+01	1.35E+01		1.35E+01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No Action value is less of the hazard- and cancer-based values.

Table A.4. Soil/Sediment No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
7440360	Antimony (metallic)	mg/kg	2.42E-01		2.42E-01	3.30E-01		3.30E-01	6.35E-02		6.35E-02
7440382	Arsenic, Inorganic	mg/kg	5.98E+00	3.46E-01	3.46E-01	6.15E+00	1.32E-01	1.32E-01	9.59E-01	1.32E-01	1.32E-01
7440417	Beryllium and compounds	mg/kg	6.06E-01	6.02E+04	6.06E-01	8.30E-01	1.55E+04	8.30E-01	1.60E-01	1.55E+04	1.60E-01
7440439	Cadmium (Diet)	mg/kg	1.47E+01	8.30E+04	1.47E+01	1.62E+01	2.14E+04	1.62E+01	2.64E+00	2.14E+04	2.64E+00
16065831	Chromium (III) (Insoluble Salts)	mg/kg	2.27E+02		2.27E+02	3.12E+02		3.12E+02	6.05E+01		6.05E+01
7440473	Chromium (Total)	mg/kg	2.27E+02	1.20E+04	2.27E+02	3.12E+02	3.10E+03	3.12E+02	6.05E+01	3.10E+03	6.05E+01
18540299	Chromium VI (particulates)	mg/kg	1.82E+00	1.72E+03	1.82E+00	2.47E+00	4.43E+02	2.47E+00	4.76E-01	4.43E+02	4.76E-01
7440508	Copper	mg/kg	3.31E+02		3.31E+02	3.95E+02		3.95E+02	6.81E+01		6.81E+01
7439896	Iron	mg/kg	1.35E+03		1.35E+03	1.73E+03		1.73E+03	3.14E+02		3.14E+02
7439921	Lead And Compounds	mg/kg			5.00E+01			5.00E+01			5.00E+01
7439965	Manganese	mg/kg	2.90E+01		2.90E+01	3.91E+01		3.91E+01	7.46E+00		7.46E+00
7439976	Mercury, Inorganic Salts	mg/kg	6.34E-01		6.34E-01	8.42E-01		8.42E-01	1.58E-01		1.58E-01
7439987	Molybdenum	mg/kg	5.64E+01		5.64E+01	6.51E+01		6.51E+01	1.09E+01		1.09E+01
7440020	Nickel Soluble Salts	mg/kg	1.61E+02		1.61E+02	1.95E+02		1.95E+02	3.40E+01		3.40E+01
7782492	Selenium	mg/kg	6.50E+01		6.50E+01	7.33E+01		7.33E+01	1.21E+01		1.21E+01
7440224	Silver	mg/kg	2.70E+01		2.70E+01	3.40E+01		3.40E+01	6.12E+00		6.12E+00
7791120	Thallium Chloride	mg/kg	4.79E-01		4.79E-01	5.99E-01		5.99E-01	1.07E-01		1.07E-01
7440611	Uranium (Soluble Salts)	mg/kg	1.47E+01		1.47E+01	1.43E+01		1.43E+01	2.16E+00		2.16E+00
7440622	Vanadium, Metallic	mg/kg	2.12E+00		2.12E+00	2.90E+00		2.90E+00	5.62E-01		5.62E-01
7440666	Zinc (Metallic)	mg/kg	1.80E+03		1.80E+03	2.25E+03		2.25E+03	4.01E+02		4.01E+02
83329	Acenaphthene	mg/kg	2.12E+02		2.12E+02	2.65E+02		2.65E+02	4.90E+01		4.90E+01
208968	Acenaphthylene	mg/kg									
107131	Acrylonitrile	mg/kg	2.26E+00	1.67E-01	1.67E-01	1.35E+00	6.45E-02	6.45E-02	2.72E-01	6.45E-02	6.45E-02
120127	Anthracene	mg/kg	2.58E+03		2.58E+03	3.03E+03		3.03E+03	5.26E+02		5.26E+02
12674112	Aroclor 1016	mg/kg	6.70E-01	1.27E-01	1.27E-01	7.93E-01	5.74E-02	5.74E-02	1.36E-01	5.74E-02	5.74E-02
11104282	Aroclor 1221	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
11141165	Aroclor 1232	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
53469219	Aroclor 1242	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
12672296	Aroclor 1248	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
11097691	Aroclor 1254	mg/kg	1.91E-01	1.27E-01	1.27E-01	2.27E-01	5.74E-02	5.74E-02	3.88E-02	5.74E-02	3.88E-02
11096825	Aroclor 1260	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
56553	Benz[a]anthracene	mg/kg		1.33E-01	1.33E-01		6.70E-02	6.70E-02		6.70E-02	6.70E-02
71432	Benzene	mg/kg	3.51E+00	1.05E+00	1.05E+00	1.65E+00	3.27E-01	3.27E-01	3.38E-01	3.27E-01	3.27E-01
50328	Benzo[a]pyrene	mg/kg		1.33E-02	1.33E-02		6.70E-03	6.70E-03		6.70E-03	6.70E-03
205992	Benzo[b]fluoranthene	mg/kg		1.33E-01	1.33E-01		6.70E-02	6.70E-02		6.70E-02	6.70E-02
207089	Benzo[k]fluoranthene	mg/kg		1.33E+00	1.33E+00		6.70E-01	6.70E-01		6.70E-01	6.70E-01
56235	Carbon Tetrachloride	mg/kg	9.11E-01	3.63E-01	3.63E-01	4.80E-01	1.19E-01	1.19E-01	9.78E-02	1.19E-01	9.78E-02
67663	Chloroform	mg/kg	2.13E-01	5.00E-01	2.13E-01	8.77E-02	1.35E-01	8.77E-02	1.82E-02	1.35E-01	1.82E-02
218019	Chrysene	mg/kg		1.33E+01	1.33E+01		6.70E+00	6.70E+00		6.70E+00	6.70E+00
53703	Dibenz[a,h]anthracene	mg/kg		1.33E-02	1.33E-02		6.70E-03	6.70E-03		6.70E-03	6.70E-03
75354	Dichloroethylene, 1,1-	mg/kg	9.95E+00	9.05E-02	9.05E-02	4.62E+00	2.76E-02	2.76E-02	9.47E-01	2.76E-02	2.76E-02
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/kg	4.32E+01		4.32E+01	5.50E+01		5.50E+01	9.97E+00		9.97E+00
156592	Dichloroethylene, 1,2-cis-	mg/kg	1.88E+01		1.88E+01	9.74E+00		9.74E+00	1.98E+00		1.98E+00
156605	Dichloroethylene, 1,2-trans-	mg/kg	3.22E+01		3.22E+01	1.60E+01		1.60E+01	3.26E+00		3.26E+00
1746016	Dioxins/Furans (Total)	mg/kg		4.15E-06	4.15E-06		1.49E-06	1.49E-06		1.49E-06	1.49E-06
100414	Ethylbenzene	mg/kg	4.16E+02	2.34E+01	2.34E+01	3.28E+02	6.01E+00	6.01E+00	6.33E+01	6.01E+00	6.01E+00
206440	Fluoranthene	mg/kg	1.44E+02		1.44E+02	1.86E+02		1.86E+02	3.43E+01		3.43E+01
86737	Fluorene	mg/kg	2.28E+02		2.28E+02	2.79E+02		2.79E+02	5.01E+01		5.01E+01
37871004	HpCDD, 2,3,7,8-	mg/kg		4.15E-04	4.15E-04		1.49E-04	1.49E-04		1.49E-04	1.49E-04
38998753	HpCDF, 2,3,7,8-	mg/kg		4.15E-04	4.15E-04		1.49E-04	1.49E-04		1.49E-04	1.49E-04
34465468	HxCDD, 2,3,7,8-	mg/kg		4.15E-05	4.15E-05		1.49E-05	1.49E-05		1.49E-05	1.49E-05
55684941	HxCDF, 2,3,7,8-	mg/kg		4.15E-05	4.15E-05		1.49E-05	1.49E-05		1.49E-05	1.49E-05
193395	Indeno[1,2,3-cd]pyrene	mg/kg		1.33E-01	1.33E-01		6.70E-02	6.70E-02		6.70E-02	6.70E-02
91203	Naphthalene	mg/kg	3.64E+01		3.64E+01	1.70E+01		1.70E+01	3.47E+00		3.47E+00

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No Action v[illegible]s less of the hazard- and cancer-based values.

Table A.4. Soil/Sediment No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

			Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
Parameter	Chemical	Units	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
3268879	OCDD	mg/kg		3.49E-03	3.49E-03		6.19E-03	6.19E-03		4.15E-03	4.15E-03		4.15E-03	4.15E-03
39001020	OCDF	mg/kg		3.49E-03	3.49E-03		6.19E-03	6.19E-03		4.15E-03	4.15E-03		4.15E-03	4.15E-03
36088229	PeCDD, 2,3,7,8-	mg/kg		6.99E-06	6.99E-06		1.24E-05	1.24E-05		8.29E-06	8.29E-06		8.29E-06	8.29E-06
57117416	PeCDF, 1,2,3,7,8-	mg/kg		6.99E-06	6.99E-06		1.24E-05	1.24E-05		8.29E-06	8.29E-06		8.29E-06	8.29E-06
57117314	PeCDF, 2,3,4,7,8-	mg/kg		6.99E-05	6.99E-05		1.24E-04	1.24E-04		8.29E-05	8.29E-05		8.29E-05	8.29E-05
85018	Phenanthrene	mg/kg												
1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		4.81E+00	4.81E+00		5.69E+00	5.69E+00		3.64E+00	3.64E+00		3.64E+00	3.64E+00
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		2.32E-02	2.32E-02		2.12E-02	2.12E-02		1.33E-02	1.33E-02		1.33E-02	1.33E-02
129000	Pyrene	mg/kg	1.81E+02		1.81E+02	1.65E+02		1.65E+02	4.95E+02		4.95E+02	7.06E+01		7.06E+01
1746016	TCDD, 2,3,7,8-	mg/kg		3.49E-06	3.49E-06		6.19E-06	6.19E-06		4.15E-06	4.15E-06		4.15E-06	4.15E-06
51207319	TCDF, 2,3,7,8-	mg/kg		3.49E-05	3.49E-05		6.19E-05	6.19E-05		4.15E-05	4.15E-05		4.15E-05	4.15E-05
127184	Tetrachloroethylene	mg/kg	6.95E+01	4.04E+00	4.04E+00	6.56E+01	3.90E+00	3.90E+00	2.11E+02	2.70E+00	2.70E+00	3.04E+01	2.70E+00	2.70E+00
79016	Trichloroethylene	mg/kg	6.15E+00	3.25E+00	3.25E+00	4.70E+00	2.51E+00	2.51E+00	1.55E+01	1.80E+00	1.80E+00	2.29E+00	1.80E+00	1.80E+00
75014	Vinyl Chloride	mg/kg	1.20E+01	1.41E-01	1.41E-01	1.01E+01	1.34E-01	1.34E-01	3.53E+01	9.54E-02	9.54E-02	5.23E+00	9.54E-02	9.54E-02
1330207	Xylene, Mixture	mg/kg	9.63E+02		9.63E+02	7.24E+02		7.24E+02	2.77E+03		2.77E+03	4.25E+02		4.25E+02
108383	Xylene, m-	mg/kg	5.56E+03		5.56E+03	4.50E+03		4.50E+03	1.68E+04		1.68E+04	2.54E+03		2.54E+03
95476	Xylene, o-	mg/kg	5.59E+03		5.59E+03	4.53E+03		4.53E+03	1.69E+04		1.69E+04	2.55E+03		2.55E+03
106423	Xylene, p-	mg/kg												
14596102	Am-241	pCi/g		1.74E+00	1.74E+00		5.16E+00	5.16E+00		1.16E+01	1.16E+01		1.16E+01	1.16E+01
10198400	Co-60	pCi/g		2.38E-02	2.38E-02		1.77E-02	1.77E-02		3.67E-02	3.67E-02		3.67E-02	3.67E-02
10045973	Cs-137+D	pCi/g		1.15E-01	1.15E-01		8.58E-02	8.58E-02		1.78E-01	1.78E-01		1.78E-01	1.78E-01
13994202	Np-237+D	pCi/g		3.28E-01	3.28E-01		2.71E-01	2.71E-01		5.65E-01	5.65E-01		5.65E-01	5.65E-01
13981163	Pu-238	pCi/g		1.66E+00	1.66E+00		1.17E+01	1.17E+01		3.10E+01	3.10E+01		3.10E+01	3.10E+01
15117483	Pu-239	pCi/g		1.63E+00	1.63E+00		1.15E+01	1.15E+01		3.03E+01	3.03E+01		3.03E+01	3.03E+01
14119336	Pu-240	pCi/g		1.63E+00	1.63E+00		1.15E+01	1.15E+01		3.05E+01	3.05E+01		3.05E+01	3.05E+01
13982633	Ra-226+D	pCi/g		3.30E-02	3.30E-02		2.56E-02	2.56E-02		5.34E-02	5.34E-02		5.34E-02	5.34E-02
14859677	Rn-222+D	pCi/g		4.59E+07	4.59E+07		3.39E+07	3.39E+07		7.06E+07	7.06E+07		7.06E+07	7.06E+07
10098972	Sr-90+D	pCi/g		2.59E+00	2.59E+00		7.44E+00	7.44E+00		1.67E+01	1.67E+01		1.67E+01	1.67E+01
14133767	Tc-99	pCi/g		5.79E+01	5.79E+01		3.62E+02	3.62E+02		9.26E+02	9.26E+02		9.26E+02	9.26E+02
14274829	Th-228+D	pCi/g		3.57E-02	3.57E-02		2.80E-02	2.80E-02		5.84E-02	5.84E-02		5.84E-02	5.84E-02
14269637	Th-230	pCi/g		2.22E+00	2.22E+00		1.49E+01	1.49E+01		3.90E+01	3.90E+01		3.90E+01	3.90E+01
N2608	Th-232	pCi/g		1.95E+00	1.95E+00		1.35E+01	1.35E+01		3.57E+01	3.57E+01		3.57E+01	3.57E+01
13966295	U-234	pCi/g		2.84E+00	2.84E+00		1.98E+01	1.98E+01		5.22E+01	5.22E+01		5.22E+01	5.22E+01
15117961	U-235+D	pCi/g		4.55E-01	4.55E-01		3.95E-01	3.95E-01		8.26E-01	8.26E-01		8.26E-01	8.26E-01
24678828	U-238+D	pCi/g		1.17E+00	1.17E+00		1.71E+00	1.71E+00		3.64E+00	3.64E+00		3.64E+00	3.64E+00

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No Action value is less of the hazard- and cancer-based values.

Table A.4. Soil/Sediment No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

			Teen Recreational User			Adult Resident			Child Resident		
Parameter	Chemical	Units	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
3268879	OCDD	mg/kg		4.15E-03	4.15E-03		1.49E-03	1.49E-03		1.49E-03	1.49E-03
39001020	OCDF	mg/kg		4.15E-03	4.15E-03		1.49E-03	1.49E-03		1.49E-03	1.49E-03
36088229	PeCDD, 2,3,7,8-	mg/kg		8.29E-06	8.29E-06		2.99E-06	2.99E-06		2.99E-06	2.99E-06
57117416	PeCDF, 1,2,3,7,8-	mg/kg		8.29E-06	8.29E-06		2.99E-06	2.99E-06		2.99E-06	2.99E-06
57117314	PeCDF, 2,3,4,7,8-	mg/kg		8.29E-05	8.29E-05		2.99E-05	2.99E-05		2.99E-05	2.99E-05
85018	Phenanthrene	mg/kg									
1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		3.64E+00	3.64E+00		1.64E+00	1.64E+00		1.64E+00	1.64E+00
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		1.33E-02	1.33E-02		6.70E-03	6.70E-03		6.70E-03	6.70E-03
129000	Pyrene	mg/kg	1.08E+02		1.08E+02	1.40E+02		1.40E+02	2.57E+01		2.57E+01
1746016	TCDD, 2,3,7,8-	mg/kg		4.15E-06	4.15E-06		1.49E-06	1.49E-06		1.49E-06	1.49E-06
51207319	TCDF, 2,3,7,8-	mg/kg		4.15E-05	4.15E-05		1.49E-05	1.49E-05		1.49E-05	1.49E-05
127184	Tetrachloroethylene	mg/kg	5.24E+01	2.70E+00	2.70E+00	5.19E+01	1.17E+00	1.17E+00	9.66E+00	1.17E+00	1.17E+00
79016	Trichloroethylene	mg/kg	4.21E+00	1.80E+00	1.80E+00	3.72E+00	7.92E-01	7.92E-01	7.41E-01	7.92E-01	7.41E-01
75014	Vinyl Chloride	mg/kg	1.10E+01	9.54E-02	9.54E-02	7.59E+00	4.00E-02	4.00E-02	1.49E+00	4.00E-02	4.00E-02
1330207	Xylene, Mixture	mg/kg	1.24E+03		1.24E+03	5.18E+02		5.18E+02	1.07E+02		1.07E+02
108383	Xylene, m-	mg/kg	6.56E+03		6.56E+03	3.25E+03		3.25E+03	6.55E+02		6.55E+02
95476	Xylene, o-	mg/kg	6.60E+03		6.60E+03	3.27E+03		3.27E+03	6.59E+02		6.59E+02
106423	Xylene, p-	mg/kg									
14596102	Am-241	pCi/g		1.16E+01	1.16E+01		8.36E-01	8.36E-01		8.36E-01	8.36E-01
10198400	Co-60	pCi/g		3.67E-02	3.67E-02		2.63E-03	2.63E-03		2.63E-03	2.63E-03
10045973	Cs-137+D	pCi/g		1.78E-01	1.78E-01		1.28E-02	1.28E-02		1.28E-02	1.28E-02
13994202	Np-237+D	pCi/g		5.65E-01	5.65E-01		4.05E-02	4.05E-02		4.05E-02	4.05E-02
13981163	Pu-238	pCi/g		3.10E+01	3.10E+01		2.27E+00	2.27E+00		2.27E+00	2.27E+00
15117483	Pu-239	pCi/g		3.03E+01	3.03E+01		2.22E+00	2.22E+00		2.22E+00	2.22E+00
14119336	Pu-240	pCi/g		3.05E+01	3.05E+01		2.23E+00	2.23E+00		2.23E+00	2.23E+00
13982633	Ra-226+D	pCi/g		5.34E-02	5.34E-02		3.82E-03	3.82E-03		3.82E-03	3.82E-03
14859677	Rn-222+D	pCi/g		7.06E+07	7.06E+07		1.51E+07	1.51E+07		1.51E+07	1.51E+07
10098972	Sr-90+D	pCi/g		1.67E+01	1.67E+01		1.20E+00	1.20E+00		1.20E+00	1.20E+00
14133767	Tc-99	pCi/g		9.26E+02	9.26E+02		6.74E+01	6.74E+01		6.74E+01	6.74E+01
14274829	Th-228+D	pCi/g		5.84E-02	5.84E-02		4.18E-03	4.18E-03		4.18E-03	4.18E-03
14269637	Th-230	pCi/g		3.90E+01	3.90E+01		2.85E+00	2.85E+00		2.85E+00	2.85E+00
N2608	Th-232	pCi/g		3.57E+01	3.57E+01		2.61E+00	2.61E+00		2.61E+00	2.61E+00
13966295	U-234	pCi/g		5.22E+01	5.22E+01		3.81E+00	3.81E+00		3.81E+00	3.81E+00
15117961	U-235+D	pCi/g		8.26E-01	8.26E-01		5.91E-02	5.91E-02		5.91E-02	5.91E-02
24678828	U-238+D	pCi/g		3.64E+00	3.64E+00		2.61E-01	2.61E-01		2.61E-01	2.61E-01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No Action [illegible] less of the hazard- and cancer-based values.

Table A.5. Groundwater No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Parameter	Chemical	Units	Adult Resident			Child Resident		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action
7440360	Antimony (metallic)	mg/L	1.34E-03		1.34E-03	5.64E-04		5.64E-04
7440382	Arsenic, Inorganic	mg/L	1.09E-03	3.50E-05	3.50E-05	4.52E-04	3.50E-05	3.50E-05
7440417	Beryllium and compounds	mg/L	6.18E-03		6.18E-03	2.64E-03		2.64E-03
7440439	Cadmium (Water)	mg/L	1.54E-03		1.54E-03	6.61E-04		6.61E-04
16065831	Chromium (III) (Insoluble Salts)	mg/L	4.02E+00		4.02E+00	1.76E+00		1.76E+00
7440473	Chromium (Total)	mg/L	4.02E+00		4.02E+00	1.76E+00		1.76E+00
18540299	Chromium VI (chromic acid mists)	mg/L	1.00E-02		1.00E-02	4.23E-03		4.23E-03
7440508	Copper	mg/L	1.34E-01		1.34E-01	5.57E-02		5.57E-02
7439896	Iron	mg/L	1.08E+00		1.08E+00	4.49E-01		4.49E-01
7439921	Lead And Compounds	mg/L			1.50E-02			1.50E-02
7439965	Manganese	mg/L	8.38E-02		8.38E-02	3.50E-02		3.50E-02
7439976	Mercury, Inorganic Salts	mg/L	1.07E-03		1.07E-03	4.44E-04		4.44E-04
7439987	Molybdenum	mg/L	1.82E-02		1.82E-02	7.53E-03		7.53E-03
7440020	Nickel Soluble Salts	mg/L	7.25E-02		7.25E-02	3.01E-02		3.01E-02
7782492	Selenium	mg/L	1.82E-02		1.82E-02	7.54E-03		7.54E-03
7440224	Silver	mg/L	1.81E-02		1.81E-02	7.50E-03		7.50E-03
7791120	Thallium Chloride	mg/L	2.89E-04		2.89E-04	1.20E-04		1.20E-04
7440611	Uranium (Soluble Salts)	mg/L	2.19E-03		2.19E-03	9.06E-04		9.06E-04
7440622	Vanadium, Metallic	mg/L	2.16E-02		2.16E-02	9.25E-03		9.25E-03
7440666	Zinc (Metallic)	mg/L	1.09E+00		1.09E+00	4.50E-01		4.50E-01
83329	Acenaphthene	mg/L	4.63E-02		4.63E-02	1.36E-02		1.36E-02
208968	Acenaphthylene	mg/L						
107131	Acrylonitrile	mg/L	7.39E-04	4.26E-05	4.26E-05	1.70E-04	4.26E-05	4.26E-05
120127	Anthracene	mg/L	2.90E-01		2.90E-01	7.66E-02		7.66E-02
12674112	Aroclor 1016	mg/L	9.85E-05	5.28E-05	5.28E-05	4.68E-05	5.28E-05	4.68E-05
11104282	Aroclor 1221	mg/L		1.12E-04	1.12E-04		1.12E-04	1.12E-04
11141165	Aroclor 1232	mg/L		1.28E-04	1.28E-04		1.28E-04	1.28E-04
53469219	Aroclor 1242	mg/L		1.23E-04	1.23E-04		1.23E-04	1.23E-04
12672296	Aroclor 1248	mg/L		7.75E-05	7.75E-05		7.75E-05	7.75E-05
11097691	Aroclor 1254	mg/L	4.28E-05	7.93E-05	4.28E-05	1.94E-05	7.93E-05	1.94E-05
11096825	Aroclor 1260	mg/L		4.28E-05	4.28E-05		4.28E-05	4.28E-05
56553	Benz[a]anthracene	mg/L		1.32E-05	1.32E-05		1.32E-05	1.32E-05
71432	Benzene	mg/L	2.18E-03	3.85E-04	3.85E-04	5.04E-04	3.85E-04	3.85E-04
50328	Benzo[a]pyrene	mg/L		9.51E-07	9.51E-07		9.51E-07	9.51E-07
205992	Benzo[b]fluoranthene	mg/L		9.51E-06	9.51E-06		9.51E-06	9.51E-06
207089	Benzo[k]fluoranthene	mg/L		1.68E-04	1.68E-04		1.68E-04	1.68E-04
56235	Carbon Tetrachloride	mg/L	7.69E-04	1.81E-04	1.81E-04	1.90E-04	1.81E-04	1.81E-04
67663	Chloroform	mg/L	1.38E-04	2.18E-04	1.38E-04	2.87E-05	2.18E-04	2.87E-05
218019	Chrysene	mg/L		1.32E-03	1.32E-03		1.32E-03	1.32E-03
53703	Dibenz[a,h]anthracene	mg/L		4.56E-07	4.56E-07		4.56E-07	4.56E-07
75354	Dichloroethylene, 1,1-	mg/L	1.00E-02	4.70E-05	4.70E-05	2.46E-03	4.70E-05	4.70E-05
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	1.01E-02		1.01E-02	2.47E-03		2.47E-03
156592	Dichloroethylene, 1,2-cis-	mg/L	1.11E-02		1.11E-02	2.73E-03		2.73E-03
156605	Dichloroethylene, 1,2-trans-	mg/L	2.24E-02		2.24E-02	5.48E-03		5.48E-03
1746016	Dioxins/Furans (Total)	mg/L		6.09E-11	6.09E-11		6.09E-11	6.09E-11
100414	Ethylbenzene	mg/L	1.89E-01	4.68E-03	4.68E-03	5.63E-02	4.68E-03	4.68E-03
206440	Fluoranthene	mg/L	4.70E-02		4.70E-02	2.26E-02		2.26E-02
86737	Fluorene	mg/L	3.51E-02		3.51E-02	9.72E-03		9.72E-03
37871004	HpCDD, 2,3,7,8-	mg/L		5.45E-09	5.45E-09		5.45E-09	5.45E-09
38998753	HpCDF, 2,3,7,8-	mg/L		3.51E-08	3.51E-08		3.51E-08	3.51E-08
34465468	HxCDD, 2,3,7,8-	mg/L		3.51E-09	3.51E-09		3.51E-09	3.51E-09
55684941	HxCDF, 2,3,7,8-	mg/L		3.51E-09	3.51E-09		3.51E-09	3.51E-09
193395	Indeno[1,2,3-cd]pyrene	mg/L		6.31E-06	6.31E-06		6.31E-06	6.31E-06
91203	Naphthalene	mg/L	1.36E-03		1.36E-03	2.85E-04		2.85E-04
3268879	OCDD	mg/L		1.91E-08	1.91E-08		1.91E-08	1.91E-08
39001020	OCDF	mg/L		2.03E-08	2.03E-08		2.03E-08	2.03E-08
36088229	PeCDD, 2,3,7,8-	mg/L		2.50E-10	2.50E-10		2.50E-10	2.50E-10
57117416	PeCDF, 1,2,3,7,8-	mg/L		1.48E-10	1.48E-10		1.48E-10	1.48E-10
57117314	PeCDF, 2,3,4,7,8-	mg/L		1.29E-09	1.29E-09		1.29E-09	1.29E-09
85018	Phenanthrene	mg/L						
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		7.93E-05	7.93E-05		7.93E-05	7.93E-05
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		4.53E-04	4.53E-04		4.53E-04	4.53E-04
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		9.51E-07	9.51E-07		9.51E-07	9.51E-07
129000	Pyrene	mg/L	3.81E-02		3.81E-02	1.82E-02		1.82E-02
1746016	TCDD, 2,3,7,8-	mg/L		6.09E-11	6.09E-11		6.09E-11	6.09E-11
51207319	TCDF, 2,3,7,8-	mg/L		1.60E-09	1.60E-09		1.60E-09	1.60E-09
127184	Tetrachloroethylene	mg/L	2.02E-02	5.82E-04	5.82E-04	8.42E-03	5.82E-04	5.82E-04
79016	Trichloroethylene	mg/L	6.34E-03	1.73E-03	1.73E-03	1.60E-03	1.73E-03	1.60E-03
75014	Vinyl Chloride	mg/L	8.76E-03	3.50E-05	3.50E-05	3.06E-03	3.50E-05	3.50E-05
1330207	Xylene, Mixture	mg/L	3.07E-01		3.07E-01	6.53E-02		6.53E-02
108383	Xylene, m-	mg/L	1.80E+00		1.80E+00	4.39E-01		4.39E-01
95476	Xylene, o-	mg/L	1.80E+00		1.80E+00	4.39E-01		4.39E-01
106423	Xylene, p-	mg/L						
14596102	Am-241	pCi/L		3.71E-01	3.71E-01		3.71E-01	3.71E-01
10198400	Co-60	pCi/L		2.46E+00	2.46E+00		2.46E+00	2.46E+00
10045973	Cs-137+D	pCi/L		1.27E+00	1.27E+00		1.27E+00	1.27E+00

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.5. Groundwater No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Parameter	Chemical	Units	Adult Resident			Child Resident		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action
13994202	Np-237+D	pCi/L		5.73E-01	5.73E-01		5.73E-01	5.73E-01
13981163	Pu-238	pCi/L		2.95E-01	2.95E-01		2.95E-01	2.95E-01
15117483	Pu-239	pCi/L		2.86E-01	2.86E-01		2.86E-01	2.86E-01
14119336	Pu-240	pCi/L		2.86E-01	2.86E-01		2.86E-01	2.86E-01
13982633	Ra-226+D	pCi/L		1.00E-01	1.00E-01		1.00E-01	1.00E-01
14859677	Rn-222+D	pCi/L		8.66E-01	8.66E-01		8.66E-01	8.66E-01
10098972	Sr-90+D	pCi/L		5.22E-01	5.22E-01		5.22E-01	5.22E-01
14133767	Tc-99	pCi/L		1.40E+01	1.40E+01		1.40E+01	1.40E+01
14274829	Th-228+D	pCi/L		1.29E-01	1.29E-01		1.29E-01	1.29E-01
14269637	Th-230	pCi/L		4.24E-01	4.24E-01		4.24E-01	4.24E-01
N2608	Th-232	pCi/L		3.82E-01	3.82E-01		3.82E-01	3.82E-01
13966295	U-234	pCi/L		5.46E-01	5.46E-01		5.46E-01	5.46E-01
15117961	U-235+D	pCi/L		5.38E-01	5.38E-01		5.38E-01	5.38E-01
24678828	U-238+D	pCi/L		4.43E-01	4.43E-01		4.43E-01	4.43E-01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.6. Surface Water No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
7440360	Antimony (metallic)	mg/L	3.21E-03		3.21E-03	7.31E-03		7.31E-03	9.12E-03		9.12E-03	1.63E-02		1.63E-02
7440382	Arsenic, Inorganic	mg/L	4.94E-02	3.07E-03	3.07E-03	1.12E-01	7.00E-03	7.00E-03	6.95E-02	1.80E-03	1.80E-03	2.50E-01	4.09E-03	4.09E-03
7440417	Beryllium and compounds	mg/L	8.03E-03		8.03E-03	1.83E-02		1.83E-02	2.34E-02		2.34E-02	4.06E-02		4.06E-02
7440439	Cadmium (Water)	mg/L	2.01E-03		2.01E-03	4.57E-03		4.57E-03	5.85E-03		5.85E-03	1.02E-02		1.02E-02
16065831	Chromium (III) (Insoluble Salts)	mg/L	3.01E+00		3.01E+00	6.86E+00		6.86E+00	8.90E+00		8.90E+00	1.52E+01		1.52E+01
7440473	Chromium (Total)	mg/L	3.01E+00		3.01E+00	6.86E+00		6.86E+00	8.90E+00		8.90E+00	1.52E+01		1.52E+01
18540299	Chromium VI (chromic acid mists)	mg/L	2.41E-02		2.41E-02	5.48E-02		5.48E-02	6.84E-02		6.84E-02	1.22E-01		1.22E-01
7440508	Copper	mg/L	4.46E+00		4.46E+00	1.01E+01		1.01E+01	7.31E+00		7.31E+00	2.26E+01		2.26E+01
7439896	Iron	mg/L	1.81E+01		1.81E+01	4.11E+01		4.11E+01	3.83E+01		3.83E+01	9.14E+01		9.14E+01
7439921	Lead And Compounds	mg/L			1.50E-02			1.50E-02			1.50E-02			1.50E-02
7439965	Manganese	mg/L	3.85E-01		3.85E-01	8.78E-01		8.78E-01	1.04E+00		1.04E+00	1.95E+00		1.95E+00
7439976	Mercury, Inorganic Salts	mg/L	8.43E-03		8.43E-03	1.92E-02		1.92E-02	2.12E-02		2.12E-02	4.27E-02		4.27E-02
7439987	Molybdenum	mg/L	7.63E-01		7.63E-01	1.74E+00		1.74E+00	1.12E+00		1.12E+00	3.86E+00		3.86E+00
7440020	Nickel Soluble Salts	mg/L	2.17E+00		2.17E+00	4.94E+00		4.94E+00	3.73E+00		3.73E+00	1.10E+01		1.10E+01
7782492	Selenium	mg/L	8.83E-01		8.83E-01	2.01E+00		2.01E+00	1.20E+00		1.20E+00	4.47E+00		4.47E+00
7440224	Silver	mg/L	3.61E-01		3.61E-01	8.23E-01		8.23E-01	7.24E-01		7.24E-01	1.83E+00		1.83E+00
7791120	Thallium Chloride	mg/L	6.42E-03		6.42E-03	1.46E-02		1.46E-02	1.24E-02		1.24E-02	3.25E-02		3.25E-02
7440611	Uranium (Soluble Salts)	mg/L	2.05E-01		2.05E-01	4.66E-01		4.66E-01	1.84E-01		1.84E-01	1.04E+00		1.04E+00
7440622	Vanadium, Metallic	mg/L	2.81E-02		2.81E-02	6.40E-02		6.40E-02	8.20E-02		8.20E-02	1.42E-01		1.42E-01
7440666	Zinc (Metallic)	mg/L	2.41E+01		2.41E+01	5.48E+01		5.48E+01	4.65E+01		4.65E+01	1.22E+02		1.22E+02
83329	Acenaphthene	mg/L	2.99E-02		2.99E-02	6.80E-02		6.80E-02	8.92E-02		8.92E-02	1.51E-01		1.51E-01
208968	Acenaphthylene	mg/L												
107131	Acrylonitrile	mg/L	2.29E-01	1.19E-02	1.19E-02	5.22E-01	2.71E-02	2.71E-02	2.67E-01	5.61E-03	5.61E-03	1.16E+00	1.58E-02	1.58E-02
120127	Anthracene	mg/L	4.16E-01		4.16E-01	9.47E-01		9.47E-01	1.24E+00		1.24E+00	2.11E+00		2.11E+00
12674112	Aroclor 1016	mg/L	3.20E-05	3.20E-05		7.29E-05	7.29E-05		9.56E-05	4.97E-05	4.97E-05	1.62E-04	4.26E-05	4.26E-05
11104282	Aroclor 1221	mg/L		2.75E-04	2.75E-04		6.26E-04	6.26E-04		4.13E-04	4.13E-04		3.66E-04	3.66E-04
11141165	Aroclor 1232	mg/L		1.81E-03	1.81E-03		4.11E-03	4.11E-03		2.24E-03	2.24E-03		2.40E-03	2.40E-03
53469219	Aroclor 1242	mg/L		6.84E-04	6.84E-04		1.56E-03	1.56E-03		9.71E-04	9.71E-04		9.09E-04	9.09E-04
12672296	Aroclor 1248	mg/L		6.84E-05	6.84E-05		1.56E-04	1.56E-04		1.06E-04	1.06E-04		9.09E-05	9.09E-05
11097691	Aroclor 1254	mg/L	2.06E-05	7.23E-05	2.06E-05	4.70E-05	1.65E-04	4.70E-05	6.14E-05	1.12E-04	6.14E-05	1.05E-04	9.61E-05	9.61E-05
11096825	Aroclor 1260	mg/L		2.30E-05	2.30E-05		5.24E-05	5.24E-05		3.58E-05	3.58E-05		3.06E-05	3.06E-05
56553	Benz[a]anthracene	mg/L		5.89E-06	5.89E-06		1.34E-05	1.34E-05		9.18E-06	9.18E-06		7.84E-06	7.84E-06
71432	Benzene	mg/L	5.56E-02	9.44E-03	9.44E-03	1.27E-01	2.15E-02	2.15E-02	1.48E-01	1.24E-02	1.24E-02	2.82E-01	1.26E-02	1.26E-02
50328	Benzo[a]pyrene	mg/L		3.98E-07	3.98E-07		9.06E-07	9.06E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
205992	Benzo[b]fluoranthene	mg/L		3.98E-06	3.98E-06		9.06E-06	9.06E-06		6.20E-06	6.20E-06		5.29E-06	5.29E-06
207089	Benzo[k]fluoranthene	mg/L		7.96E-05	7.96E-05		1.81E-04	1.81E-04		1.24E-04	1.24E-04		1.06E-04	1.06E-04
56235	Carbon Tetrachloride	mg/L	8.30E-03	2.55E-03	2.55E-03	1.89E-02	5.82E-03	5.82E-03	2.30E-02	3.56E-03	3.56E-03	4.20E-02	3.40E-03	3.40E-03
67663	Chloroform	mg/L	9.02E-02	4.14E-02	4.14E-02	2.05E-01	9.43E-02	9.43E-02	2.55E-01	5.92E-02	5.92E-02	4.57E-01	5.51E-02	5.51E-02
218019	Chrysene	mg/L		5.89E-04	5.89E-04		1.34E-03	1.34E-03		9.18E-04	9.18E-04		7.84E-04	7.84E-04
53703	Dibenz[a,h]anthracene	mg/L		1.77E-07	1.77E-07		4.03E-07	4.03E-07		2.76E-07	2.76E-07		2.35E-07	2.35E-07
75354	Dichloroethylene, 1,1-	mg/L	4.06E-01	2.11E-03	2.11E-03	9.24E-01	4.79E-03	4.79E-03	9.29E-01	2.26E-03	2.26E-03	2.05E+00	2.80E-03	2.80E-03
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	2.63E+00		2.63E+00	5.98E+00		5.98E+00	2.62E+00		2.62E+00	1.33E+01		1.33E+01
156592	Dichloroethylene, 1,2-cis-	mg/L	4.01E-01		4.01E-01	9.14E-01		9.14E-01	9.43E-01		9.43E-01	2.03E+00		2.03E+00
156605	Dichloroethylene, 1,2-trans-	mg/L	7.30E+00		7.30E+00	1.66E+01		1.66E+01	6.24E+00		6.24E+00	3.69E+01		3.69E+01
1746016	Dioxins/Furans (Total)	mg/L		2.68E-11	2.68E-11		6.09E-11	6.09E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
100414	Ethylbenzene	mg/L	5.26E-01		5.26E-01	1.20E+00		1.20E+00	1.52E+00		1.52E+00	2.66E+00		2.66E+00
206440	Fluoranthene	mg/L	1.38E-02		1.38E-02	3.15E-02		3.15E-02	4.13E-02		4.13E-02	7.00E-02		7.00E-02
86737	Fluorene	mg/L	3.21E-02		3.21E-02	7.31E-02		7.31E-02	9.57E-02		9.57E-02	1.63E-01		1.63E-01
37871004	HpCDD, 2,3,7,8-	mg/L		2.34E-09	2.34E-09		5.33E-09	5.33E-09		3.65E-09	3.65E-09		3.12E-09	3.12E-09
38998753	HpCDF, 2,3,7,8-	mg/L								2.89E-06	2.89E-06			
34465468	HxCDD, 2,3,7,8-	mg/L								2.89E-07	2.89E-07			
55684941	HxCDF, 2,3,7,8-	mg/L								2.89E-07	2.89E-07			
193395	Indeno[1,2,3-cd]pyrene	mg/L		2.51E-06	2.51E-06		5.72E-06	5.72E-06		3.92E-06	3.92E-06		3.34E-06	3.34E-06
91203	Naphthalene	mg/L	9.31E-02		9.31E-02	2.12E-01		2.12E-01	2.70E-01		2.70E-01	4.71E-01		4.71E-01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a ELCR of 1E-06.
No action level is less of hazard- and cancer-based values.

Table A.6. Surface Water No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
7440360	Antimony (metallic)	mg/L	4.41E-03		4.41E-03	3.12E-03		3.12E-03	7.40E-03		7.40E-03	4.66E-03		4.66E-03
7440382	Arsenic, Inorganic	mg/L	2.01E-02	1.80E-03	1.80E-03	4.79E-02	4.09E-03	4.09E-03	4.85E-02	1.80E-03	1.80E-03	7.17E-02	4.09E-03	4.09E-03
7440417	Beryllium and compounds	mg/L	1.17E-02		1.17E-02	7.80E-03		7.80E-03	1.92E-02		1.92E-02	1.17E-02		1.17E-02
7440439	Cadmium (Water)	mg/L	2.94E-03		2.94E-03	1.95E-03		1.95E-03	4.79E-03		4.79E-03	2.91E-03		2.91E-03
16065831	Chromium (III) (Insoluble Salts)	mg/L	4.55E+00		4.55E+00	2.92E+00		2.92E+00	7.32E+00		7.32E+00	4.37E+00		4.37E+00
7440473	Chromium (Total)	mg/L	4.55E+00		4.55E+00	2.92E+00		2.92E+00	7.32E+00		7.32E+00	4.37E+00		4.37E+00
18540299	Chromium VI (chromic acid mists)	mg/L	3.31E-02		3.31E-02	2.34E-02		2.34E-02	5.55E-02		5.55E-02	3.50E-02		3.50E-02
7440508	Copper	mg/L	2.26E+00		2.26E+00	4.33E+00		4.33E+00	5.22E+00		5.22E+00	6.47E+00		6.47E+00
7439896	Iron	mg/L	1.38E+01		1.38E+01	1.75E+01		1.75E+01	2.87E+01		2.87E+01	2.62E+01		2.62E+01
7439921	Lead And Compounds	mg/L			1.50E-02			1.50E-02			1.50E-02			1.50E-02
7439965	Manganese	mg/L	4.72E-01		4.72E-01	3.74E-01		3.74E-01	8.31E-01		8.31E-01	5.59E-01		5.59E-01
7439976	Mercury, Inorganic Salts	mg/L	8.88E-03		8.88E-03	8.19E-03		8.19E-03	1.66E-02		1.66E-02	1.22E-02		1.22E-02
7439987	Molybdenum	mg/L	3.28E-01		3.28E-01	7.41E-01		7.41E-01	7.84E-01		7.84E-01	1.11E+00		1.11E+00
7440020	Nickel Soluble Salts	mg/L	1.18E+00		1.18E+00	2.10E+00		2.10E+00	2.68E+00		2.68E+00	3.15E+00		3.15E+00
7782492	Selenium	mg/L	3.41E-01		3.41E-01	8.58E-01		8.58E-01	8.31E-01		8.31E-01	1.28E+00		1.28E+00
7440224	Silver	mg/L	2.51E-01		2.51E-01	3.51E-01		3.51E-01	5.37E-01		5.37E-01	5.24E-01		5.24E-01
7791120	Thallium Chloride	mg/L	4.21E-03		4.21E-03	6.24E-03		6.24E-03	9.13E-03		9.13E-03	9.32E-03		9.32E-03
7440611	Uranium (Soluble Salts)	mg/L	4.64E-02		4.64E-02	1.99E-01		1.99E-01	1.22E-01		1.22E-01	2.97E-01		2.97E-01
7440622	Vanadium, Metallic	mg/L	4.11E-02		4.11E-02	2.73E-02		2.73E-02	6.71E-02		6.71E-02	4.08E-02		4.08E-02
7440666	Zinc (Metallic)	mg/L	1.58E+01		1.58E+01	2.34E+01		2.34E+01	3.42E+01		3.42E+01	3.50E+01		3.50E+01
83329	Acenaphthene	mg/L	4.63E-02		4.63E-02	2.90E-02		2.90E-02	7.36E-02		7.36E-02	4.34E-02		4.34E-02
208968	Acenaphthylene	mg/L												
107131	Acrylonitrile	mg/L	7.23E-02	5.61E-03	5.61E-03	2.23E-01	1.58E-02	1.58E-02	1.82E-01	5.61E-03	5.61E-03	3.33E-01	1.58E-02	1.58E-02
120127	Anthracene	mg/L	6.36E-01		6.36E-01	4.04E-01		4.04E-01	1.02E+00		1.02E+00	6.04E-01		6.04E-01
12674112	Aroclor 1016	mg/L	4.97E-05	4.97E-05	4.97E-05	3.11E-05	4.26E-05	3.11E-05	7.89E-05	4.97E-05	4.97E-05	4.65E-05	4.26E-05	4.26E-05
11104282	Aroclor 1221	mg/L		4.13E-04	4.13E-04		3.66E-04	3.66E-04		4.13E-04	4.13E-04		3.66E-04	3.66E-04
11141165	Aroclor 1232	mg/L		2.24E-03	2.24E-03		2.40E-03	2.40E-03		2.24E-03	2.24E-03		2.40E-03	2.40E-03
53469219	Aroclor 1242	mg/L		9.71E-04	9.71E-04		9.09E-04	9.09E-04		9.71E-04	9.71E-04		9.09E-04	9.09E-04
12672296	Aroclor 1248	mg/L		1.06E-04	1.06E-04		9.09E-05	9.09E-05		1.06E-04	1.06E-04		9.09E-05	9.09E-05
11097691	Aroclor 1254	mg/L	3.17E-05	1.12E-04	3.17E-05	2.00E-05	9.61E-05	2.00E-05	5.06E-05	1.12E-04	5.06E-05	3.00E-05	9.61E-05	3.00E-05
11096825	Aroclor 1260	mg/L		3.58E-05	3.58E-05		3.06E-05	3.06E-05		3.58E-05	3.58E-05		3.06E-05	3.06E-05
56553	Benz[a]anthracene	mg/L		9.18E-06	9.18E-06		7.84E-06	7.84E-06		9.18E-06	9.18E-06		7.84E-06	7.84E-06
71432	Benzene	mg/L	6.59E-02	1.24E-02	1.24E-02	5.40E-02	1.26E-02	1.26E-02	1.18E-01	1.24E-02	1.24E-02	8.07E-02	1.26E-02	1.26E-02
50328	Benzo[a]pyrene	mg/L		6.20E-07	6.20E-07		5.29E-07	5.29E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
205992	Benzo[b]fluoranthene	mg/L		6.20E-06	6.20E-06		5.29E-06	5.29E-06		6.20E-06	6.20E-06		5.29E-06	5.29E-06
207089	Benzo[k]fluoranthene	mg/L		1.24E-04	1.24E-04		1.06E-04	1.06E-04		1.24E-04	1.24E-04		1.06E-04	1.06E-04
56235	Carbon Tetrachloride	mg/L	1.08E-02	3.56E-03	3.56E-03	8.06E-03	3.40E-03	3.40E-03	1.85E-02	3.56E-03	3.56E-03	1.21E-02	3.40E-03	3.40E-03
67663	Chloroform	mg/L	1.22E-01	5.92E-02	5.92E-02	8.76E-02	5.51E-02	5.51E-02	2.06E-01	5.92E-02	5.92E-02	1.31E-01	5.51E-02	5.51E-02
218019	Chrysene	mg/L		9.18E-04	9.18E-04		7.84E-04	7.84E-04		9.18E-04	9.18E-04		7.84E-04	7.84E-04
53703	Dibenz[a,h]anthracene	mg/L		2.76E-07	2.76E-07		2.35E-07	2.35E-07		2.76E-07	2.76E-07		2.35E-07	2.35E-07
75354	Dichloroethylene, 1,1-	mg/L	3.57E-01	2.26E-03	2.26E-03	3.94E-01	2.80E-03	2.80E-03	7.10E-01	2.26E-03	2.26E-03	5.89E-01	2.80E-03	2.80E-03
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	6.80E-01		6.80E-01	2.55E+00		2.55E+00	1.76E+00		1.76E+00	3.81E+00		3.81E+00
156592	Dichloroethylene, 1,2-cis-	mg/L	3.71E-01		3.71E-01	3.90E-01		3.90E-01	7.25E-01		7.25E-01	5.83E-01		5.83E-01
156605	Dichloroethylene, 1,2-trans-	mg/L	1.56E+00		1.56E+00	7.09E+00		7.09E+00	4.14E+00		4.14E+00	1.06E+01		1.06E+01
1746016	Dioxins/Furans (Total)	mg/L		4.17E-11	4.17E-11		3.56E-11	3.56E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
100414	Ethylbenzene	mg/L	7.55E-01		7.55E-01	5.11E-01		5.11E-01	1.24E+00		1.24E+00	7.64E-01		7.64E-01
206440	Fluoranthene	mg/L	2.15E-02		2.15E-02	1.34E-02		1.34E-02	3.41E-02		3.41E-02	2.01E-02		2.01E-02
86737	Fluorene	mg/L	4.96E-02		4.96E-02	3.12E-02		3.12E-02	7.89E-02		7.89E-02	4.66E-02		4.66E-02
37871004	HpCDD, 2,3,7,8-	mg/L		3.65E-09	3.65E-09		3.12E-09	3.12E-09		3.65E-09	3.65E-09		3.12E-09	3.12E-09
38998753	HpCDF, 2,3,7,8-	mg/L		2.89E-06	2.89E-06					2.89E-06	2.89E-06			
34465468	HxCDD, 2,3,7,8-	mg/L		2.89E-07	2.89E-07					2.89E-07	2.89E-07			
55684941	HxCDF, 2,3,7,8-	mg/L		2.89E-07	2.89E-07					2.89E-07	2.89E-07			
193395	Indeno[1,2,3-cd]pyrene	mg/L		3.92E-06	3.92E-06		3.34E-06	3.34E-06		3.92E-06	3.92E-06		3.34E-06	3.34E-06
91203	Naphthalene	mg/L	1.35E-01		1.35E-01	9.04E-02		9.04E-02	2.21E-01		2.21E-01	1.35E-01		1.35E-01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a ELCR of 1E-06.
No action l[illegible]less of hazard- and cancer-based values.

Table A.6. Surface Water No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
3268879	OCDD	mg/L		7.35E-09	7.35E-09		1.67E-08	1.67E-08		1.15E-08	1.15E-08		9.77E-09	9.77E-09
39001020	OCDF	mg/L		7.81E-09	7.81E-09		1.78E-08	1.78E-08		1.22E-08	1.22E-08		1.04E-08	1.04E-08
36088229	PeCDD, 2,3,7,8-	mg/L		1.41E-10	1.41E-10		3.22E-10	3.22E-10		2.20E-10	2.20E-10		1.88E-10	1.88E-10
57117416	PeCDF, 1,2,3,7,8-	mg/L		6.81E-11	6.81E-11		1.55E-10	1.55E-10		1.06E-10	1.06E-10		9.06E-11	9.06E-11
57117314	PeCDF, 2,3,4,7,8-	mg/L		5.76E-10	5.76E-10		1.31E-09	1.31E-09		8.98E-10	8.98E-10		7.67E-10	7.67E-10
85018	Phenanthrene	mg/L												
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		7.23E-05	7.23E-05		1.65E-04	1.65E-04		1.12E-04	1.12E-04		9.61E-05	9.61E-05
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		4.13E-04	4.13E-04		9.40E-04	9.40E-04		6.38E-04	6.38E-04		5.49E-04	5.49E-04
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		3.98E-07	3.98E-07		9.06E-07	9.06E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
129000	Pyrene	mg/L	1.17E-02		1.17E-02	2.66E-02		2.66E-02	3.49E-02		3.49E-02	5.91E-02		5.91E-02
1746016	TCDD, 2,3,7,8-	mg/L		2.68E-11	2.68E-11		6.09E-11	6.09E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
51207319	TCDF, 2,3,7,8-	mg/L		1.07E-09	1.07E-09		2.44E-09	2.44E-09		1.66E-09	1.66E-09		1.42E-09	1.42E-09
127184	Tetrachloroethylene	mg/L	1.09E-02	5.84E-04	5.84E-04	2.47E-02	1.33E-03	1.33E-03	3.23E-02	9.02E-04	9.02E-04	5.49E-02	7.77E-04	7.77E-04
79016	Trichloroethylene	mg/L	2.26E-02	9.58E-03	9.58E-03	5.14E-02	2.18E-02	2.18E-02	6.60E-02	1.44E-02	1.44E-02	1.14E-01	1.27E-02	1.27E-02
75014	Vinyl Chloride	mg/L	1.65E-01	1.10E-03	1.10E-03	3.76E-01	2.50E-03	2.50E-03	3.59E-01	1.10E-03	1.10E-03	8.35E-01	1.46E-03	1.46E-03
1330207	Xylene, Mixture	mg/L	7.78E+00		7.78E+00	1.77E+01		1.77E+01	2.27E+01		2.27E+01	3.94E+01		3.94E+01
108383	Xylene, m-	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	2.34E+01		2.34E+01	4.06E+01		4.06E+01
95476	Xylene, o-	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	2.34E+01		2.34E+01	4.06E+01		4.06E+01
106423	Xylene, p-	mg/L												
14596102	Am-241	pCi/L								4.11E+01	4.11E+01			
10198400	Co-60	pCi/L								2.72E+02	2.72E+02			
10045973	Cs-137+D	pCi/L								1.41E+02	1.41E+02			
13994202	Np-237+D	pCi/L								6.34E+01	6.34E+01			
13981163	Pu-238	pCi/L								3.26E+01	3.26E+01			
15117483	Pu-239	pCi/L								3.17E+01	3.17E+01			
14119336	Pu-240	pCi/L								3.17E+01	3.17E+01			
13982633	Ra-226+D	pCi/L								1.11E+01	1.11E+01			
14859677	Rn-222+D	pCi/L												
10098972	Sr-90+D	pCi/L								5.78E+01	5.78E+01			
14133767	Tc-99	pCi/L								1.55E+03	1.55E+03			
14274829	Th-228+D	pCi/L								1.42E+01	1.42E+01			
14269637	Th-230	pCi/L								4.70E+01	4.70E+01			
N2608	Th-232	pCi/L								4.23E+01	4.23E+01			
13966295	U-234	pCi/L								6.04E+01	6.04E+01			
15117961	U-235+D	pCi/L								5.95E+01	5.95E+01			
24678828	U-238+D	pCi/L								4.91E+01	4.91E+01			

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a ELCR of 1E-06.
No action level is less of hazard- and cancer-based values.

Table A.6. Surface Water No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

			Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
Parameter	Chemical	Units	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
3268879	OCDD	mg/L		1.15E-08	1.15E-08		9.77E-09	9.77E-09		1.15E-08	1.15E-08		9.77E-09	9.77E-09
39001020	OCDF	mg/L		1.22E-08	1.22E-08		1.04E-08	1.04E-08		1.22E-08	1.22E-08		1.04E-08	1.04E-08
36088229	PeCDD, 2,3,7,8-	mg/L		2.20E-10	2.20E-10		1.88E-10	1.88E-10		2.20E-10	2.20E-10		1.88E-10	1.88E-10
57117416	PeCDF, 1,2,3,7,8-	mg/L		1.06E-10	1.06E-10		9.06E-11	9.06E-11		1.06E-10	1.06E-10		9.06E-11	9.06E-11
57117314	PeCDF, 2,3,4,7,8-	mg/L		8.98E-10	8.98E-10		7.67E-10	7.67E-10		8.98E-10	8.98E-10		7.67E-10	7.67E-10
85018	Phenanthrene	mg/L												
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		1.12E-04	1.12E-04		9.61E-05	9.61E-05		1.12E-04	1.12E-04		9.61E-05	9.61E-05
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		6.38E-04	6.38E-04		5.49E-04	5.49E-04		6.38E-04	6.38E-04		5.49E-04	5.49E-04
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		6.20E-07	6.20E-07		5.29E-07	5.29E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
129000	Pyrene	mg/L	1.81E-02		1.81E-02	1.13E-02		1.13E-02	2.88E-02		2.88E-02	1.69E-02		1.69E-02
1746016	TCDD, 2,3,7,8-	mg/L		4.17E-11	4.17E-11		3.56E-11	3.56E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
51207319	TCDF, 2,3,7,8-	mg/L		1.66E-09	1.66E-09		1.42E-09	1.42E-09		1.66E-09	1.66E-09		1.42E-09	1.42E-09
127184	Tetrachloroethylene	mg/L	1.67E-02	9.02E-04	9.02E-04	1.05E-02	7.77E-04	7.77E-04	2.66E-02	9.02E-04	9.02E-04	1.57E-02	7.77E-04	7.77E-04
79016	Trichloroethylene	mg/L	3.32E-02	1.44E-02	1.44E-02	2.19E-02	1.27E-02	1.27E-02	5.40E-02	1.44E-02	1.44E-02	3.28E-02	1.27E-02	1.27E-02
75014	Vinyl Chloride	mg/L	1.32E-01	1.10E-03	1.10E-03	1.60E-01	1.46E-03	1.46E-03	2.71E-01	1.10E-03	1.10E-03	2.39E-01	1.46E-03	1.46E-03
1330207	Xylene, Mixture	mg/L	1.14E+01		1.14E+01	7.55E+00		7.55E+00	1.86E+01		1.86E+01	1.13E+01		1.13E+01
108383	Xylene, m-	mg/L	1.17E+01		1.17E+01	7.80E+00		7.80E+00	1.92E+01		1.92E+01	1.17E+01		1.17E+01
95476	Xylene, o-	mg/L	1.17E+01		1.17E+01	7.80E+00		7.80E+00	1.92E+01		1.92E+01	1.17E+01		1.17E+01
106423	Xylene, p-	mg/L												
14596102	Am-241	pCi/L		4.11E+01	4.11E+01					4.11E+01	4.11E+01			
10198400	Co-60	pCi/L		2.72E+02	2.72E+02					2.72E+02	2.72E+02			
10045973	Cs-137+D	pCi/L		1.41E+02	1.41E+02					1.41E+02	1.41E+02			
13994202	Np-237+D	pCi/L		6.34E+01	6.34E+01					6.34E+01	6.34E+01			
13981163	Pu-238	pCi/L		3.26E+01	3.26E+01					3.26E+01	3.26E+01			
15117483	Pu-239	pCi/L		3.17E+01	3.17E+01					3.17E+01	3.17E+01			
14119336	Pu-240	pCi/L		3.17E+01	3.17E+01					3.17E+01	3.17E+01			
13982633	Ra-226+D	pCi/L		1.11E+01	1.11E+01					1.11E+01	1.11E+01			
14859677	Rn-222+D	pCi/L												
10098972	Sr-90+D	pCi/L		5.78E+01	5.78E+01					5.78E+01	5.78E+01			
14133767	Tc-99	pCi/L		1.55E+03	1.55E+03					1.55E+03	1.55E+03			
14274829	Th-228+D	pCi/L		1.42E+01	1.42E+01					1.42E+01	1.42E+01			
14269637	Th-230	pCi/L		4.70E+01	4.70E+01					4.70E+01	4.70E+01			
N2608	Th-232	pCi/L		4.23E+01	4.23E+01					4.23E+01	4.23E+01			
13966295	U-234	pCi/L		6.04E+01	6.04E+01					6.04E+01	6.04E+01			
15117961	U-235+D	pCi/L		5.95E+01	5.95E+01					5.95E+01	5.95E+01			
24678828	U-238+D	pCi/L		4.91E+01	4.91E+01					4.91E+01	4.91E+01			

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a ELCR of 1E-06.
No action le less of hazard- and cancer-based values.

Table A.6. Surface Water No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

			Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
Parameter	Chemical	Units	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
7440360	Antimony (metallic)	mg/L	3.21E-03		3.21E-03	7.31E-03		7.31E-03	9.12E-03		9.12E-03	1.63E-02		1.63E-02
7440382	Arsenic, Inorganic	mg/L	4.94E-02	3.07E-03	3.07E-03	1.12E-01	7.00E-03	7.00E-03	6.95E-02	1.80E-03	1.80E-03	2.50E-01	4.09E-03	4.09E-03
7440417	Beryllium and compounds	mg/L	8.03E-03		8.03E-03	1.83E-02		1.83E-02	2.34E-02		2.34E-02	4.06E-02		4.06E-02
7440439	Cadmium (Water)	mg/L	2.01E-03		2.01E-03	4.57E-03		4.57E-03	5.85E-03		5.85E-03	1.02E-02		1.02E-02
16065831	Chromium (III) (Insoluble Salts)	mg/L	3.01E+00		3.01E+00	6.86E+00		6.86E+00	8.90E+00		8.90E+00	1.52E+01		1.52E+01
7440473	Chromium (Total)	mg/L	3.01E+00		3.01E+00	6.86E+00		6.86E+00	8.90E+00		8.90E+00	1.52E+01		1.52E+01
18540299	Chromium VI (chromic acid mists)	mg/L	2.41E-02		2.41E-02	5.48E-02		5.48E-02	6.84E-02		6.84E-02	1.22E-01		1.22E-01
7440508	Copper	mg/L	4.46E+00		4.46E+00	1.01E+01		1.01E+01	7.31E+00		7.31E+00	2.26E+01		2.26E+01
7439896	Iron	mg/L	1.81E+01		1.81E+01	4.11E+01		4.11E+01	3.83E+01		3.83E+01	9.14E+01		9.14E+01
7439921	Lead And Compounds	mg/L			1.50E-02			1.50E-02			1.50E-02			1.50E-02
7439965	Manganese	mg/L	3.85E-01		3.85E-01	8.78E-01		8.78E-01	1.04E+00		1.04E+00	1.95E+00		1.95E+00
7439976	Mercury, Inorganic Salts	mg/L	8.43E-03		8.43E-03	1.92E-02		1.92E-02	2.12E-02		2.12E-02	4.27E-02		4.27E-02
7439987	Molybdenum	mg/L	7.63E-01		7.63E-01	1.74E+00		1.74E+00	1.12E+00		1.12E+00	3.86E+00		3.86E+00
7440020	Nickel Soluble Salts	mg/L	2.17E+00		2.17E+00	4.94E+00		4.94E+00	3.73E+00		3.73E+00	1.10E+01		1.10E+01
7782492	Selenium	mg/L	8.83E-01		8.83E-01	2.01E+00		2.01E+00	1.20E+00		1.20E+00	4.47E+00		4.47E+00
7440224	Silver	mg/L	3.61E-01		3.61E-01	8.23E-01		8.23E-01	7.24E-01		7.24E-01	1.83E+00		1.83E+00
7791120	Thallium Chloride	mg/L	6.42E-03		6.42E-03	1.46E-02		1.46E-02	1.24E-02		1.24E-02	3.25E-02		3.25E-02
7440611	Uranium (Soluble Salts)	mg/L	2.05E-01		2.05E-01	4.66E-01		4.66E-01	1.84E-01		1.84E-01	1.04E+00		1.04E+00
7440622	Vanadium, Metallic	mg/L	2.81E-02		2.81E-02	6.40E-02		6.40E-02	8.20E-02		8.20E-02	1.42E-01		1.42E-01
7440666	Zinc (Metallic)	mg/L	2.41E+01		2.41E+01	5.48E+01		5.48E+01	4.65E+01		4.65E+01	1.22E+02		1.22E+02
83329	Acenaphthene	mg/L	2.99E-02		2.99E-02	6.80E-02		6.80E-02	8.92E-02		8.92E-02	1.51E-01		1.51E-01
208968	Acenaphthylene	mg/L												
107131	Acrylonitrile	mg/L	2.29E-01	1.19E-02	1.19E-02	5.22E-01	2.71E-02	2.71E-02	2.67E-01	5.61E-03	5.61E-03	1.16E+00	1.58E-02	1.58E-02
120127	Anthracene	mg/L	4.16E-01		4.16E-01	9.47E-01		9.47E-01	1.24E+00		1.24E+00	2.11E+00		2.11E+00
12674112	Aroclor 1016	mg/L	3.20E-05	3.20E-05		7.29E-05	7.29E-05		9.56E-05	4.97E-05	4.97E-05	1.62E-04	4.26E-05	4.26E-05
11104282	Aroclor 1221	mg/L		2.75E-04	2.75E-04		6.26E-04	6.26E-04		4.13E-04	4.13E-04		3.66E-04	3.66E-04
11141165	Aroclor 1232	mg/L		1.81E-03	1.81E-03		4.11E-03	4.11E-03		2.24E-03	2.24E-03		2.40E-03	2.40E-03
53469219	Aroclor 1242	mg/L		6.84E-04	6.84E-04		1.56E-03	1.56E-03		9.71E-04	9.71E-04		9.09E-04	9.09E-04
12672296	Aroclor 1248	mg/L		6.84E-05	6.84E-05		1.56E-04	1.56E-04		1.06E-04	1.06E-04		9.09E-05	9.09E-05
11097691	Aroclor 1254	mg/L	2.06E-05	7.23E-05	2.06E-05	4.70E-05	1.65E-04	4.70E-05	6.14E-05	1.12E-04	6.14E-05	1.05E-04	9.61E-05	9.61E-05
11096825	Aroclor 1260	mg/L		2.30E-05	2.30E-05		5.24E-05	5.24E-05		3.58E-05	3.58E-05		3.06E-05	3.06E-05
56553	Benz[a]anthracene	mg/L		5.89E-06	5.89E-06		1.34E-05	1.34E-05		9.18E-06	9.18E-06		7.84E-06	7.84E-06
71432	Benzene	mg/L	5.56E-02	9.44E-03	9.44E-03	1.27E-01	2.15E-02	2.15E-02	1.48E-01	1.24E-02	1.24E-02	2.82E-01	1.26E-02	1.26E-02
50328	Benzo[a]pyrene	mg/L		3.98E-07	3.98E-07		9.06E-07	9.06E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
205992	Benzo[b]fluoranthene	mg/L		3.98E-06	3.98E-06		9.06E-06	9.06E-06		6.20E-06	6.20E-06		5.29E-06	5.29E-06
207089	Benzo[k]fluoranthene	mg/L		7.96E-05	7.96E-05		1.81E-04	1.81E-04		1.24E-04	1.24E-04		1.06E-04	1.06E-04
56235	Carbon Tetrachloride	mg/L	8.30E-03	2.55E-03	2.55E-03	1.89E-02	5.82E-03	5.82E-03	2.30E-02	3.56E-03	3.56E-03	4.20E-02	3.40E-03	3.40E-03
67663	Chloroform	mg/L	9.02E-02	4.14E-02	4.14E-02	2.05E-01	9.43E-02	9.43E-02	2.55E-01	5.92E-02	5.92E-02	4.57E-01	5.51E-02	5.51E-02
218019	Chrysene	mg/L		5.89E-04	5.89E-04		1.34E-03	1.34E-03		9.18E-04	9.18E-04		7.84E-04	7.84E-04
53703	Dibenz[a.h]anthracene	mg/L		1.77E-07	1.77E-07		4.03E-07	4.03E-07		2.76E-07	2.76E-07		2.35E-07	2.35E-07
75354	Dichloroethylene, 1,1-	mg/L	4.06E-01	2.11E-03	2.11E-03	9.24E-01	4.79E-03	4.79E-03	9.29E-01	2.26E-03	2.26E-03	2.05E+00	2.80E-03	2.80E-03
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	2.63E+00		2.63E+00	5.98E+00		5.98E+00	2.62E+00		2.62E+00	1.33E+01		1.33E+01
156592	Dichloroethylene, 1,2-cis-	mg/L	4.01E-01		4.01E-01	9.14E-01		9.14E-01	9.43E-01		9.43E-01	2.03E+00		2.03E+00
156605	Dichloroethylene, 1,2-trans-	mg/L	7.30E+00		7.30E+00	1.66E+01		1.66E+01	6.24E+00		6.24E+00	3.69E+01		3.69E+01
1746016	Dioxins/Furans (Total)	mg/L		2.68E-11	2.68E-11		6.09E-11	6.09E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
100414	Ethylbenzene	mg/L	5.26E-01		5.26E-01	1.20E+00		1.20E+00	1.52E+00		1.52E+00	2.66E+00		2.66E+00
206440	Fluoranthene	mg/L	1.38E-02		1.38E-02	3.15E-02		3.15E-02	4.13E-02		4.13E-02	7.00E-02		7.00E-02
86737	Fluorene	mg/L	3.21E-02		3.21E-02	7.31E-02		7.31E-02	9.57E-02		9.57E-02	1.63E-01		1.63E-01
37871004	HpCDD, 2,3,7,8-	mg/L		2.34E-09	2.34E-09		5.33E-09	5.33E-09		3.65E-09	3.65E-09		3.12E-09	3.12E-09
38998753	HpCDF, 2,3,7,8-	mg/L								2.89E-06	2.89E-06			
34465468	HxCDD, 2,3,7,8-	mg/L								2.89E-07	2.89E-07			
55684941	HxCDF, 2,3,7,8-	mg/L								2.89E-07	2.89E-07			
193395	Indeno[1,2,3-cd]pyrene	mg/L		2.51E-06	2.51E-06		5.72E-06	5.72E-06		3.92E-06	3.92E-06		3.34E-06	3.34E-06
91203	Naphthalene	mg/L	9.31E-02		9.31E-02	2.12E-01		2.12E-01	2.70E-01		2.70E-01	4.71E-01		4.71E-01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a ELCR of 1E-06.
No action level is less of hazard- and cancer-based values.

Table A.6. Surface Water No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
7440360	Antimony (metallic)	mg/L	4.41E-03		4.41E-03	3.12E-03		3.12E-03	7.40E-03		7.40E-03	4.66E-03		4.66E-03
7440382	Arsenic, Inorganic	mg/L	2.01E-02	1.80E-03	1.80E-03	4.79E-02	4.09E-03	4.09E-03	4.85E-02	1.80E-03	1.80E-03	7.17E-02	4.09E-03	4.09E-03
7440417	Beryllium and compounds	mg/L	1.17E-02		1.17E-02	7.80E-03		7.80E-03	1.92E-02		1.92E-02	1.17E-02		1.17E-02
7440439	Cadmium (Water)	mg/L	2.94E-03		2.94E-03	1.95E-03		1.95E-03	4.79E-03		4.79E-03	2.91E-03		2.91E-03
16065831	Chromium (III) (Insoluble Salts)	mg/L	4.55E+00		4.55E+00	2.92E+00		2.92E+00	7.32E+00		7.32E+00	4.37E+00		4.37E+00
7440473	Chromium (Total)	mg/L	4.55E+00		4.55E+00	2.92E+00		2.92E+00	7.32E+00		7.32E+00	4.37E+00		4.37E+00
18540299	Chromium VI (chromic acid mists)	mg/L	3.31E-02		3.31E-02	2.34E-02		2.34E-02	5.55E-02		5.55E-02	3.50E-02		3.50E-02
7440508	Copper	mg/L	2.26E+00		2.26E+00	4.33E+00		4.33E+00	5.22E+00		5.22E+00	6.47E+00		6.47E+00
7439896	Iron	mg/L	1.38E+01		1.38E+01	1.75E+01		1.75E+01	2.87E+01		2.87E+01	2.62E+01		2.62E+01
7439921	Lead And Compounds	mg/L			1.50E-02			1.50E-02			1.50E-02			1.50E-02
7439965	Manganese	mg/L	4.72E-01		4.72E-01	3.74E-01		3.74E-01	8.31E-01		8.31E-01	5.59E-01		5.59E-01
7439976	Mercury, Inorganic Salts	mg/L	8.88E-03		8.88E-03	8.19E-03		8.19E-03	1.66E-02		1.66E-02	1.22E-02		1.22E-02
7439987	Molybdenum	mg/L	3.28E-01		3.28E-01	7.41E-01		7.41E-01	7.84E-01		7.84E-01	1.11E+00		1.11E+00
7440020	Nickel Soluble Salts	mg/L	1.18E+00		1.18E+00	2.10E+00		2.10E+00	2.68E+00		2.68E+00	3.15E+00		3.15E+00
7782492	Selenium	mg/L	3.41E-01		3.41E-01	8.58E-01		8.58E-01	8.31E-01		8.31E-01	1.28E+00		1.28E+00
7440224	Silver	mg/L	2.51E-01		2.51E-01	3.51E-01		3.51E-01	5.37E-01		5.37E-01	5.24E-01		5.24E-01
7791120	Thallium Chloride	mg/L	4.21E-03		4.21E-03	6.24E-03		6.24E-03	9.13E-03		9.13E-03	9.32E-03		9.32E-03
7440611	Uranium (Soluble Salts)	mg/L	4.64E-02		4.64E-02	1.99E-01		1.99E-01	1.22E-01		1.22E-01	2.97E-01		2.97E-01
7440622	Vanadium, Metallic	mg/L	4.11E-02		4.11E-02	2.73E-02		2.73E-02	6.71E-02		6.71E-02	4.08E-02		4.08E-02
7440666	Zinc (Metallic)	mg/L	1.58E+01		1.58E+01	2.34E+01		2.34E+01	3.42E+01		3.42E+01	3.50E+01		3.50E+01
83329	Acenaphthene	mg/L	4.63E-02		4.63E-02	2.90E-02		2.90E-02	7.36E-02		7.36E-02	4.34E-02		4.34E-02
208968	Acenaphthylene	mg/L												
107131	Acrylonitrile	mg/L	7.23E-02	5.61E-03	5.61E-03	2.23E-01	1.58E-02	1.58E-02	1.82E-01	5.61E-03	5.61E-03	3.33E-01	1.58E-02	1.58E-02
120127	Anthracene	mg/L	6.36E-01		6.36E-01	4.04E-01		4.04E-01	1.02E+00		1.02E+00	6.04E-01		6.04E-01
12674112	Aroclor 1016	mg/L	4.97E-05	4.97E-05	4.97E-05	3.11E-05	4.26E-05	3.11E-05	7.89E-05	4.97E-05	4.97E-05	4.65E-05	4.26E-05	4.26E-05
11104282	Aroclor 1221	mg/L		4.13E-04	4.13E-04		3.66E-04	3.66E-04		4.13E-04	4.13E-04		3.66E-04	3.66E-04
11141165	Aroclor 1232	mg/L		2.24E-03	2.24E-03		2.40E-03	2.40E-03		2.24E-03	2.24E-03		2.40E-03	2.40E-03
53469219	Aroclor 1242	mg/L		9.71E-04	9.71E-04		9.09E-04	9.09E-04		9.71E-04	9.71E-04		9.09E-04	9.09E-04
12672296	Aroclor 1248	mg/L		1.06E-04	1.06E-04		9.09E-05	9.09E-05		1.06E-04	1.06E-04		9.09E-05	9.09E-05
11097691	Aroclor 1254	mg/L	3.17E-05	1.12E-04	3.17E-05	2.00E-05	9.61E-05	2.00E-05	5.06E-05	1.12E-04	5.06E-05	3.00E-05	9.61E-05	3.00E-05
11096825	Aroclor 1260	mg/L		3.58E-05	3.58E-05		3.06E-05	3.06E-05		3.58E-05	3.58E-05		3.06E-05	3.06E-05
56553	Benz[a]anthracene	mg/L		9.18E-06	9.18E-06		7.84E-06	7.84E-06		9.18E-06	9.18E-06		7.84E-06	7.84E-06
71432	Benzene	mg/L	6.59E-02	1.24E-02	1.24E-02	5.40E-02	1.26E-02	1.26E-02	1.18E-01	1.24E-02	1.24E-02	8.07E-02	1.26E-02	1.26E-02
50328	Benzo[a]pyrene	mg/L		6.20E-07	6.20E-07		5.29E-07	5.29E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
205992	Benzo[b]fluoranthene	mg/L		6.20E-06	6.20E-06		5.29E-06	5.29E-06		6.20E-06	6.20E-06		5.29E-06	5.29E-06
207089	Benzo[k]fluoranthene	mg/L		1.24E-04	1.24E-04		1.06E-04	1.06E-04		1.24E-04	1.24E-04		1.06E-04	1.06E-04
56235	Carbon Tetrachloride	mg/L	1.08E-02	3.56E-03	3.56E-03	8.06E-03	3.40E-03	3.40E-03	1.85E-02	3.56E-03	3.56E-03	1.21E-02	3.40E-03	3.40E-03
67663	Chloroform	mg/L	1.22E-01	5.92E-02	5.92E-02	8.76E-02	5.51E-02	5.51E-02	2.06E-01	5.92E-02	5.92E-02	1.31E-01	5.51E-02	5.51E-02
218019	Chrysene	mg/L		9.18E-04	9.18E-04		7.84E-04	7.84E-04		9.18E-04	9.18E-04		7.84E-04	7.84E-04
53703	Dibenz[a,h]anthracene	mg/L		2.76E-07	2.76E-07		2.35E-07	2.35E-07		2.76E-07	2.76E-07		2.35E-07	2.35E-07
75354	Dichloroethylene, 1,1-	mg/L	3.57E-01	2.26E-03	2.26E-03	3.94E-01	2.80E-03	2.80E-03	7.10E-01	2.26E-03	2.26E-03	5.89E-01	2.80E-03	2.80E-03
540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	6.80E-01		6.80E-01	2.55E+00		2.55E+00	1.76E+00		1.76E+00	3.81E+00		3.81E+00
156592	Dichloroethylene, 1,2-cis-	mg/L	3.71E-01		3.71E-01	3.90E-01		3.90E-01	7.25E-01		7.25E-01	5.83E-01		5.83E-01
156605	Dichloroethylene, 1,2-trans-	mg/L	1.56E+00		1.56E+00	7.09E+00		7.09E+00	4.14E+00		4.14E+00	1.06E+01		1.06E+01
1746016	Dioxins/Furans (Total)	mg/L		4.17E-11	4.17E-11		3.56E-11	3.56E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
100414	Ethylbenzene	mg/L	7.55E-01		7.55E-01	5.11E-01		5.11E-01	1.24E+00		1.24E+00	7.64E-01		7.64E-01
206440	Fluoranthene	mg/L	2.15E-02		2.15E-02	1.34E-02		1.34E-02	3.41E-02		3.41E-02	2.01E-02		2.01E-02
86737	Fluorene	mg/L	4.96E-02		4.96E-02	3.12E-02		3.12E-02	7.89E-02		7.89E-02	4.66E-02		4.66E-02
37871004	HpCDD, 2,3,7,8-	mg/L		3.65E-09	3.65E-09		3.12E-09	3.12E-09		3.65E-09	3.65E-09		3.12E-09	3.12E-09
38998753	HpCDF, 2,3,7,8-	mg/L		2.89E-06	2.89E-06					2.89E-06	2.89E-06			
34465468	HxCDD, 2,3,7,8-	mg/L		2.89E-07	2.89E-07					2.89E-07	2.89E-07			
55684941	HxCDF, 2,3,7,8-	mg/L		2.89E-07	2.89E-07					2.89E-07	2.89E-07			
193395	Indeno[1,2,3-cd]pyrene	mg/L		3.92E-06	3.92E-06		3.34E-06	3.34E-06		3.92E-06	3.92E-06		3.34E-06	3.34E-06
91203	Naphthalene	mg/L	1.35E-01		1.35E-01	9.04E-02		9.04E-02	2.21E-01		2.21E-01	1.35E-01		1.35E-01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a ELCR of 1E-06.
No action le[illegible]'ess of hazard- and cancer-based values.

Table A.6. Surface Water No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
3268879	OCDD	mg/L		7.35E-09	7.35E-09		1.67E-08	1.67E-08		1.15E-08	1.15E-08		9.77E-09	9.77E-09
39001020	OCDF	mg/L		7.81E-09	7.81E-09		1.78E-08	1.78E-08		1.22E-08	1.22E-08		1.04E-08	1.04E-08
36088229	PeCDD, 2,3,7,8-	mg/L		1.41E-10	1.41E-10		3.22E-10	3.22E-10		2.20E-10	2.20E-10		1.88E-10	1.88E-10
57117416	PeCDF, 1,2,3,7,8-	mg/L		6.81E-11	6.81E-11		1.55E-10	1.55E-10		1.06E-10	1.06E-10		9.06E-11	9.06E-11
57117314	PeCDF, 2,3,4,7,8-	mg/L		5.76E-10	5.76E-10		1.31E-09	1.31E-09		8.98E-10	8.98E-10		7.67E-10	7.67E-10
85018	Phenanthrene	mg/L												
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		7.23E-05	7.23E-05		1.65E-04	1.65E-04		1.12E-04	1.12E-04		9.61E-05	9.61E-05
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		4.13E-04	4.13E-04		9.40E-04	9.40E-04		6.38E-04	6.38E-04		5.49E-04	5.49E-04
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		3.98E-07	3.98E-07		9.06E-07	9.06E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
129000	Pyrene	mg/L	1.17E-02		1.17E-02	2.66E-02		2.66E-02	3.49E-02		3.49E-02	5.91E-02		5.91E-02
1746016	TCDD, 2,3,7,8-	mg/L		2.68E-11	2.68E-11		6.09E-11	6.09E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
51207319	TCDF, 2,3,7,8-	mg/L		1.07E-09	1.07E-09		2.44E-09	2.44E-09		1.66E-09	1.66E-09		1.42E-09	1.42E-09
127184	Tetrachloroethylene	mg/L	1.09E-02	5.84E-04	5.84E-04	2.47E-02	1.33E-03	1.33E-03	3.23E-02	9.02E-04	9.02E-04	5.49E-02	7.77E-04	7.77E-04
79016	Trichloroethylene	mg/L	2.26E-02	9.58E-03	9.58E-03	5.14E-02	2.18E-02	2.18E-02	6.60E-02	1.44E-02	1.44E-02	1.14E-01	1.27E-02	1.27E-02
75014	Vinyl Chloride	mg/L	1.65E-01	1.10E-03	1.10E-03	3.76E-01	2.50E-03	2.50E-03	3.59E-01	1.10E-03	1.10E-03	8.35E-01	1.46E-03	1.46E-03
1330207	Xylene, Mixture	mg/L	7.78E+00		7.78E+00	1.77E+01		1.77E+01	2.27E+01		2.27E+01	3.94E+01		3.94E+01
108383	Xylene, m-	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	2.34E+01		2.34E+01	4.06E+01		4.06E+01
95476	Xylene, o-	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	2.34E+01		2.34E+01	4.06E+01		4.06E+01
106423	Xylene, p-	mg/L												
14596102	Am-241	pCi/L								4.11E+01	4.11E+01			
10198400	Co-60	pCi/L								2.72E+02	2.72E+02			
10045973	Cs-137+D	pCi/L								1.41E+02	1.41E+02			
13994202	Np-237+D	pCi/L								6.34E+01	6.34E+01			
13981163	Pu-238	pCi/L								3.26E+01	3.26E+01			
15117483	Pu-239	pCi/L								3.17E+01	3.17E+01			
14119336	Pu-240	pCi/L								3.17E+01	3.17E+01			
13982633	Ra-226+D	pCi/L								1.11E+01	1.11E+01			
14859677	Rn-222+D	pCi/L												
10098972	Sr-90+D	pCi/L								5.78E+01	5.78E+01			
14133767	Tc-99	pCi/L								1.55E+03	1.55E+03			
14274829	Th-228+D	pCi/L								1.42E+01	1.42E+01			
14269637	Th-230	pCi/L								4.70E+01	4.70E+01			
N2608	Th-232	pCi/L								4.23E+01	4.23E+01			
13966295	U-234	pCi/L								6.04E+01	6.04E+01			
15117961	U-235+D	pCi/L								5.95E+01	5.95E+01			
24678828	U-238+D	pCi/L								4.91E+01	4.91E+01			

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a ELCR of 1E-06.
No action level is less of hazard- and cancer-based values.

Table A.6. Surface Water No Action Levels for Significant COPCs at the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
			Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
3268879	OCDD	mg/L		1.15E-08	1.15E-08		9.77E-09	9.77E-09		1.15E-08	1.15E-08		9.77E-09	9.77E-09
39001020	OCDF	mg/L		1.22E-08	1.22E-08		1.04E-08	1.04E-08		1.22E-08	1.22E-08		1.04E-08	1.04E-08
36088229	PeCDD, 2,3,7,8-	mg/L		2.20E-10	2.20E-10		1.88E-10	1.88E-10		2.20E-10	2.20E-10		1.88E-10	1.88E-10
57117416	PeCDF, 1,2,3,7,8-	mg/L		1.06E-10	1.06E-10		9.06E-11	9.06E-11		1.06E-10	1.06E-10		9.06E-11	9.06E-11
57117314	PeCDF, 2,3,4,7,8-	mg/L		8.98E-10	8.98E-10		7.67E-10	7.67E-10		8.98E-10	8.98E-10		7.67E-10	7.67E-10
85018	Phenanthrene	mg/L												
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		1.12E-04	1.12E-04		9.61E-05	9.61E-05		1.12E-04	1.12E-04		9.61E-05	9.61E-05
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		6.38E-04	6.38E-04		5.49E-04	5.49E-04		6.38E-04	6.38E-04		5.49E-04	5.49E-04
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		6.20E-07	6.20E-07		5.29E-07	5.29E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
129000	Pyrene	mg/L	1.81E-02		1.81E-02	1.13E-02		1.13E-02	2.88E-02		2.88E-02	1.69E-02		1.69E-02
1746016	TCDD, 2,3,7,8-	mg/L		4.17E-11	4.17E-11		3.56E-11	3.56E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
51207319	TCDF, 2,3,7,8-	mg/L		1.66E-09	1.66E-09		1.42E-09	1.42E-09		1.66E-09	1.66E-09		1.42E-09	1.42E-09
127184	Tetrachloroethylene	mg/L	1.67E-02	9.02E-04	9.02E-04	1.05E-02	7.77E-04	7.77E-04	2.66E-02	9.02E-04	9.02E-04	1.57E-02	7.77E-04	7.77E-04
79016	Trichloroethylene	mg/L	3.32E-02	1.44E-02	1.44E-02	2.19E-02	1.27E-02	1.27E-02	5.40E-02	1.44E-02	1.44E-02	3.28E-02	1.27E-02	1.27E-02
75014	Vinyl Chloride	mg/L	1.32E-01	1.10E-03	1.10E-03	1.60E-01	1.46E-03	1.46E-03	2.71E-01	1.10E-03	1.10E-03	2.39E-01	1.46E-03	1.46E-03
1330207	Xylene, Mixture	mg/L	1.14E+01		1.14E+01	7.55E+00		7.55E+00	1.86E+01		1.86E+01	1.13E+01		1.13E+01
108383	Xylene, m-	mg/L	1.17E+01		1.17E+01	7.80E+00		7.80E+00	1.92E+01		1.92E+01	1.17E+01		1.17E+01
95476	Xylene, o-	mg/L	1.17E+01		1.17E+01	7.80E+00		7.80E+00	1.92E+01		1.92E+01	1.17E+01		1.17E+01
106423	Xylene, p-	mg/L												
14596102	Am-241	pCi/L		4.11E+01	4.11E+01					4.11E+01	4.11E+01			
10198400	Co-60	pCi/L		2.72E+02	2.72E+02					2.72E+02	2.72E+02			
10045973	Cs-137+D	pCi/L		1.41E+02	1.41E+02					1.41E+02	1.41E+02			
13994202	Np-237+D	pCi/L		6.34E+01	6.34E+01					6.34E+01	6.34E+01			
13981163	Pu-238	pCi/L		3.26E+01	3.26E+01					3.26E+01	3.26E+01			
15117483	Pu-239	pCi/L		3.17E+01	3.17E+01					3.17E+01	3.17E+01			
14119336	Pu-240	pCi/L		3.17E+01	3.17E+01					3.17E+01	3.17E+01			
13982633	Ra-226+D	pCi/L		1.11E+01	1.11E+01					1.11E+01	1.11E+01			
14859677	Rn-222+D	pCi/L												
10098972	Sr-90+D	pCi/L		5.78E+01	5.78E+01					5.78E+01	5.78E+01			
14133767	Tc-99	pCi/L		1.55E+03	1.55E+03					1.55E+03	1.55E+03			
14274829	Th-228+D	pCi/L		1.42E+01	1.42E+01					1.42E+01	1.42E+01			
14269637	Th-230	pCi/L		4.70E+01	4.70E+01					4.70E+01	4.70E+01			
N2608	Th-232	pCi/L		4.23E+01	4.23E+01					4.23E+01	4.23E+01			
13966295	U-234	pCi/L		6.04E+01	6.04E+01					6.04E+01	6.04E+01			
15117961	U-235+D	pCi/L		5.95E+01	5.95E+01					5.95E+01	5.95E+01			
24678828	U-238+D	pCi/L		4.91E+01	4.91E+01					4.91E+01	4.91E+01			

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a ELCR of 1E-06.
No action le ss of hazard- and cancer-based values.

Table A.7a. Risk-based Soil Screening Levels (SSLs) for Protection of RGA Groundwater for Significant COPCs at the PGDP

(Values compiled on December 14, 2001 and are based on best available information.)

		SSLs from EPA Web Site (Downloaded on12/14/2001)				SSLs Calculated Using PGDP No Action Values (See Table A.5)			
Parameter	Chemical	SSL 1 (mg/kg)	SSL 20 (mg/kg)	GW Conc. (mg/L)	GW Conc. Source	SSL 1 (mg/kg)	SSL 20 (mg/kg)	GW Conc. (mg/L)	GW Conc. Source
7440360	Antimony (metallic)	2.70E-01	5.40E+00	6.00E-03	MCLG	2.54E-02	5.08E-01	5.64E-04	Child Resident
7440382	Arsenic, Inorganic	1.50E+00	2.90E+01	5.00E-02	MCL	1.05E-03	2.03E-02	3.50E-05	Child Resident
7440417	Beryllium and compounds	3.20E+00	6.30E+01	4.00E-03	MCLG	2.11E+00	4.16E+01	2.64E-03	Child Resident
7440439	Cadmium	3.80E-01	7.50E+00	5.00E-03	MCLG	5.02E-02	9.92E-01	6.61E-04	Child Resident
16065831	Chromium (III) (Insoluble Salts)	9.90E+07	2.00E+09	5.50E+01	HBL	3.17E+06	6.40E+07	1.76E+00	Child Resident
18540299	Chromium VI (particulates)	2.10E+00	4.20E+01	1.10E-01	HBL	8.08E-02	1.62E+00	4.23E-03	Child Resident
7440473	Chromium (Total)	9.90E+07	2.00E+09	5.50E+01	HBL	3.17E+06	6.40E+07	1.76E+00	Child Resident
7439965	Manganese	1.10E+02	2.20E+03	1.70E+00	HBL	2.26E+00	4.53E+01	3.50E-02	Child Resident
7439976	Mercury (elemental)	1.00E-01	2.10E+00	2.00E-03	MCLG	2.22E-02	4.66E-01	4.44E-04	Child Resident
7439987	Molybdenum	3.70E+00	7.40E+01	1.80E-01	HBL	1.55E-01	3.10E+00	7.53E-03	Child Resident
7440020	Nickel Soluble Salts	4.80E+01	9.50E+02	7.30E-01	HBL	1.98E+00	3.92E+01	3.01E-02	Child Resident
7782492	Selenium	2.60E-01	5.20E+00	5.00E-02	MCLG	3.92E-02	7.84E-01	7.54E-03	Child Resident
7440224	Silver	1.60E+00	3.10E+01	1.80E-01	HBL	6.67E-02	1.29E+00	7.50E-03	Child Resident
7791120	Thallium Chloride			2.90E-03	HBL			1.20E-04	Child Resident
7440622	Vanadium, Metallic	2.60E+02	5.10E+03	2.60E-01	HBL	9.25E+00	1.81E+02	9.25E-03	Child Resident
7440666	Zinc (Metallic)	6.80E+02	1.40E+04	1.10E+01	HBL	2.78E+01	5.73E+02	4.50E-01	Child Resident
83329	Acenaphthene	3.10E+01	6.30E+02	2.20E+00	HBL	1.92E-01	3.89E+00	1.36E-02	Child Resident
107131	Acrylonitrile	3.20E-05	6.30E-04	1.60E-04	HBL	8.52E-06	1.68E-04	4.26E-05	Child Resident
120127	Anthracene	6.50E+02	1.30E+04	1.10E+01	HBL	4.53E+00	9.05E+01	7.66E-02	Child Resident
12674112	Aroclor 1016	2.80E-03	5.60E-02	4.30E-05	HBL	3.05E-03	6.09E-02	4.68E-05	Child Resident
11104282	Aroclor 1221			4.30E-05	HBL			1.12E-04	Child Resident
11141165	Aroclor 1232			4.30E-05	HBL			1.28E-04	Child Resident
53469219	Aroclor 1242	2.80E-03	5.60E-02	4.30E-05	HBL	8.01E-03	1.60E-01	1.23E-04	Child Resident
12672296	Aroclor 1248			4.30E-05	HBL			7.75E-05	Child Resident
11097691	Aroclor 1254	1.70E-02	3.40E-01	4.30E-05	HBL	7.67E-03	1.53E-01	1.94E-05	Child Resident
11096825	Aroclor 1260	2.50E-02	4.90E-01	4.30E-05	HBL	2.49E-02	4.88E-01	4.28E-05	Child Resident
50328	Benzo[a]pyrene	4.10E-01	8.20E+00	2.00E-04	MCL	1.95E-03	3.90E-02	9.51E-07	Child Resident
56235	Carbon Tetrachloride	3.30E-03	6.60E-02	5.00E-03	MCL	1.19E-04	2.39E-03	1.81E-04	Child Resident
67663	Chloroform	2.90E-02	5.90E-01	1.00E-01	MCL	8.32E-06	1.69E-04	2.87E-05	Child Resident
75354	Dichloroethylene, 1,1-	2.90E-03	5.80E-02	7.00E-03	MCLG	1.95E-05	3.89E-04	4.70E-05	Child Resident
540590	Dichloroethylene, 1,2- (Mixed Isomers)			3.30E-01	HBL			2.47E-03	Child Resident
156592	Dichloroethylene, 1,2-cis-	2.00E-02	4.00E-01	7.00E-02	MCLG	7.80E-04	1.56E-02	2.73E-03	Child Resident
156605	Dichloroethylene, 1,2-trans-	3.40E-02	6.80E-01	1.00E-01	MCLG	1.86E-03	3.73E-02	5.48E-03	Child Resident
100414	Ethylbenzene	6.70E-01	1.30E+01	7.00E-01	MCLG	4.48E-03	8.69E-02	4.68E-03	Child Resident
206440	Fluoranthene	3.10E+02	6.30E+03	1.50E+00	HBL	4.67E+00	9.49E+01	2.26E-02	Child Resident
86737	Fluorene	4.10E+01	8.10E+02	1.50E+00	HBL	2.66E-01	5.25E+00	9.72E-03	Child Resident
91203	Naphthalene	3.10E+00	6.10E+01	7.30E-01	HBL	1.21E-03	2.38E-02	2.85E-04	Child Resident
1336363	Polychlorinated Biphenyls (high risk)	3.10E-01	6.20E+00	5.00E-04	MCL	4.92E-02	9.83E-01	7.93E-05	Child Resident
129000	Pyrene	2.30E+02	4.60E+03	1.10E+00	HBL	3.81E+00	7.61E+01	1.82E-02	Child Resident
1746016	TCDD, 2,3,7,8-	2.80E-07	5.60E-06	3.00E-08	MCL	5.68E-10	1.14E-08	6.09E-11	Child Resident
127184	Tetrachloroethylene	2.90E-03	5.80E-02	5.00E-03	MCL	3.38E-04	6.75E-03	5.82E-04	Child Resident
79016	Trichloroethylene	2.80E-03	5.70E-02	5.00E-03	MCL	9.69E-04	1.97E-02	1.73E-03	Child Resident
75014	Vinyl Chloride	6.70E-04	1.30E-02	2.00E-03	MCL	1.17E-05	2.28E-04	3.50E-05	Child Resident
108383	Xylene, m-	1.00E+01	2.10E+02	1.00E+01	MCLG	4.39E-01	9.22E+00	4.39E-01	Child Resident
1330207	Xylene, Mixture	7.10E+01	1.40E+03	7.30E+01	HBL	6.35E-02	1.25E+00	6.53E-02	Child Resident
95476	Xylene, o-	9.50E+00	1.90E+02	1.00E+01	MCLG	4.17E-01	8.34E+00	4.39E-01	Child Resident

Notes:

Values identified as being from the EPA website are from http://risk.lsd.ornl.gov/calc_start.htm.

Only significant COPCs listed on the EPA website are shown. SSLs for other chemicals will be derived using similar methods as needed.

GW = Groundwater; MCLG = Maximum Contaminant Level Goal; MCL = Maximum Contaminant Level; HBL = Heath-based Level

Method 1 on Website used to calculate all values. Parameters used are as follows:

Dilution factor (unitless)	1 or 20
Fraction organic carbon in soil (unitless)	0.002
Water-filled soil porosity (Lwater/Lsoil)	0.3
Dry soil bulk density (kg/L)	1.5
Soil particle density (kg/L)	2.65

Table A.7b. Risk-based Soil Screening Levels for Protection of RGA Groundwater for Significant Radionuclide COPCs at the PGDP

(Values calculated on 12/13/2000 and are based on best available information.)

Parameter	Radionuclide	Units	Resident Adult		Resident Child		Year
			10^{-6}	10^{-4}	10^{-6}	10^{-4}	
14596102	Americium-241	pCi/g	3.24E+06	3.24E+08	3.89E+07	3.89E+09	3108
10198400	Cobalt-60	pCi/g	2.81E+13	2.81E+15	3.38E+14	3.38E+16	228
10045973	Cesium-137	pCi/g	NA	NA	NA	NA	NA
13994202	Neptunium-237+D	pCi/g	5.16E+02	5.16E+04	6.20E+03	6.20E+05	2277
13981163	Plutonium-238	pCi/g	3.85E+03	3.85E+05	4.62E+04	4.62E+06	1129
15117483	Plutonium-239	pCi/g	3.71E-01	3.71E+01	4.46E+00	4.46E+02	2871
14119336	Plutonium-240	pCi/g	4.64E-01	4.64E+01	5.57E+00	5.57E+02	2871
13982633	Radium-226+D	pCi/g	NA	NA	NA	NA	NA
14859677	Radon-222+D *						
10098972	Strontium-90+D	pCi/g	1.77E+03	1.77E+05	2.13E+04	2.13E+06	347
14133767	Technetium-99	pCi/g	2.19E+00	2.19E+02	2.63E+01	2.63E+03	7.6
14274829	Thorium-228+D	pCi/g	NA	NA	NA	NA	NA
14269637	Thorium-230	pCi/g	NA	NA	NA	NA	NA
7440291	Thorium-232	pCi/g	NA	NA	NA	NA	NA
13966295	Uranium-234	pCi/g	1.02E+00	1.02E+02	1.22E+01	1.22E+03	976
15117961	Uranium-235+D	pCi/g	9.49E-01	9.49E+01	1.14E+01	1.14E+03	975
7440611	Uranium-238+D	pCi/g	7.18E-01	7.18E+01	8.62E+00	8.62E+02	976

"Year" = year that radionuclide is estimated to produce maximum dose over the 10,000-year evaluation period.

"NA" = not applicable. That is, the radionuclide does not reach groundwater within 10,000 years precluding receptor uptake.

SSLs estimated using the RESRAD code version 6.0.

Table A.8. Dose-based Soil/Sediment Screening Levels for Site-related Radionuclides at the PGDP

(Values calculated on 12/19/2000 and are based on best available information.)

Paramater	Radionuclide	Units	Excavation Worker			Industrial Worker			Adult Recreator		
			1 mrem/yr	15 mrem/yr	25 mrem/yr	1 mrem/yr	15 mrem/yr	25 mrem/yr	1 mrem/yr	15 mrem/yr	25 mrem/yr
14596102	Americium-241	pCi/g	3.04E+00	4.56E+01	7.59E+01	1.87E+01	2.80E+02	4.67E+02	1.00E+02	1.50E+03	2.51E+03
10045973	Cesium-137	pCi/g	2.15E+00	3.22E+01	5.37E+01	1.60E+00	2.41E+01	4.01E+01	6.17E+00	9.26E+01	1.54E+02
10198400	Cobalt-60	pCi/g	4.56E-01	6.84E+00	1.14E+01	3.38E-01	5.07E+00	8.45E+00	1.30E+00	1.95E+01	3.25E+01
13994202	Neptunium-237+D	pCi/g	1.84E+00	2.76E+01	4.60E+01	3.90E+00	5.85E+01	9.75E+01	1.62E+01	2.42E+02	4.04E+02
13981163	Plutonium-238	pCi/g	3.52E+00	5.28E+01	8.80E+01	2.49E+01	3.74E+02	6.24E+02	1.44E+02	2.16E+03	3.59E+03
15117483	Plutonium-239	pCi/g	3.18E+00	4.77E+01	7.95E+01	2.25E+01	3.38E+02	5.63E+02	1.30E+02	1.95E+03	3.25E+03
14119336	Plutonium-240	pCi/g	3.18E+00	4.77E+01	7.95E+01	2.26E+01	3.38E+02	5.64E+02	1.30E+02	1.95E+03	3.25E+03
13982633	Radium-226+D	pCi/g	6.13E-01	9.19E+00	1.53E+01	4.85E-01	7.27E+00	1.21E+01	1.87E+00	2.81E+01	4.68E+01
14859677	Radon-222+D *	pCi/g									
10098972	Strontium-90+D	pCi/g	5.91E+01	8.87E+02	1.48E+03	1.56E+02	2.34E+03	3.90E+03	6.67E+02	1.00E+04	1.67E+04
14133767	Technetium-99	pCi/g	6.82E+03	1.02E+05	1.70E+05	2.42E+04	3.64E+05	6.06E+05	1.09E+05	1.64E+06	2.73E+06
14274829	Thorium-228+D	pCi/g	6.89E-01	1.03E+01	1.72E+01	5.34E-01	8.01E+00	1.33E+01	2.06E+00	3.09E+01	5.14E+01
14269637	Thorium-230	pCi/g	2.05E+01	3.07E+02	5.12E+02	1.40E+02	2.11E+03	3.51E+03	7.95E+02	1.19E+04	1.99E+04
7440291	Thorium-232	pCi/g	4.12E+00	6.18E+01	1.03E+02	2.90E+01	4.35E+02	7.25E+02	1.66E+02	2.50E+03	4.16E+03
13966295	Uranium-234	pCi/g	3.97E+01	5.95E+02	9.92E+02	2.75E+02	4.13E+03	6.88E+03	1.57E+03	2.35E+04	3.92E+04
15117961	Uranium-235+D	pCi/g	7.93E+00	1.19E+02	1.98E+02	7.06E+00	1.06E+02	1.77E+02	2.74E+01	4.11E+02	6.84E+02
7440611	Uranium-238+D	pCi/g	2.36E+01	3.54E+02	5.89E+02	3.52E+01	5.28E+02	8.80E+02	1.41E+02	2.11E+03	3.52E+03

Screening Value = $[S\ 1/(\text{Pathway-Specific Action Levels})]^{-1}$

Pathways include ingestion, inhalation and external gamma

* Not evaluated in quantitative dose calculations.

Table A.8. Dose-based Soil/Sediment Screening Levels for Site-related Radionuclides at the PGDP

(Values calculated on 12/19/2000 and are based on best available information.)

			Child Recreator			Teen Recreator			Adult Resident		
Paramater	Radionuclide	Units	1 mrem/yr	15 mrem/yr	25 mrem/yr	1 mrem/yr	15 mrem/yr	25 mrem/yr	1 mrem/yr	15 mrem/yr	25 mrem/yr
14596102	Americium-241	pCi/g	4.16E+01	6.24E+02	1.04E+03	7.44E+01	1.12E+03	1.86E+03	6.21E+00	9.32E+01	1.55E+02
10045973	Cesium-137	pCi/g	4.58E+00	6.87E+01	1.15E+02	4.58E+00	6.88E+01	1.15E+02	3.82E-01	5.73E+00	9.55E+00
10198400	Cobalt-60	pCi/g	9.65E-01	1.45E+01	2.41E+01	9.66E-01	1.45E+01	2.41E+01	8.05E-02	1.21E+00	2.01E+00
13994202	Neptunium-237+D	pCi/g	1.04E+01	1.56E+02	2.60E+02	1.20E+01	1.80E+02	3.00E+02	1.00E+00	1.50E+01	2.50E+01
13981163	Plutonium-238	pCi/g	5.35E+01	8.02E+02	1.34E+03	1.07E+02	1.60E+03	2.67E+03	8.91E+00	1.34E+02	2.23E+02
15117483	Plutonium-239	pCi/g	4.83E+01	7.25E+02	1.21E+03	9.65E+01	1.45E+03	2.41E+03	8.05E+00	1.21E+02	2.01E+02
14119336	Plutonium-240	pCi/g	4.83E+01	7.25E+02	1.21E+03	9.65E+01	1.45E+03	2.41E+03	8.06E+00	1.21E+02	2.01E+02
13982633	Radium-226+D	pCi/g	1.38E+00	2.07E+01	3.45E+01	1.39E+00	2.08E+01	3.47E+01	1.16E-01	1.74E+00	2.89E+00
14859677	Radon-222+D *	pCi/g									
10098972	Strontium-90+D	pCi/g	4.06E+02	6.08E+03	1.01E+04	4.95E+02	7.43E+03	1.24E+04	4.13E+01	6.19E+02	1.03E+03
14133767	Technetium-99	pCi/g	6.03E+04	9.05E+05	1.51E+06	8.12E+04	1.22E+06	2.03E+06	6.77E+03	1.02E+05	1.69E+05
14274829	Thorium-228+D	pCi/g	1.52E+00	2.28E+01	3.81E+01	1.53E+00	2.29E+01	3.82E+01	1.27E-01	1.91E+00	3.18E+00
14269637	Thorium-230	pCi/g	3.04E+02	4.56E+03	7.59E+03	5.91E+02	8.86E+03	1.48E+04	4.96E+01	7.43E+02	1.24E+03
7440291	Thorium-232	pCi/g	6.23E+01	9.35E+02	1.56E+03	1.24E+02	1.86E+03	3.09E+03	1.04E+01	1.56E+02	2.60E+02
13966295	Uranium-234	pCi/g	5.94E+02	8.91E+03	1.48E+04	1.17E+03	1.75E+04	2.91E+04	9.76E+01	1.46E+03	2.44E+03
15117961	Uranium-235+D	pCi/g	2.00E+01	3.00E+02	5.00E+02	2.03E+01	3.05E+02	5.08E+02	1.69E+00	2.54E+01	4.24E+01
7440611	Uranium-238+D	pCi/g	9.68E+01	1.45E+03	2.42E+03	1.05E+02	1.57E+03	2.62E+03	8.73E+00	1.31E+02	2.18E+02

Screening Value = $[S\ 1/(\text{Pathway-Specific Action Levels})]^{-1}$

Pathways include ingestion, inhalation and external gamma

* Not eval[illegible] in quantitative dose calculations.

Table A.8. Dose-based Soil/Sediment Screening Levels for Site-related Radionuclides at the PGDP

(Values calculated on 12/19/2000 and are based on best available information.)

			Child Resident		
Paramater	**Radionuclide**	**Units**	**1 mrem/yr**	**15 mrem/yr**	**25 mrem/yr**
14596102	Americium-241	pCi/g	3.47E+00	5.20E+01	8.67E+01
10045973	Cesium-137	pCi/g	3.82E-01	5.73E+00	9.54E+00
10198400	Cobalt-60	pCi/g	8.05E-02	1.21E+00	2.01E+00
13994202	Neptunium-237+D	pCi/g	8.66E-01	1.30E+01	2.16E+01
13981163	Plutonium-238	pCi/g	4.46E+00	6.69E+01	1.12E+02
15117483	Plutonium-239	pCi/g	4.03E+00	6.05E+01	1.01E+02
14119336	Plutonium-240	pCi/g	4.03E+00	6.05E+01	1.01E+02
13982633	Radium-226+D	pCi/g	1.15E-01	1.73E+00	2.88E+00
14859677	Radon-222+D *	pCi/g			
10098972	Strontium-90+D	pCi/g	3.38E+01	5.07E+02	8.45E+02
14133767	Technetium-99	pCi/g	5.03E+03	7.54E+04	1.26E+05
14274829	Thorium-228+D	pCi/g	1.27E-01	1.90E+00	3.17E+00
14269637	Thorium-230	pCi/g	2.54E+01	3.81E+02	6.35E+02
7440291	Thorium-232	pCi/g	5.21E+00	7.82E+01	1.30E+02
13966295	Uranium-234	pCi/g	4.96E+01	7.45E+02	1.24E+03
15117961	Uranium-235+D	pCi/g	1.67E+00	2.50E+01	4.17E+01
7440611	Uranium-238+D	pCi/g	8.07E+00	1.21E+02	2.02E+02

Screening Value = $[S\ 1/(\text{Pathway-Specific Action Levels})]^{-1}$

Pathways include ingestion, inhalation and external gamma

* Not evaluated in quantitative dose calculations.

Table A.9. Dose-based Groundwater Screening Levels for Site-related Radionuclides at the PGDP

(Values calculated on 12/13/2000 and are based on best available information.)

Parameter	Radionuclide	Units	Industrial Worker				Adult Resident				Child Resident			
			1 mrem/yr	4 mrem/yr	15 mrem/yr	25 mrem/yr	1 mrem/yr	4 mrem/yr	15 mrem/yr	25 mrem/yr	1 mrem/yr	4 mrem/yr	15 mrem/yr	25 mrem/yr
14596102	Americium-241	pCi/L	1.10E+00	4.40E+00	1.65E+01	2.75E+01	3.92E-01	1.57E+00	5.89E+00	9.81E+00	7.85E-01	3.14E+00	1.18E+01	1.96E+01
10045973	Cesium-137	pCi/L	8.00E+01	3.20E+02	1.20E+03	2.00E+03	2.86E+01	1.14E+02	4.29E+02	7.14E+02	5.71E+01	2.29E+02	8.57E+02	1.43E+03
10198400	Cobalt-60	pCi/L	1.49E+02	5.95E+02	2.23E+03	3.72E+03	5.31E+01	2.12E+02	7.97E+02	1.33E+03	1.06E+02	4.25E+02	1.59E+03	2.66E+03
13994202	Neptunium-237+D	pCi/L	9.01E-01	3.60E+00	1.35E+01	2.25E+01	3.22E-01	1.29E+00	4.83E+00	8.04E+00	6.44E-01	2.57E+00	9.65E+00	1.61E+01
13981163	Plutonium-238	pCi/L	1.25E+00	5.00E+00	1.88E+01	3.13E+01	4.46E-01	1.79E+00	6.70E+00	1.12E+01	8.93E-01	3.57E+00	1.34E+01	2.23E+01
15117483	Plutonium-239	pCi/L	1.13E+00	4.52E+00	1.69E+01	2.82E+01	4.04E-01	1.61E+00	6.05E+00	1.01E+01	8.07E-01	3.23E+00	1.21E+01	2.02E+01
14119336	Plutonium-240	pCi/L	1.13E+00	4.52E+00	1.69E+01	2.82E+01	4.04E-01	1.61E+00	6.05E+00	1.01E+01	8.07E-01	3.23E+00	1.21E+01	2.02E+01
13982633	Radium-226+D	pCi/L	3.01E+00	1.20E+01	4.51E+01	7.52E+01	1.07E+00	4.30E+00	1.61E+01	2.69E+01	2.15E+00	8.59E+00	3.22E+01	5.37E+01
14859677	Radon-222+D •	pCi/L												
10098972	Strontium-90+D	pCi/L	2.61E+01	1.05E+02	3.92E+02	6.54E+02	9.34E+00	3.73E+01	1.40E+02	2.33E+02	1.87E+01	7.47E+01	2.80E+02	4.67E+02
14133767	Technetium-99	pCi/L	2.74E+03	1.10E+04	4.11E+04	6.85E+04	9.78E+02	3.91E+03	1.47E+04	2.45E+04	1.96E+03	7.83E+03	2.94E+04	4.89E+04
14274829	Thorium-228+D	pCi/L	4.95E+00	1.98E+01	7.43E+01	1.24E+02	1.77E+00	7.07E+00	2.65E+01	4.42E+01	3.54E+00	1.41E+01	5.30E+01	8.84E+01
14269637	Thorium-230	pCi/L	7.30E+00	2.92E+01	1.09E+02	1.82E+02	2.61E+00	1.04E+01	3.91E+01	6.52E+01	5.21E+00	2.09E+01	7.82E+01	1.30E+02
7440291	Thorium-232	pCi/L	1.47E+00	5.86E+00	2.20E+01	3.66E+01	5.23E-01	2.09E+00	7.85E+00	1.31E+01	1.05E+00	4.19E+00	1.57E+01	2.62E+01
13966295	Uranium-234	pCi/L	1.41E+01	5.65E+01	2.12E+02	3.53E+02	5.05E+00	2.02E+01	7.57E+01	1.26E+02	1.01E+01	4.04E+01	1.51E+02	2.52E+02
15117961	Uranium-235+D	pCi/L	1.50E+01	5.99E+01	2.25E+02	3.75E+02	5.35E+00	2.14E+01	8.03E+01	1.34E+02	1.07E+01	4.28E+01	1.61E+02	2.68E+02
7440611	Uranium-238+D	pCi/L	1.49E+01	5.95E+01	2.23E+02	3.72E+02	5.31E+00	2.12E+01	7.97E+01	1.33E+02	1.06E+01	4.25E+01	1.59E+02	2.66E+02

• Not evaluated in quantitative dose calculations

Table A.10. Dose-based Surface Water Screening Levels for Site-Related Radionuclides at the PGDP

(Values calculated on 12/13/2000 and are based on the best available information.)

			Recreational User (Child and Adult)			
Parameter	**Radionuclide**	**Units**	**1 mrem/yr**	**4 mrem/yr**	**15 mrem/yr**	**25 mrem/yr**
14596102	Americium-241	pCi/L	4.70E+01	1.88E+02	7.04E+02	1.17E+03
10045973	Cesium-137	pCi/L	3.42E+03	1.37E+04	5.13E+04	8.55E+04
10198400	Cobalt-60	pCi/L	6.35E+03	2.54E+04	9.53E+04	1.59E+05
13994202	Neptunium-237+D	pCi/L	3.85E+01	1.54E+02	5.78E+02	9.63E+02
13981163	Plutonium-238	pCi/L	5.34E+01	2.14E+02	8.01E+02	1.34E+03
15117483	Plutonium-239	pCi/L	4.83E+01	1.93E+02	7.24E+02	1.21E+03
14119336	Plutonium-240	pCi/L	4.83E+01	1.93E+02	7.24E+02	1.21E+03
13982633	Radium-226+D	pCi/L	1.29E+02	5.14E+02	1.93E+03	3.21E+03
14859677	Radon-222+D *	pCi/L				
10098972	Strontium-90+D	pCi/L	1.12E+03	4.47E+03	1.68E+04	2.79E+04
14133767	Technetium-99	pCi/L	1.17E+05	4.68E+05	1.76E+06	2.93E+06
14274829	Thorium-228+D	pCi/L	2.12E+02	8.46E+02	3.17E+03	5.29E+03
14269637	Thorium-230	pCi/L	3.12E+02	1.25E+03	4.68E+03	7.80E+03
7440291	Thorium-232	pCi/L	6.26E+01	2.50E+02	9.39E+02	1.57E+03
13966295	Uranium-234	pCi/L	6.04E+02	2.42E+03	9.06E+03	1.51E+04
15117961	Uranium-235+D	pCi/L	6.40E+02	2.56E+03	9.60E+03	1.60E+04
7440611	Uranium-238+D	pCi/L	6.35E+02	2.54E+03	9.53E+03	1.59E+04

* Not evaluated in quantitative dose calculations.

Table A.11. Dose-based Soil Screening Levels for Protection of RGA Groundwater for Site-related Radionuclides at the PGDP

(Values calculated on 12/13/2000 and are based on best available information.)

			Resident Adult				Resident Child				
Parameter	Radionuclide	Units	1 mrem/yr	4 mrem/yr	15 mrem/yr	25 mrem/yr	1 mrem/yr	4 mrem/yr	15 mrem/yr	25 mrem/yr	Year
14596102	Americium-241	pCi/g	1.70E+07	6.80E+07	2.55E+08	4.25E+08	3.40E+07	1.36E+08	5.10E+08	8.50E+08	3108
10045973	Cesium-137	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA
10198400	Cobalt-60	pCi/g	1.94E+14	7.77E+14	2.91E+15	4.86E+15	3.89E+14	1.55E+15	5.83E+15	9.71E+15	228
13994202	Neptunium-237+D	pCi/g	2.72E+03	1.09E+04	4.07E+04	6.79E+04	5.43E+03	2.17E+04	8.15E+04	1.36E+05	2277
13981163	Plutonium-238	pCi/g	2.03E+04	8.11E+04	3.04E+05	5.07E+05	4.06E+04	1.62E+05	6.09E+05	1.01E+06	1129
15117483	Plutonium-239	pCi/g	1.13E+00	4.50E+00	1.69E+01	2.81E+01	2.25E+00	9.01E+00	3.38E+01	5.63E+01	2871
14119336	Plutonium-240	pCi/g	1.40E+00	5.62E+00	2.11E+01	3.51E+01	2.81E+00	1.12E+01	4.21E+01	7.02E+01	2871
13982633	Radium-226+D	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA
14859677	Radon-222+D *										
10098972	Strontium-90+D	pCi/g	1.42E+04	5.66E+04	2.12E+05	3.54E+05	2.83E+04	1.13E+05	4.25E+05	7.08E+05	347
14133767	Technetium-99	pCi/g	9.63E+00	3.85E+01	1.45E+02	2.41E+02	1.93E+01	7.71E+01	2.89E+02	4.82E+02	7.6
14274829	Thorium-228+D	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA
14269637	Thorium-230	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440291	Thorium-232	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA
13966295	Uranium-234	pCi/g	5.19E+00	2.08E+01	7.78E+01	1.30E+02	1.04E+01	4.15E+01	1.56E+02	2.59E+02	976
15117961	Uranium-235+D	pCi/g	5.47E+00	2.19E+01	8.20E+01	1.37E+02	1.09E+01	4.37E+01	1.64E+02	2.73E+02	975
7440611	Uranium-238+D	pCi/g	5.43E+00	2.17E+01	8.14E+01	1.36E+02	1.09E+01	4.34E+01	1.63E+02	2.71E+02	976

"Year" = year that radionuclide is estimated to produce maximum dose over the 10,000-year evaluation period.

"NA" = not applicable. That is, the radionuclide does not reach groundwater within 10,000 years precluding receptor uptake.

SSLs estimated using the RESRAD code version 6.0.

* Not e· ·tes in quantitative dose calculations.

Table A.12. Provisional Background Concentrations for Surface and Subsurface Soil at the PGDP

Analyte	Background Value[b]	
	Surface	Subsurface
Inorganic Chemicals (mg/kg)[a]		
Aluminum	13,000	12,000
Antimony	0.21	0.21
Arsenic	12	7.9
Barium	200	170
Beryllium	0.67	0.69
Cadmium	0.21	0.21
Calcium	200,000	6,100
Chromium (III)	16	43
Chromium (VI)[d]	---	---
Cobalt	14	13
Copper	19	25
Cyanide (CN-)[c]	---	---
Iron	28,000	28,000
Lead	36	23
Magnesium	7,700	2,100
Manganese	1,500	820
Mercury	0.2	0.13
Nickel	21	22
Potassium	1,300	950
Selenium	0.8	0.7
Silver	2.3	2.7
Sodium	320	340
Sulfide[d]	---	---
Thallium	0.21	0.34
Tin[d]	---	---
Uranium	4.9	4.6
Vanadium	38	37
Zinc	65	60
Radionuclide (pCi/g)		
Cesium-137	0.49	0.28
Neptunium-237[e]	0.1	---
Plutonium-238[e]	0.073	---
Plutonium-239[e]	0.025	---
Potassium-40	16	16
Radium-226	1.5	1.5
Strontium-90[e]	4.7	---
Technetium-99	2.5	2.8
Thorium-228	1.6	1.6
Thorium-230	1.5	1.4
Thorium-232	1.5	1.5
Uranium-234	2.5	2.4
Uranium-235	0.14	0.14
Uranium-238	1.2	1.2

Notes: Cells with dashes (---) indicate data are not available or not applicable.
Values contained in this table have not been approved for all uses by the Risk Assessment Working Group. Therefore, the values presented here are provisional values and subject to change. Issues to be resolved in forthcoming meetings include the data set from which these values were derived and the statistical methods used to analyze the data set.

[a] Includes inorganic chemicals found on Target Analyte List as defined by EPA in 1988 CLP Statement of Work and RCRA Appendix IX list of constituents.

[b] Value for use in screening to determine if inorganic chemical or radionuclide detected at naturally occurring concentration in surface or subsurface soil. Details on the derivation of the background concentrations for antimony, beryllium, cadmium, thallium, uranium, and all radionuclides are in DOE 1997a. Details on the derivation of the background concentration for all other inorganic chemicals are in DOE 1996a.

[c] Cyanide is not expected to be naturally occurring in soil at PGDP; background values were not derived.

[d] Data are not adequate to calculate a background concentration in soil for this analyte.

[e] Concentrations for these radionuclides in subsurface soil were not derived.

Table A.13. Provisional Background Concentrations for Groundwater Drawn from the RGA and McNairy Formation at the PGDP

Analyte	Over All Observations		Over Wells	
	RGA	McNairy	RGA	McNairy
Inorganic Chemicals (mg/L)				
Aluminum	2.189	0.687	1.64	0.75
Aluminum, Dissolved	0.311	0.579	0.201	0.587
Antimony	0.060 [a]	0.060 [a]	0.060 [a]	0.060 [a]
Antimony, Dissolved	0.060 [a]	0.060 [a]	0.060 [a]	0.060 [a]
Arsenic	0.005 [a]	0.005 [a]	0.005 [a]	0.005 [a]
Arsenic, Dissolved	0.005 [a]	0.005 [a]	0.005 [a]	0.005 [a]
Barium	0.235	0.296	0.202	0.265
Barium, Dissolved	0.2	0.268	0.179	0.266
Beryllium	0.004 [a]	0.017 [a]	0.004 [a]	0.017 [a]
Beryllium, Dissolved	0.004 [a]	0.004 [a]	0.004 [a]	0.004 [a]
Cadmium	0.010 [a]	0.010 [a]	0.010 [a]	0.010 [a]
Cadmium, Dissolved	0.010 [a]	0.010 [a]	0.010 [a]	0.010 [a]
Calcium	41.238	38.858	40	39.47
Calcium, Dissolved	38.166	38.829	35.8	40.27
Chloride	91.021	19.708	89.2	20.23
Chromium	0.144	0.060 [a]	0.134	0.060 [a]
Chromium, Dissolved	0.050 [a]	0.050 [a]	0.050 [a]	0.050 [a]
Cobalt	0.045 [a]	0.096	0.045 [a]	0.072
Cobalt, Dissolved	0.045 [a]	0.045 [a]	0.045 [a]	0.045 [a]
Copper	0.036	0.057	0.034	0.033
Copper, Dissolved	0.02	0.013 [a]	0.018	0.013 [a]
Fluoride	0.27	0.33	0.245	0.298
Iron	5.03	18.36	3.72	15.83
Iron, Dissolved	0.267	12.372	0.164	9.446
Lead	0.129	0.050 [a]	0.25	0.050 [a]
Lead, Dissolved	0.098	0.050 [a]	0.25	0.050 [a]
Magnesium	16.262	13.418	15.7	16.457
Magnesium, Dissolved	16.215	14.171	15.4	16.533
Manganese	0.119	0.941	0.082	0.729
Manganese, Dissolved	0.068	0.894	0.048	0.682
Mercury	0.0002 [a]	0.0002 [a]	0.0002 [a]	0.0002 [a]
Mercury, Dissolved	0.0002 [a]	0.0002 [a]	0.0002 [a]	0.0002 [a]
Molybdenum	0.050 [a]	0.050 [a]	0.050 [a]	0.050 [a]
Molybdenum, Dissolved	0.050 [a]	0.050 [a]	0.050 [a]	0.050 [a]
Nickel	0.682	0.109 [a]	0.682	0.109 [a]
Nickel, Dissolved	0.305	0.050 [a]	0.305	0.050 [a]
Nitrate as Nitrogen	15.561	1.474	13.5	1.43
Potassium	5.195	55.752	4.47	64.08
Potassium, Dissolved	4.096	51.205	3.7	58.75
Selenium	0.005 [a]	0.005 [a]	0.005 [a]	0.005 [a]
Selenium, Dissolved	0.005 [a]	0.005 [a]	0.005 [a]	0.005 [a]
Silica	26.401	36	21.1	29.4
Silver	0.011 [a]	0.050 [a]	0.011 [a]	0.050 [a]
Silver, Dissolved	0.060 [a]	0.050 [a]	0.060 [a]	0.050 [a]
Sodium	59.45	29.2	63.5	24.92
Sodium, Dissolved	60.433	27.98	65.7	25.9
Sulfate	19.947	28.9	19.1	27.27
Thallium	0.056 [a]	0.644	0.056 [a]	0.255

Analyte	Over All Observations		Over Wells	
	RGA	McNairy	RGA	McNairy
Thallium, Dissolved	0.056 [a]	0.056 [a]	0.056 [a]	0.056 [a]
Uranium	0.002 [a]	0.001 [a]	0.002 [a]	0.001 [a]
Uranium, Dissolved	0.002 [a]	0.001	0.002 [a]	0.001
Vanadium	0.134	0.126	0.139	0.119
Vanadium, Dissolved	0.134	0.126	0.131	0.107
Zinc	0.054	0.142	0.025	0.104
Zinc, Dissolved	0.049	0.116	0.026	0.08
Radionuclides (pCi/L)				
Gross Alpha	5.8	11.9	2.36	5.3
Gross Beta	13.8	144.5	7.3	125.4
Neptunium-237	0.8	0.5	0.21	0.13
Plutonium-239	0.1	0.2	0.03	0.04
Radium-226	0.6	1.2	0.1	0.29
Radon-222	626	295	555.3	228.3
Technetium-99	22.3	20.6	10.8	7.8
Thorium-230	1.1	1.5	0.54	0.4
Total Radium	1.3	0.7	0.46	0.36
Uranium-234 [b]	0.7	0.3	0.7	0.3
Uranium-235 [b]	0.3	0.2	0.3	0.2
Uranium-238 [b]	0.7	0.3	0.7	0.3

Notes: Values taken from Volume 5 *Background Concentrations of Naturally Occurring Inorganic Chemicals and Selected Radionuclides in the Regional Gravel Aquifer and McNairy Formation at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* in *Feasibility Study for the Groundwater Operable Unit at Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE 2000a).

Values contained in this table have not been approved for all uses by the Risk Assessment Working Group. Therefore, the values presented here are provisional values and subject to change. Issues to be resolved in forthcoming meetings include the data set from which these values were derived and the statistical methods used to analyze the data set.

For all projects where averages within wells over time are considered, the values derived over wells should be used. For all other projects, the values derived over all observations should be used

[a] Background value was derived qualitatively over all observations because analyte was never detected or was detected infrequently at a concentration near the analyte's detection limit.

[b] Uranium isotopic concentrations were derived from the mass concentration of uranium.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	7429905	Aluminum	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	20859738	Aluminum Phosphide	mg/kg	3.06E+03		3.06E+03	1.72E+03		1.72E+03	7.69E+03		7.69E+03	7.52E+02		7.52E+02
N	7664417	Ammonia	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7773060	Ammonium Sulfamate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7440360	Antimony (metallic)	mg/kg	2.21E+03		2.21E+03	4.63E+02		4.63E+02	1.51E+03		1.51E+03	1.99E+02		1.99E+02
N	1314609	Antimony Pentoxide	mg/kg	3.82E+03		3.82E+03	2.14E+03		2.14E+03	9.61E+03		9.61E+03	9.40E+02		9.40E+02
N	304610	Antimony Potassium Tartrate	mg/kg	6.88E+03		6.88E+03	3.86E+03		3.86E+03	1.73E+04		1.73E+04	1.69E+03		1.69E+03
N	1332816	Antimony Tetroxide	mg/kg	3.06E+03		3.06E+03	1.72E+03		1.72E+03	7.69E+03		7.69E+03	7.52E+02		7.52E+02
N	1309644	Antimony Trioxide	mg/kg	3.06E+03		3.06E+03	1.72E+03		1.72E+03	7.69E+03		7.69E+03	7.52E+02		7.52E+02
N		Arsenic Salts	mg/kg												
Y	7440382	Arsenic, Inorganic	mg/kg	2.34E+03	1.22E+04	2.34E+03	1.52E+03	3.15E+02	3.15E+02	7.53E+03	3.14E+02	3.14E+02	6.70E+02	3.14E+02	3.14E+02
N	7784421	Arsine	mg/kg	1.00E+05	1.19E+04	1.19E+04	1.00E+05	2.67E+02	2.67E+02	1.00E+05	2.43E+02	2.43E+02	1.00E+05	2.43E+02	2.43E+02
N	1332214	Asbestos	mg/kg												
N	7440393	Barium	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.34E+04		8.34E+04
N	542621	Barium Cyanide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7440417	Beryllium and compounds	mg/kg	8.42E+03	1.00E+05	8.42E+03	1.28E+03	1.00E+05	1.28E+03	3.97E+03	1.00E+05	3.97E+03	5.47E+02	1.00E+05	5.47E+02
N	7440428	Boron And Borates Only	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7637072	Boron Trifluoride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7440439	Cadmium (Diet)	mg/kg	8.02E+02	1.00E+05	8.02E+02	7.05E+01	1.00E+05	7.05E+01	2.09E+02	1.00E+05	2.09E+02	3.01E+01	1.00E+05	3.01E+01
N	592018	Calcium Cyanide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.52E+04		7.52E+04
N	16887006	Chloride	mg/kg												
N	7782505	Chlorine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7758192	Chlorite (Sodium Salt)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	5.64E+04		5.64E+04
Y	16065831	Chromium (III) (Insoluble Salts)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7440473	Chromium (Total)	mg/kg	1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05	
N		Chromium Salts	mg/kg												
Y	18540299	Chromium VI (particulates)	mg/kg	1.65E+04	1.00E+05	1.65E+04	3.47E+03	1.00E+05	3.47E+03	1.13E+04	1.00E+05	1.13E+04	1.49E+03	1.00E+05	1.49E+03
N	7440484	Cobalt	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7440508	Copper	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.76E+04		7.76E+04
N	544923	Copper Cyanide	mg/kg	3.82E+04		3.82E+04	2.14E+04		2.14E+04	9.61E+04		9.61E+04	9.40E+03		9.40E+03
N	57125	Cyanide (CN-)	mg/kg	1.00E+05		1.00E+05	2.02E+04		2.02E+04	6.50E+04		6.50E+04	8.69E+03		8.69E+03
N	7782414	Fluorine (Soluble Fluoride)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7647010	Hydrogen Chloride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	74908	Hydrogen Cyanide	mg/kg	1.00E+05		1.00E+05	8.14E+04		8.14E+04	1.00E+05		1.00E+05	3.57E+04		3.57E+04
N	7783064	Hydrogen Sulfide	mg/kg	2.29E+04		2.29E+04	1.29E+04		1.29E+04	5.77E+04		5.77E+04	5.64E+03		5.64E+03
Y	7439896	Iron	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7439921	Lead And Compounds	mg/kg			1.25E+03			1.25E+03			4.00E+02			4.00E+02
N	7439932	Lithium	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.90E+04		4.90E+04
N	7439954	Magnesium	mg/kg												
Y	7439965	Manganese	mg/kg	1.00E+05		1.00E+05	4.64E+04		4.64E+04	1.00E+05		1.00E+05	2.01E+04		2.01E+04
N	7487947	Mercuric Chloride	mg/kg	2.12E+03		2.12E+03	8.25E+02		8.25E+02	3.12E+03		3.12E+03	3.58E+02		3.58E+02
N	1344485	Mercuric Sulfide	mg/kg												
N	7439976	Mercury (elemental)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7439976	Mercury, Inorganic Salts	mg/kg	2.12E+03		2.12E+03	8.25E+02		8.25E+02	3.12E+03		3.12E+03	3.58E+02		3.58E+02
N	22967926	Methyl Mercury	mg/kg	7.91E+02		7.91E+02	5.60E+02		5.60E+02	2.98E+03		2.98E+03	2.48E+02		2.48E+02
Y	7439987	Molybdenum	mg/kg	3.90E+04		3.90E+04	2.50E+04		2.50E+04	1.00E+05		1.00E+05	1.10E+04		1.10E+04
N		Nickel Refinery Dust	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
Y	7440020	Nickel Soluble Salts	mg/kg	1.00E+05		1.00E+05	9.30E+04		9.30E+04	1.00E+05		1.00E+05	4.09E+04		4.09E+04
N	12035722	Nickel Subsulfide	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
N	14797558	Nitrate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	10102439	Nitric Oxide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	14797650	Nitrite	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	10102440	Nitrogen Dioxide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7803512	Phosphine	mg/kg	2.29E+03		2.29E+03	1.29E+03		1.29E+03	5.77E+03		5.77E+03	5.64E+02		5.64E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	7429905	Aluminum	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	20859738	Aluminum Phosphide	mg/kg	2.33E+03		2.33E+03	7.46E+02		7.46E+02	8.30E+01		8.30E+01
N	7664417	Ammonia	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7773060	Ammonium Sulfamate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.15E+04		4.15E+04
Y	7440360	Antimony (metallic)	mg/kg	3.44E+02		3.44E+02	3.19E+02		3.19E+02	4.69E+01		4.69E+01
N	1314609	Antimony Pentoxide	mg/kg	2.91E+03		2.91E+03	9.32E+02		9.32E+02	1.04E+02		1.04E+02
N	304610	Antimony Potassium Tartrate	mg/kg	5.23E+03		5.23E+03	1.68E+03		1.68E+03	1.87E+02		1.87E+02
N	1332816	Antimony Tetroxide	mg/kg	2.33E+03		2.33E+03	7.46E+02		7.46E+02	8.30E+01		8.30E+01
N	1309644	Antimony Trioxide	mg/kg	2.33E+03		2.33E+03	7.46E+02		7.46E+02	8.30E+01		8.30E+01
N		Arsenic Salts	mg/kg									
Y	7440382	Arsenic, Inorganic	mg/kg	2.59E+03	3.14E+02	3.14E+02	6.05E+02	3.50E+01	3.50E+01	6.51E+01	3.50E+01	3.50E+01
N	7784421	Arsine	mg/kg	1.00E+05	2.43E+02	2.43E+02	1.00E+05	3.30E+01	3.30E+01	1.00E+05	3.30E+01	3.30E+01
N	1332214	Asbestos	mg/kg									
N	7440393	Barium	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.25E+04		1.25E+04
N	542621	Barium Cyanide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.07E+04		2.07E+04
Y	7440417	Beryllium and compounds	mg/kg	8.84E+02	1.00E+05	8.84E+02	9.73E+02	1.00E+05	9.73E+02	1.58E+02	1.00E+05	1.58E+02
N	7440428	Boron And Borates Only	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.00E+04		2.00E+04
N	7637072	Boron Trifluoride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7440439	Cadmium (Diet)	mg/kg	4.53E+01	1.00E+05	4.53E+01	6.08E+01	1.00E+05	6.08E+01	1.15E+01	1.00E+05	1.15E+01
N	592018	Calcium Cyanide	mg/kg	1.00E+05		1.00E+05	7.46E+04		7.46E+04	8.30E+03		8.30E+03
N	16887006	Chloride	mg/kg									
N	7782505	Chlorine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.07E+04		2.07E+04
N	7758192	Chlorite (Sodium Salt)	mg/kg	1.00E+05		1.00E+05	5.59E+04		5.59E+04	6.22E+03		6.22E+03
Y	16065831	Chromium (III) (Insoluble Salts)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.19E+04		7.19E+04
Y	7440473	Chromium (Total)	mg/kg	1.00E+05	1.00E+05		1.00E+05	1.00E+05		7.19E+04	1.00E+05	7.19E+04
N		Chromium Salts	mg/kg									
Y	18540299	Chromium VI (particulates)	mg/kg	2.58E+03	1.00E+05	2.58E+03	2.39E+03	4.43E+04	2.39E+03	3.52E+02	4.43E+04	3.52E+02
N	7440484	Cobalt	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.33E+04		1.33E+04
Y	7440508	Copper	mg/kg	1.00E+05		1.00E+05	7.26E+04		7.26E+04	7.90E+03		7.90E+03
N	544923	Copper Cyanide	mg/kg	2.91E+04		2.91E+04	9.32E+03		9.32E+03	1.04E+03		1.04E+03
N	57125	Cyanide (CN-)	mg/kg	1.47E+04		1.47E+04	1.43E+04		1.43E+04	2.16E+03		2.16E+03
N	7782414	Fluorine (Soluble Fluoride)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.34E+04		1.34E+04
N	7647010	Hydrogen Chloride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	74908	Hydrogen Cyanide	mg/kg	1.00E+05		1.00E+05	3.63E+04		3.63E+04	4.09E+03		4.09E+03
N	7783064	Hydrogen Sulfide	mg/kg	1.74E+04		1.74E+04	5.59E+03		5.59E+03	6.22E+02		6.22E+02
Y	7439896	Iron	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.05E+04		6.05E+04
Y	7439921	Lead And Compounds	mg/kg			4.00E+02			4.00E+02			4.00E+02
N	7439932	Lithium	mg/kg	1.00E+05		1.00E+05	4.20E+04		4.20E+04	4.43E+03		4.43E+03
N	7439954	Magnesium	mg/kg									
Y	7439965	Manganese	mg/kg	3.91E+04		3.91E+04	2.79E+04		2.79E+04	3.70E+03		3.70E+03
N	7487947	Mercuric Chloride	mg/kg	7.97E+02		7.97E+02	4.38E+02		4.38E+02	5.37E+01		5.37E+01
N	1344485	Mercuric Sulfide	mg/kg									
N	7439976	Mercury (elemental)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7439976	Mercury, Inorganic Salts	mg/kg	7.97E+02		7.97E+02	4.38E+02		4.38E+02	5.37E+01		5.37E+01
N	22967926	Methyl Mercury	mg/kg	1.16E+03		1.16E+03	2.11E+02		2.11E+02	2.22E+01		2.22E+01
Y	7439987	Molybdenum	mg/kg	4.17E+04		4.17E+04	1.00E+04		1.00E+04	1.08E+03		1.08E+03
N		Nickel Refinery Dust	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
Y	7440020	Nickel Soluble Salts	mg/kg	1.00E+05		1.00E+05	3.88E+04		3.88E+04	4.24E+03		4.24E+03
N	12035722	Nickel Subsulfide	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
N	14797558	Nitrate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	10102439	Nitric Oxide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.07E+04		2.07E+04
N	14797650	Nitrite	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.19E+04		2.19E+04
N	10102440	Nitrogen Dioxide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7803512	Phosphine	mg/kg	1.74E+03		1.74E+03	5.59E+02		5.59E+02	6.22E+01		6.22E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	7664382	Phosphoric Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	151508	Potassium Cyanide	mg/kg	1.00E+05		1.00E+05	5.78E+04		5.78E+04	1.00E+05		1.00E+05	2.49E+04		2.49E+04
N	506616	Potassium Silver Cyanide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7782492	Selenium	mg/kg	3.91E+04		3.91E+04	2.56E+04		2.56E+04	1.00E+05		1.00E+05	1.13E+04		1.13E+04
N	7446346	Selenium Sulfide	mg/kg												
Y	7440224	Silver	mg/kg	3.80E+04		3.80E+04	2.07E+04		2.07E+04	9.15E+04		9.15E+04	9.09E+03		9.09E+03
N	506649	Silver Cyanide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7440235	Sodium	mg/kg												
N	26628228	Sodium Azide	mg/kg	3.06E+04		3.06E+04	1.72E+04		1.72E+04	7.69E+04		7.69E+04	7.52E+03		7.52E+03
N	143339	Sodium Cyanide	mg/kg	1.00E+05		1.00E+05	4.63E+04		4.63E+04	1.00E+05		1.00E+05	1.99E+04		1.99E+04
N	13718268	Sodium Metavanadate	mg/kg	7.64E+03		7.64E+03	4.29E+03		4.29E+03	1.92E+04		1.92E+04	1.88E+03		1.88E+03
N	7440246	Strontium, Stable	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	14808798	Sulfate	mg/kg												
N	10102451	Thallium (I) Nitrate	mg/kg	6.88E+02		6.88E+02	3.86E+02		3.86E+02	1.73E+03		1.73E+03	1.69E+02		1.69E+02
N	7440280	Thallium (Soluble Salts)	mg/kg												
Y	7791120	Thallium Chloride	mg/kg	6.11E+02		6.11E+02	3.43E+02		3.43E+02	1.54E+03		1.54E+03	1.50E+02		1.50E+02
N	12039520	Thallium Selenite	mg/kg	6.88E+02		6.88E+02	3.86E+02		3.86E+02	1.73E+03		1.73E+03	1.69E+02		1.69E+02
N	7446186	Thallium Sulfate	mg/kg	6.11E+02		6.11E+02	3.43E+02		3.43E+02	1.54E+03		1.54E+03	1.50E+02		1.50E+02
N	7440291	Thorium	mg/kg												
N	7440315	Tin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7440326	Titanium	mg/kg												
Y	7440611	Uranium (Soluble Salts)	mg/kg	4.74E+03		4.74E+03	3.34E+03		3.34E+03	1.77E+04		1.77E+04	1.48E+03		1.48E+03
N	1314621	Vanadium Pentoxide	mg/kg	6.88E+04		6.88E+04	3.86E+04		3.86E+04	1.00E+05		1.00E+05	1.69E+04		1.69E+04
N	36907423	Vanadium Sulfate	mg/kg	1.00E+05		1.00E+05	8.58E+04		8.58E+04	1.00E+05		1.00E+05	3.76E+04		3.76E+04
Y	7440622	Vanadium, Metallic	mg/kg	2.95E+04		2.95E+04	4.47E+03		4.47E+03	1.39E+04		1.39E+04	1.91E+03		1.91E+03
N	27774136	Vanadyl Sulfate	mg/kg	1.00E+05		1.00E+05	8.58E+04		8.58E+04	1.00E+05		1.00E+05	3.76E+04		3.76E+04
N	7723140	White Phosphorus	mg/kg	1.53E+02		1.53E+02	8.58E+01		8.58E+01	3.85E+02		3.85E+02	3.76E+01		3.76E+01
Y	7440666	Zinc (Metallic)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	557211	Zinc Cyanide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.40E+04		9.40E+04
N	1314847	Zinc Phosphide	mg/kg	2.29E+03		2.29E+03	1.29E+03		1.29E+03	5.77E+03		5.77E+03	5.64E+02		5.64E+02
N	7440677	Zirconium	mg/kg												
N	1596845	ALAR	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	83329	Acenaphthene	mg/kg	1.00E+05		1.00E+05	6.67E+04		6.67E+04	1.00E+05		1.00E+05	3.15E+04		3.15E+04
Y	208968	Acenaphthylene	mg/kg												
N	30560191	Acephate	mg/kg	2.71E+04	1.00E+05	2.71E+04	9.02E+03	2.42E+04	9.02E+03	3.25E+04	1.80E+04	1.80E+04	3.90E+03	1.80E+04	3.90E+03
N	75070	Acetaldehyde	mg/kg	6.05E+03	1.00E+05	6.05E+03	4.84E+02	2.28E+03	4.84E+02	1.86E+03	2.51E+03	1.86E+03	2.87E+02	2.51E+03	2.87E+02
N	34256821	Acetochlor	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	67641	Acetone	mg/kg	1.00E+05		1.00E+05	1.91E+04		1.91E+04	7.34E+04		7.34E+04	1.10E+04		1.10E+04
N	75865	Acetone Cyanohydrin	mg/kg	5.42E+03		5.42E+03	1.80E+03		1.80E+03	6.49E+03		6.49E+03	7.80E+02		7.80E+02
N	75058	Acetonitrile	mg/kg	2.78E+04		2.78E+04	4.63E+03		4.63E+03	1.78E+04		1.78E+04	2.50E+03		2.50E+03
N	98862	Acetophenone	mg/kg	6.26E+01		6.26E+01	5.01E+00		5.01E+00	1.93E+01		1.93E+01	2.96E+00		2.96E+00
N	107028	Acrolein	mg/kg	1.09E+01		1.09E+01	8.69E-01		8.69E-01	3.34E+00		3.34E+00	5.15E-01		5.15E-01
N	79061	Acrylamide	mg/kg	1.35E+03	3.51E+03	1.35E+03	4.51E+02	4.68E+01	4.68E+01	1.62E+03	3.48E+01	3.48E+01	1.95E+02	3.48E+01	3.48E+01
N	79107	Acrylic Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	107131	Acrylonitrile	mg/kg	8.09E+02	1.04E+04	8.09E+02	7.12E+01	4.56E+01	4.56E+01	2.74E+02	4.86E+01	4.86E+01	4.18E+01	4.86E+01	4.18E+01
N	15972608	Alachlor	mg/kg	6.77E+04	1.00E+05	6.77E+04	2.25E+04	2.63E+03	2.63E+03	8.11E+04	1.96E+03	1.96E+03	9.75E+03	1.96E+03	1.96E+03
N	116063	Aldicarb	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	1646884	Aldicarb Sulfone	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	309002	Aldrin	mg/kg	2.03E+02	9.29E+02	2.03E+02	6.76E+01	1.24E+01	1.24E+01	2.43E+02	9.22E+00	9.22E+00	2.93E+01	9.22E+00	9.22E+00
N	74223646	Ally	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	107186	Allyl Alcohol	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	107051	Allyl Chloride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.42E+04		6.42E+04
N	67485294	Amdro	mg/kg	2.03E+03		2.03E+03	6.76E+02		6.76E+02	2.43E+03		2.43E+03	2.93E+02		2.93E+02
N	834128	Ametryn	mg/kg	6.09E+04		6.09E+04	2.03E+04		2.03E+04	7.30E+04		7.30E+04	8.78E+03		8.78E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	7664382	Phosphoric Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	151508	Potassium Cyanide	mg/kg	4.30E+04		4.30E+04	3.98E+04		3.98E+04	5.87E+03		5.87E+03
N	506616	Potassium Silver Cyanide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.15E+04		4.15E+04
Y	7782492	Selenium	mg/kg	4.47E+04		4.47E+04	1.01E+04		1.01E+04	1.09E+03		1.09E+03
N	7446346	Selenium Sulfide	mg/kg									
Y	7440224	Silver	mg/kg	2.71E+04		2.71E+04	9.17E+03		9.17E+03	1.03E+03		1.03E+03
N	506649	Silver Cyanide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.07E+04		2.07E+04
N	7440235	Sodium	mg/kg									
N	26628228	Sodium Azide	mg/kg	2.33E+04		2.33E+04	7.46E+03		7.46E+03	8.30E+02		8.30E+02
N	143339	Sodium Cyanide	mg/kg	3.44E+04		3.44E+04	3.19E+04		3.19E+04	4.69E+03		4.69E+03
N	13718268	Sodium Metavanadate	mg/kg	5.82E+03		5.82E+03	1.86E+03		1.86E+03	2.07E+02		2.07E+02
N	7440246	Strontium, Stable	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	14808798	Sulfate	mg/kg									
N	10102451	Thallium (I) Nitrate	mg/kg	5.23E+02		5.23E+02	1.68E+02		1.68E+02	1.87E+01		1.87E+01
N	7440280	Thallium (Soluble Salts)	mg/kg									
Y	7791120	Thallium Chloride	mg/kg	4.65E+02		4.65E+02	1.49E+02		1.49E+02	1.66E+01		1.66E+01
N	12039520	Thallium Selenite	mg/kg	5.23E+02		5.23E+02	1.68E+02		1.68E+02	1.87E+01		1.87E+01
N	7446186	Thallium Sulfate	mg/kg	4.65E+02		4.65E+02	1.49E+02		1.49E+02	1.66E+01		1.66E+01
N	7440291	Thorium	mg/kg									
N	7440315	Tin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7440326	Titanium	mg/kg									
Y	7440611	Uranium (Soluble Salts)	mg/kg	6.83E+03		6.83E+03	1.26E+03		1.26E+03	1.33E+02		1.33E+02
N	1314621	Vanadium Pentoxide	mg/kg	5.23E+04		5.23E+04	1.68E+04		1.68E+04	1.87E+03		1.87E+03
N	36907423	Vanadium Sulfate	mg/kg	1.00E+05		1.00E+05	3.73E+04		3.73E+04	4.15E+03		4.15E+03
Y	7440622	Vanadium, Metallic	mg/kg	3.09E+03		3.09E+03	3.41E+03		3.41E+03	5.54E+02		5.54E+02
N	27774136	Vanadyl Sulfate	mg/kg	1.00E+05		1.00E+05	3.73E+04		3.73E+04	4.15E+03		4.15E+03
N	7723140	White Phosphorus	mg/kg	1.16E+02		1.16E+02	3.73E+01		3.73E+01	4.15E+00		4.15E+00
Y	7440666	Zinc (Metallic)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.22E+04		6.22E+04
N	557211	Zinc Cyanide	mg/kg	1.00E+05		1.00E+05	9.32E+04		9.32E+04	1.04E+04		1.04E+04
N	1314847	Zinc Phosphide	mg/kg	1.74E+03		1.74E+03	5.59E+02		5.59E+02	6.22E+01		6.22E+01
N	7440677	Zirconium	mg/kg									
N	1596845	ALAR	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.48E+04		2.48E+04
Y	83329	Acenaphthene	mg/kg	6.43E+04		6.43E+04	4.38E+04		4.38E+04	6.68E+03		6.68E+03
Y	208968	Acenaphthylene	mg/kg									
N	30560191	Acephate	mg/kg	7.97E+03	1.80E+04	7.97E+03	5.15E+03	4.28E+03	4.28E+03	6.61E+02	4.28E+03	6.61E+02
N	75070	Acetaldehyde	mg/kg	8.50E+02	2.51E+03	8.50E+02	3.46E+02	6.47E+02	3.46E+02	7.16E+01	6.47E+02	7.16E+01
N	34256821	Acetochlor	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	67641	Acetone	mg/kg	3.20E+04		3.20E+04	1.33E+04		1.33E+04	2.59E+03		2.59E+03
N	75865	Acetone Cyanohydrin	mg/kg	1.59E+03		1.59E+03	1.03E+03		1.03E+03	1.32E+02		1.32E+02
N	75058	Acetonitrile	mg/kg	6.79E+03		6.79E+03	3.00E+03		3.00E+03	5.04E+02		5.04E+02
N	98862	Acetophenone	mg/kg	8.79E+00		8.79E+00	3.58E+00		3.58E+00	7.41E-01		7.41E-01
N	107028	Acrolein	mg/kg	1.53E+00		1.53E+00	6.21E-01		6.21E-01	1.29E-01		1.29E-01
N	79061	Acrylamide	mg/kg	3.98E+02	3.48E+01	3.48E+01	2.58E+02	8.27E+00	8.27E+00	3.30E+01	8.27E+00	8.27E+00
N	79107	Acrylic Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.23E+04		8.23E+04
Y	107131	Acrylonitrile	mg/kg	1.23E+02	4.86E+01	4.86E+01	5.04E+01	1.20E+01	1.20E+01	1.02E+01	1.20E+01	1.02E+01
N	15972608	Alachlor	mg/kg	1.99E+04	1.96E+03	1.96E+03	1.29E+04	4.65E+02	4.65E+02	1.65E+03	4.65E+02	4.65E+02
N	116063	Aldicarb	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	1646884	Aldicarb Sulfone	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	309002	Aldrin	mg/kg	5.98E+01	9.22E+00	9.22E+00	3.86E+01	2.19E+00	2.19E+00	4.96E+00	2.19E+00	2.19E+00
N	74223646	Ally	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.13E+04		4.13E+04
N	107186	Allyl Alcohol	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	107051	Allyl Chloride	mg/kg	1.00E+05		1.00E+05	7.61E+04		7.61E+04	9.19E+03		9.19E+03
N	67485294	Amdro	mg/kg	5.98E+02		5.98E+02	3.86E+02		3.86E+02	4.96E+01		4.96E+01
N	834128	Ametryn	mg/kg	1.79E+04		1.79E+04	1.16E+04		1.16E+04	1.49E+03		1.49E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	591275	Aminophenol, m-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.83E+04		6.83E+04
N	504245	Aminopyridine, 4-	mg/kg	1.35E+02		1.35E+02	4.51E+01		4.51E+01	1.62E+02		1.62E+02	1.95E+01		1.95E+01
N	33089611	Amitraz	mg/kg	1.69E+04		1.69E+04	5.64E+03		5.64E+03	2.03E+04		2.03E+04	2.44E+03		2.44E+03
N	62533	Aniline	mg/kg	4.74E+04	1.00E+05	4.74E+04	1.58E+04	3.69E+04	1.58E+04	5.68E+04	2.75E+04	2.75E+04	6.83E+03	2.75E+04	6.83E+03
Y	120127	Anthracene	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	74115245	Apollo	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	140578	Aramite	mg/kg	1.00E+05	1.00E+05		1.00E+05	8.42E+03	8.42E+03	1.00E+05	6.27E+03	6.27E+03	4.88E+04	6.27E+03	6.27E+03
Y	12674112	Aroclor 1016	mg/kg	3.50E+02	5.83E+03	3.50E+02	6.37E+01	4.25E+01	4.25E+01	2.03E+02	2.83E+01	2.83E+01	2.73E+01	2.83E+01	2.73E+01
Y	11104282	Aroclor 1221	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
Y	11141165	Aroclor 1232	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
Y	53469219	Aroclor 1242	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
Y	12672296	Aroclor 1248	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
Y	11097691	Aroclor 1254	mg/kg	1.00E+02	5.83E+03	1.00E+02	1.82E+01	4.25E+01	1.82E+01	5.80E+01	2.83E+01	2.83E+01	7.81E+00	2.83E+01	7.81E+00
Y	11096825	Aroclor 1260	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
N	76578148	Assure	mg/kg	6.09E+04		6.09E+04	2.03E+04		2.03E+04	7.30E+04		7.30E+04	8.78E+03		8.78E+03
N	3337711	Asulam	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	1912249	Atrazine	mg/kg	1.00E+05	7.12E+04	7.12E+04	7.89E+04	9.48E+02	9.48E+02	1.00E+05	7.06E+02	7.06E+02	3.41E+04	7.06E+02	7.06E+02
N	65195553	Avermectin B1	mg/kg	2.71E+03		2.71E+03	9.02E+02		9.02E+02	3.25E+03		3.25E+03	3.90E+02		3.90E+02
N	103333	Azobenzene	mg/kg		1.00E+05	1.00E+05		1.91E+03	1.91E+03		1.42E+03	1.42E+03		1.42E+03	1.42E+03
N	114261	Baygon	mg/kg	2.71E+04		2.71E+04	9.02E+03		9.02E+03	3.25E+04		3.25E+04	3.90E+03		3.90E+03
N	43121433	Bayleton	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	68359375	Baythroid	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
N	1861401	Benefin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	17804352	Benomyl	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	25057890	Bentazon	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
Y	56553	Benz[a]anthracene	mg/kg		1.98E+04	1.98E+04		2.08E+02	2.08E+02		1.46E+02	1.46E+02		1.46E+02	1.46E+02
N	100527	Benzaldehyde	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	71432	Benzene	mg/kg	9.00E+02	4.11E+04	9.00E+02	7.45E+01	1.47E+02	7.45E+01	2.86E+02	1.61E+02	1.61E+02	4.40E+01	1.61E+02	4.40E+01
N	29224553	Benzene, Ethyldimethyl	mg/kg												
N	25550145	Benzene, Ethylmethyl	mg/kg												
N	768003	Benzene, Methylpropenyl	mg/kg												
N	28729546	Benzene, Methylpropyl	mg/kg												
N	25551137	Benzene, Trimethyl	mg/kg												
N	108985	Benzenethiol	mg/kg	6.77E+01		6.77E+01	2.25E+01		2.25E+01	8.11E+01		8.11E+01	9.75E+00		9.75E+00
N	92875	Benzidine	mg/kg	2.15E+04	7.28E+01	7.28E+01	8.87E+03	1.20E+00	1.20E+00	3.42E+04	9.53E-01	9.53E-01	3.85E+03	9.53E-01	9.53E-01
Y	50328	Benzo[a]pyrene	mg/kg		1.98E+03	1.98E+03		2.08E+01	2.08E+01		1.46E+01	1.46E+01		1.46E+01	1.46E+01
Y	205992	Benzo[b]fluoranthene	mg/kg		1.98E+04	1.98E+04		2.08E+02	2.08E+02		1.46E+02	1.46E+02		1.46E+02	1.46E+02
N	191242	Benzo[g,h,i]perylene	mg/kg												
Y	207089	Benzo[k]fluoranthene	mg/kg		1.00E+05	1.00E+05		2.08E+03	2.08E+03		1.46E+03	1.46E+03		1.46E+03	1.46E+03
N	65850	Benzoic Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	98077	Benzotrichloride	mg/kg		1.22E+03	1.22E+03		1.62E+01	1.62E+01		1.21E+01	1.21E+01		1.21E+01	1.21E+01
N	100516	Benzyl Alcohol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	100447	Benzyl Chloride	mg/kg		2.69E+04	2.69E+04		1.11E+02	1.11E+02		1.19E+02	1.19E+02		1.19E+02	1.19E+02
N	141662	Bidrin	mg/kg	6.77E+02		6.77E+02	2.25E+02		2.25E+02	8.11E+02		8.11E+02	9.75E+01		9.75E+01
N	82657043	Biphenthrin	mg/kg	1.00E+05		1.00E+05	3.38E+04		3.38E+04	1.00E+05		1.00E+05	1.46E+04		1.46E+04
N	92524	Biphenyl, 1,1'-	mg/kg	1.00E+05		1.00E+05	6.71E+04		6.71E+04	1.00E+05		1.00E+05	3.26E+04		3.26E+04
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/kg		1.00E+05	1.00E+05		3.01E+03	3.01E+03		2.24E+03	2.24E+03		2.24E+03	2.24E+03
N	111911	Bis(2-chloroethoxy)methane	mg/kg												
N	111444	Bis(2-chloroethyl)ether	mg/kg		7.01E+03	7.01E+03		3.57E+01	3.57E+01		3.61E+01	3.61E+01		3.61E+01	3.61E+01
N	39638329	Bis(2-chloroisopropyl)ether	mg/kg	1.00E+05	1.00E+05		9.02E+04	3.01E+03	3.01E+03	1.00E+05	2.24E+03	2.24E+03	3.90E+04	2.24E+03	2.24E+03
N	117817	Bis(2-ethylhexyl)phthalate	mg/kg	1.00E+05	1.00E+05		2.22E+04	7.40E+03	7.40E+03	7.19E+04	5.00E+03	5.00E+03	9.53E+03	5.00E+03	5.00E+03
N	542881	Bis(chloromethyl)ether	mg/kg		3.43E+01	3.43E+01		1.72E-01	1.72E-01		1.80E-01	1.80E-01		1.80E-01	1.80E-01
N	80057	Bisphenol A	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	108861	Bromobenzene	mg/kg	1.00E+05		1.00E+05	5.91E+04		5.91E+04	1.00E+05		1.00E+05	2.57E+04		2.57E+04

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	591275	Aminophenol, m-	mg/kg	1.00E+05		1.00E+05	9.02E+04		9.02E+04	1.16E+04		1.16E+04
N	504245	Aminopyridine, 4-	mg/kg	3.98E+01		3.98E+01	2.58E+01		2.58E+01	3.30E+00		3.30E+00
N	33089611	Amitraz	mg/kg	4.98E+03		4.98E+03	3.22E+03		3.22E+03	4.13E+02		4.13E+02
N	62533	Aniline	mg/kg	1.39E+04	2.75E+04	1.39E+04	9.02E+03	6.53E+03	6.53E+03	1.16E+03	6.53E+03	1.16E+03
Y	120127	Anthracene	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.98E+04		4.98E+04
N	74115245	Apollo	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	140578	Aramite	mg/kg	9.96E+04	6.27E+03	6.27E+03	6.44E+04	1.49E+03	1.49E+03	8.26E+03	1.49E+03	1.49E+03
Y	12674112	Aroclor 1016	mg/kg	4.58E+01	2.83E+01	2.83E+01	4.60E+01	1.05E+01	1.05E+01	7.08E+00	1.05E+01	7.08E+00
Y	11104282	Aroclor 1221	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
Y	11141165	Aroclor 1232	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
Y	53469219	Aroclor 1242	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
Y	12672296	Aroclor 1248	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
Y	11097691	Aroclor 1254	mg/kg	1.31E+01	2.83E+01	1.31E+01	1.31E+01	1.05E+01	1.05E+01	2.02E+00	1.05E+01	2.02E+00
Y	11096825	Aroclor 1260	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
N	76578148	Assure	mg/kg	1.79E+04		1.79E+04	1.16E+04		1.16E+04	1.49E+03		1.49E+03
N	3337711	Asulam	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	1912249	Atrazine	mg/kg	6.97E+04	7.06E+02	7.06E+02	4.51E+04	1.68E+02	1.68E+02	5.78E+03	1.68E+02	1.68E+02
N	65195553	Avermectin B1	mg/kg	7.97E+02		7.97E+02	5.15E+02		5.15E+02	6.61E+01		6.61E+01
N	103333	Azobenzene	mg/kg		1.42E+03	1.42E+03		3.38E+02	3.38E+02		3.38E+02	3.38E+02
N	114261	Baygon	mg/kg	7.97E+03		7.97E+03	5.15E+03		5.15E+03	6.61E+02		6.61E+02
N	43121433	Bayleton	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	68359375	Baythroid	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
N	1861401	Benefin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.96E+04		4.96E+04
N	17804352	Benomyl	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	25057890	Bentazon	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
Y	56553	Benz[a]anthracene	mg/kg		1.46E+02	1.46E+02		4.24E+01	4.24E+01		4.24E+01	4.24E+01
N	100527	Benzaldehyde	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.84E+04		1.84E+04
Y	71432	Benzene	mg/kg	1.30E+02	1.61E+02	1.30E+02	5.30E+01	4.08E+01	4.08E+01	1.09E+01	4.08E+01	1.09E+01
N	29224553	Benzene, Ethyldimethyl	mg/kg									
N	25550145	Benzene, Ethylmethyl	mg/kg									
N	768003	Benzene, Methylpropenyl	mg/kg									
N	28729546	Benzene, Methylpropyl	mg/kg									
N	25551137	Benzene, Trimethyl	mg/kg									
N	108985	Benzenethiol	mg/kg	1.99E+01		1.99E+01	1.29E+01		1.29E+01	1.65E+00		1.65E+00
N	92875	Benzidine	mg/kg	8.90E+03	9.53E-01	9.53E-01	4.57E+03	1.85E-01	1.85E-01	5.52E+02	1.85E-01	1.85E-01
Y	50328	Benzo[a]pyrene	mg/kg		1.46E+01	1.46E+01		4.24E+00	4.24E+00		4.24E+00	4.24E+00
Y	205992	Benzo[b]fluoranthene	mg/kg		1.46E+02	1.46E+02		4.24E+01	4.24E+01		4.24E+01	4.24E+01
N	191242	Benzo[g,h,i]perylene	mg/kg									
Y	207089	Benzo[k]fluoranthene	mg/kg		1.46E+03	1.46E+03		4.24E+02	4.24E+02		4.24E+02	4.24E+02
N	65850	Benzoic Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	98077	Benzotrichloride	mg/kg		1.21E+01	1.21E+01		2.86E+00	2.86E+00		2.86E+00	2.86E+00
N	100516	Benzyl Alcohol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	5.31E+04		5.31E+04
N	100447	Benzyl Chloride	mg/kg		1.19E+02	1.19E+02		2.97E+01	2.97E+01		2.97E+01	2.97E+01
N	141662	Bidrin	mg/kg	1.99E+02		1.99E+02	1.29E+02		1.29E+02	1.65E+01		1.65E+01
N	82657043	Biphenthrin	mg/kg	2.99E+04		2.99E+04	1.93E+04		1.93E+04	2.48E+03		2.48E+03
N	92524	Biphenyl, 1,1'-	mg/kg	7.42E+04		7.42E+04	4.17E+04		4.17E+04	6.18E+03		6.18E+03
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/kg		2.24E+03	2.24E+03		5.32E+02	5.32E+02		5.32E+02	5.32E+02
N	111911	Bis(2-chloroethoxy)methane	mg/kg									
N	111444	Bis(2-chloroethyl)ether	mg/kg		3.61E+01	3.61E+01		9.09E+00	9.09E+00		9.09E+00	9.09E+00
N	39638329	Bis(2-chloroisopropyl)ether	mg/kg	7.97E+04	2.24E+03	2.24E+03	5.15E+04	5.32E+02	5.32E+02	6.61E+03	5.32E+02	5.32E+02
N	117817	Bis(2-ethylhexyl)phthalate	mg/kg	1.64E+04	5.00E+03	5.00E+03	1.54E+04	1.73E+03	1.73E+03	2.29E+03	1.73E+03	1.73E+03
N	542881	Bis(chloromethyl)ether	mg/kg		1.80E-01	1.80E-01		4.37E-02	4.37E-02		4.37E-02	4.37E-02
N	80057	Bisphenol A	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	108861	Bromobenzene	mg/kg	5.93E+04		5.93E+04	3.05E+04		3.05E+04	3.68E+03		3.68E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action val[illegible]s of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	74975	Bromochloromethane	mg/kg												
N	75274	Bromodichloromethane	mg/kg	2.72E+04	5.13E+04	2.72E+04	2.57E+03	1.94E+02	1.94E+02	9.91E+03	2.10E+02	2.10E+02	1.50E+03	2.10E+02	2.10E+02
N	101553	Bromodiphenyl Ether, p-	mg/kg												
N	75252	Bromoform	mg/kg	1.00E+05	1.00E+05		5.04E+04	2.98E+04	2.98E+04	1.00E+05	2.27E+04	2.27E+04	2.18E+04	2.27E+04	2.18E+04
N	74839	Bromomethane	mg/kg	5.08E+02		5.08E+02	4.24E+01		4.24E+01	1.63E+02		1.63E+02	2.50E+01		2.50E+01
N	2104963	Bromophos	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	75627	Bromotrichloromethane	mg/kg												
N	1689845	Bromoxynil	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	1689992	Bromoxynil Octanoate	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	106990	Butadiene, 1,3-	mg/kg		3.50E+02	3.50E+02		1.16E+00	1.16E+00		1.27E+00	1.27E+00		1.27E+00	1.27E+00
N	71363	Butanol, N-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/kg												
N	85687	Butyl Benzyl Phthlate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	2008415	Butylate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	104518	Butylbenzene, N-	mg/kg	7.90E+04		7.90E+04	5.54E+04		5.54E+04	1.00E+05		1.00E+05	2.45E+04		2.45E+04
N	135988	Butylbenzene, sec-	mg/kg	7.90E+04		7.90E+04	5.54E+04		5.54E+04	1.00E+05		1.00E+05	2.45E+04		2.45E+04
N	98066	Butylbenzene-tert	mg/kg	7.90E+04		7.90E+04	5.54E+04		5.54E+04	1.00E+05		1.00E+05	2.45E+04		2.45E+04
N	507200	Butylchloride, t-	mg/kg												
N	85701	Butylphthalyl Butylglycolate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	75605	Cacodylic Acid	mg/kg	2.03E+04		2.03E+04	6.76E+03		6.76E+03	2.43E+04		2.43E+04	2.93E+03		2.93E+03
N	105602	Caprolactam	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	2425061	Captafol	mg/kg	1.35E+04	1.00E+05	1.35E+04	4.51E+03	2.45E+04	4.51E+03	1.62E+04	1.82E+04	1.62E+04	1.95E+03	1.82E+04	1.95E+03
N	133062	Captan	mg/kg	1.00E+05	1.00E+05		1.00E+05	6.01E+04	6.01E+04	1.00E+05	4.48E+04	4.48E+04	1.00E+05	4.48E+04	4.48E+04
N	63252	Carbaryl	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	86748	Carbazole	mg/kg		1.00E+05	1.00E+05		1.28E+04	1.28E+04		1.00E+04	1.00E+04		1.00E+04	1.00E+04
N	1563662	Carbofuran	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	75150	Carbon Disulfide	mg/kg	3.79E+04		3.79E+04	3.17E+03		3.17E+03	1.16E+04		1.16E+04	1.75E+03		1.75E+03
Y	56235	Carbon Tetrachloride	mg/kg	2.76E+02	1.62E+04	2.76E+02	2.31E+01	5.77E+01	2.31E+01	8.87E+01	6.28E+01	6.28E+01	1.36E+01	6.28E+01	1.36E+01
N	55285148	Carbosulfan	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	5234684	Carboxin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	75876	Chloral	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	133904	Chloramben	mg/kg	1.00E+05		1.00E+05	3.38E+04		3.38E+04	1.00E+05		1.00E+05	1.46E+04		1.46E+04
N	118752	Chloranil	mg/kg		3.92E+04	3.92E+04		5.22E+02	5.22E+02		3.89E+02	3.89E+02		3.89E+02	3.89E+02
N	57749	Chlordane	mg/kg	3.39E+03	4.51E+04	3.39E+03	1.13E+03	6.01E+02	6.01E+02	4.06E+03	4.48E+02	4.48E+02	4.88E+02	4.48E+02	4.48E+02
N	90982324	Chlorimuron, Ethyl-	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	10049044	Chlorine Dioxide	mg/kg	1.00E+05		1.00E+05	6.75E+04		6.75E+04	1.00E+05		1.00E+05	2.92E+04		2.92E+04
N	75683	Chloro-1,1-difluoroethane, 1-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	126998	Chloro-1,3-butadiene, 2-	mg/kg	4.59E+03		4.59E+03	3.77E+02		3.77E+02	1.45E+03		1.45E+03	2.23E+02		2.23E+02
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/kg		3.43E+04	3.43E+04		4.57E+02	4.57E+02		3.41E+02	3.41E+02		3.41E+02	3.41E+02
N	95692	Chloro-2-methylaniline, 4-	mg/kg		2.72E+04	2.72E+04		3.63E+02	3.63E+02		2.70E+02	2.70E+02		2.70E+02	2.70E+02
N	79118	Chloroacetic Acid	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	532274	Chloroacetophenone, 2-	mg/kg	5.15E+01		5.15E+01	1.27E+01		1.27E+01	4.66E+01		4.66E+01	6.04E+00		6.04E+00
N	106478	Chloroaniline, p-	mg/kg	2.71E+04		2.71E+04	9.02E+03		9.02E+03	3.25E+04		3.25E+04	3.90E+03		3.90E+03
N	108907	Chlorobenzene	mg/kg	1.84E+04		1.84E+04	1.64E+03		1.64E+03	6.26E+03		6.26E+03	9.52E+02		9.52E+02
N	510156	Chlorobenzilate	mg/kg	1.00E+05	5.85E+04	5.85E+04	4.51E+04	7.79E+02	7.79E+02	1.00E+05	5.81E+02	5.81E+02	1.95E+04	5.81E+02	5.81E+02
N	74113	Chlorobenzoic Acid, p-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	98566	Chlorobenzotrifluoride, 4-	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	109693	Chlorobutane, 1-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	78864	Chlorobutane, 2-	mg/kg												
N	41851507	Chlorocyclopentadiene	mg/kg												
N	73506942	Chlorodibromoethane	mg/kg		1.00E+05	1.00E+05		3.28E+03	3.28E+03		2.61E+03	2.61E+03		2.61E+03	2.61E+03
N	75456	Chlorodifluoromethane	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	67663	Chloroform	mg/kg	4.62E+01	1.55E+04	4.62E+01	3.70E+00	4.99E+01	3.70E+00	1.42E+01	5.49E+01	1.42E+01	2.19E+00	5.49E+01	2.19E+00
N	74873	Chloromethane	mg/kg	8.25E+03	1.00E+05	8.25E+03	6.60E+02	3.73E+02	3.73E+02	2.54E+03	4.09E+02	4.09E+02	3.90E+02	4.09E+02	3.90E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	74975	Bromochloromethane	mg/kg									
N	75274	Bromodichloromethane	mg/kg	4.40E+03	2.10E+02	2.10E+02	1.81E+03	5.29E+01	5.29E+01	3.59E+02	5.29E+01	5.29E+01
N	101553	Bromodiphenyl Ether, p-	mg/kg									
N	75252	Bromoform	mg/kg	4.67E+04	2.27E+04	2.27E+04	2.77E+04	4.98E+03	4.98E+03	3.46E+03	4.98E+03	3.46E+03
N	74839	Bromomethane	mg/kg	7.39E+01		7.39E+01	3.02E+01		3.02E+01	6.19E+00		6.19E+00
N	2104963	Bromophos	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	75627	Bromotrichloromethane	mg/kg									
N	1689845	Bromoxynil	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	1689992	Bromoxynil Octanoate	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	106990	Butadiene, 1,3-	mg/kg		1.27E+00	1.27E+00		3.26E-01	3.26E-01		3.26E-01	3.26E-01
N	71363	Butanol, N-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/kg									
N	85687	Butyl Benzyl Phthlate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.47E+04		3.47E+04
N	2008415	Butylate	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	104518	Butylbenzene, N-	mg/kg	1.00E+05		1.00E+05	2.10E+04		2.10E+04	2.22E+03		2.22E+03
N	135988	Butylbenzene, sec-	mg/kg	1.00E+05		1.00E+05	2.10E+04		2.10E+04	2.22E+03		2.22E+03
N	98066	Butylbenzene-tert	mg/kg	1.00E+05		1.00E+05	2.10E+04		2.10E+04	2.22E+03		2.22E+03
N	507200	Butylchloride, t-	mg/kg									
N	85701	Butylphthalyl Butylglycolate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	75605	Cacodylic Acid	mg/kg	5.98E+03		5.98E+03	3.86E+03		3.86E+03	4.96E+02		4.96E+02
N	105602	Caprolactam	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.26E+04		8.26E+04
N	2425061	Captafol	mg/kg	3.98E+03	1.82E+04	3.98E+03	2.58E+03	4.33E+03	2.58E+03	3.30E+02	4.33E+03	3.30E+02
N	133062	Captan	mg/kg	1.00E+05	4.48E+04	4.48E+04	1.00E+05	1.06E+04	1.06E+04	2.15E+04	1.06E+04	1.06E+04
N	63252	Carbaryl	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	86748	Carbazole	mg/kg		1.00E+04	1.00E+04		2.05E+03	2.05E+03		2.05E+03	2.05E+03
N	1563662	Carbofuran	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	75150	Carbon Disulfide	mg/kg	4.25E+03		4.25E+03	2.33E+03		2.33E+03	4.72E+02		4.72E+02
Y	56235	Carbon Tetrachloride	mg/kg	4.01E+01	6.28E+01	4.01E+01	1.64E+01	1.60E+01	1.60E+01	3.36E+00	1.60E+01	3.36E+00
N	55285148	Carbosulfan	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	5234684	Carboxin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	75876	Chloral	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	133904	Chloramben	mg/kg	2.99E+04		2.99E+04	1.93E+04		1.93E+04	2.48E+03		2.48E+03
N	118752	Chloranil	mg/kg		3.89E+02	3.89E+02		9.23E+01	9.23E+01		9.23E+01	9.23E+01
N	57749	Chlordane	mg/kg	9.96E+02	4.48E+02	4.48E+02	6.44E+02	1.06E+02	1.06E+02	8.26E+01	1.06E+02	8.26E+01
N	90982324	Chlorimuron, Ethyl-	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	10049044	Chlorine Dioxide	mg/kg	5.97E+04		5.97E+04	3.86E+04		3.86E+04	4.95E+03		4.95E+03
N	75683	Chloro-1,1-difluoroethane, 1-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	126998	Chloro-1,3-butadiene, 2-	mg/kg	6.58E+02		6.58E+02	2.69E+02		2.69E+02	5.53E+01		5.53E+01
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/kg		3.41E+02	3.41E+02		8.09E+01	8.09E+01		8.09E+01	8.09E+01
N	95692	Chloro-2-methylaniline, 4-	mg/kg		2.70E+02	2.70E+02		6.42E+01	6.42E+01		6.42E+01	6.42E+01
N	79118	Chloroacetic Acid	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	532274	Chloroacetophenone, 2-	mg/kg	1.35E+01		1.35E+01	7.77E+00		7.77E+00	1.12E+00		1.12E+00
N	106478	Chloroaniline, p-	mg/kg	7.97E+03		7.97E+03	5.15E+03		5.15E+03	6.61E+02		6.61E+02
N	108907	Chlorobenzene	mg/kg	2.71E+03		2.71E+03	1.16E+03		1.16E+03	2.34E+02		2.34E+02
N	510156	Chlorobenzilate	mg/kg	3.98E+04	5.81E+02	5.81E+02	2.58E+04	1.38E+02	1.38E+02	3.30E+03	1.38E+02	1.38E+02
N	74113	Chlorobenzoic Acid, p-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.30E+04		3.30E+04
N	98566	Chlorobenzotrifluoride, 4-	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	109693	Chlorobutane, 1-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.36E+04		7.36E+04
N	78864	Chlorobutane, 2-	mg/kg									
N	41851507	Chlorocyclopentadiene	mg/kg									
N	73506942	Chlorodibromoethane	mg/kg		2.61E+03	2.61E+03		5.06E+02	5.06E+02		5.06E+02	5.06E+02
N	75456	Chlorodifluoromethane	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.81E+04		2.81E+04
Y	67663	Chloroform	mg/kg	6.49E+00	5.49E+01	6.49E+00	2.64E+00	1.42E+01	2.64E+00	5.48E-01	1.42E+01	5.48E-01
N	74873	Chloromethane	mg/kg	1.16E+03	4.09E+02	4.09E+02	4.71E+02	1.04E+02	1.04E+02	9.76E+01	1.04E+02	9.76E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	107302	Chloromethyl Methyl Ether	mg/kg												
N	91587	Chloronaphthalene, Beta-	mg/kg	1.00E+05		1.00E+05	1.49E+04		1.49E+04	5.69E+04		5.69E+04	8.54E+03		8.54E+03
N	88733	Chloronitrobenzene, o-	mg/kg		8.48E+04	8.48E+04		3.02E+02	3.02E+02		3.29E+02	3.29E+02		3.29E+02	3.29E+02
N	121733	Chloronitrobenzene, p-	mg/kg		1.00E+05	1.00E+05		3.09E+03	3.09E+03		3.16E+03	3.16E+03		3.16E+03	3.16E+03
N	95578	Chlorophenol, 2-	mg/kg	1.61E+04		1.61E+04	2.01E+03		2.01E+03	7.65E+03		7.65E+03	1.12E+03		1.12E+03
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/kg												
N	934736	Chlorophenyl Methyl Sulfoxide	mg/kg												
N	75296	Chloropropane, 2-	mg/kg	1.40E+04		1.40E+04	1.18E+03		1.18E+03	4.56E+03		4.56E+03	6.98E+02		6.98E+02
N	1897456	Chlorothalonil	mg/kg	1.00E+05	1.00E+05		3.38E+04	1.91E+04	1.91E+04	1.00E+05	1.42E+04	1.42E+04	1.46E+04	1.42E+04	1.42E+04
N	95498	Chlorotoluene, o-	mg/kg	3.54E+04		3.54E+04	3.53E+03		3.53E+03	1.36E+04		1.36E+04	2.05E+03		2.05E+03
N	101213	Chlorpropham	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	2921882	Chlorpyrifos	mg/kg	2.03E+04		2.03E+04	6.76E+03		6.76E+03	2.43E+04		2.43E+04	2.93E+03		2.93E+03
N	5598130	Chlorpyrifos Methyl	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	64902723	Chlorsulfuron	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	60238564	Chlorthiophos	mg/kg	5.42E+03		5.42E+03	1.80E+03		1.80E+03	6.49E+03		6.49E+03	7.80E+02		7.80E+02
Y	218019	Chrysene	mg/kg		1.00E+05	1.00E+05		2.08E+04	2.08E+04		1.46E+04	1.46E+04		1.46E+04	1.46E+04
N	8007452	Coke Oven Emissions	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
N	8001589	Creosote	mg/kg												
N	108394	Cresol, m-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	95487	Cresol, o-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	106445	Cresol, p-	mg/kg	3.51E+04		3.51E+04	1.32E+04		1.32E+04	4.93E+04		4.93E+04	5.72E+03		5.72E+03
N	123739	Crotonaldehyde, trans-	mg/kg		3.92E+03	3.92E+03		1.95E+01	1.95E+01		1.98E+01	1.98E+01		1.98E+01	1.98E+01
N	98828	Cumene	mg/kg	1.00E+05		1.00E+05	1.90E+04		1.90E+04	7.32E+04		7.32E+04	1.10E+04		1.10E+04
N	21725462	Cyanazine	mg/kg	1.35E+04	1.88E+04	1.35E+04	4.51E+03	2.50E+02	2.50E+02	1.62E+04	1.87E+02	1.87E+02	1.95E+03	1.87E+02	1.87E+02
N	460195	Cyanogen	mg/kg	8.74E+03		8.74E+03	7.17E+02		7.17E+02	2.76E+03		2.76E+03	4.23E+02		4.23E+02
N	506683	Cyanogen Bromide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	506774	Cyanogen Chloride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.42E+04		6.42E+04
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/kg		1.00E+05	1.00E+05		9.15E+03	9.15E+03		6.81E+03	6.81E+03		6.81E+03	6.81E+03
N	108941	Cyclohexanone	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	108918	Cyclohexylamine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	542927	Cyclopentadiene	mg/kg												
N	68085858	Cyhalothrin/karate	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	52315078	Cypermethrin	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	66215278	Cyromazine	mg/kg	5.08E+04		5.08E+04	1.69E+04		1.69E+04	6.09E+04		6.09E+04	7.32E+03		7.32E+03
N	72548	DDD	mg/kg		6.88E+04	6.88E+04		1.07E+03	1.07E+03		8.34E+02	8.34E+02		8.34E+02	8.34E+02
N	72559	DDE	mg/kg		4.86E+04	4.86E+04		7.55E+02	7.55E+02		5.89E+02	5.89E+02		5.89E+02	5.89E+02
N	50293	DDT	mg/kg	3.54E+03	4.86E+04	3.54E+03	1.38E+03	7.55E+02	7.55E+02	5.20E+03	5.89E+02	5.89E+02	5.97E+02	5.89E+02	5.89E+02
N	1861321	Dacthal	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	75990	Dalapon	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	1163195	Decabromodiphenyl Ether	mg/kg	7.18E+04		7.18E+04	2.96E+04		2.96E+04	1.00E+05		1.00E+05	1.28E+04		1.28E+04
N	8065483	Demeton	mg/kg	2.71E+02		2.71E+02	9.02E+01		9.02E+01	3.25E+02		3.25E+02	3.90E+01		3.90E+01
N	103231	Di(2-ethylhexyl)adipate	mg/kg	1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05	
N	2303164	Diallate	mg/kg		1.00E+05	1.00E+05		4.52E+03	4.52E+03		3.59E+03	3.59E+03		3.59E+03	3.59E+03
N	505293	Diathane, 1,4-	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	333415	Diazinon	mg/kg	6.09E+03		6.09E+03	2.03E+03		2.03E+03	7.30E+03		7.30E+03	8.78E+02		8.78E+02
Y	53703	Dibenz[a,h]anthracene	mg/kg		1.98E+03	1.98E+03		2.08E+01	2.08E+01		1.46E+01	1.46E+01		1.46E+01	1.46E+01
N	132649	Dibenzofuran	mg/kg	2.71E+04		2.71E+04	9.02E+03		9.02E+03	3.25E+04		3.25E+04	3.90E+03		3.90E+03
N	96128	Dibromo-3-chloropropane, 1,2-	mg/kg	3.10E+02	1.20E+04	3.10E+02	6.39E+01	1.96E+02	6.39E+01	2.46E+02	1.56E+02	1.56E+02	3.32E+01	1.56E+02	3.32E+01
N	106376	Dibromobenzene, 1,4-	mg/kg	7.18E+04		7.18E+04	2.96E+04		2.96E+04	1.00E+05		1.00E+05	1.28E+04		1.28E+04
N	124481	Dibromochloromethane	mg/kg	4.27E+04	5.94E+04	4.27E+04	4.50E+03	2.50E+02	2.50E+02	1.72E+04	2.65E+02	2.65E+02	2.58E+03	2.65E+02	2.65E+02
N	594183	Dibromodichloromethane	mg/kg												
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/kg												
N	106934	Dibromoethane, 1,2-	mg/kg	1.71E+02	1.95E+02	1.71E+02	2.07E+01	3.05E+00	3.05E+00	7.97E+01	2.46E+00	2.46E+00	1.17E+01	2.46E+00	2.46E+00
N	74953	Dibromomethane (Methylene Bromide)	mg/kg	9.73E+03		9.73E+03	8.74E+02		8.74E+02	3.36E+03		3.36E+03	5.12E+02		5.12E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	107302	Chloromethyl Methyl Ether	mg/kg									
N	91587	Chloronaphthalene, Beta-	mg/kg	2.41E+04		2.41E+04	1.04E+04		1.04E+04	2.03E+03		2.03E+03
N	88733	Chloronitrobenzene, o-	mg/kg		3.29E+02	3.29E+02		8.37E+01	8.37E+01		8.37E+01	8.37E+01
N	121733	Chloronitrobenzene, p-	mg/kg		3.16E+03	3.16E+03		7.50E+02	7.50E+02		7.50E+02	7.50E+02
N	95578	Chlorophenol, 2-	mg/kg	3.00E+03		3.00E+03	1.38E+03		1.38E+03	2.52E+02		2.52E+02
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/kg									
N	934736	Chlorophenyl Methyl Sulfoxide	mg/kg									
N	75296	Chloropropane, 2-	mg/kg	2.06E+03		2.06E+03	8.42E+02		8.42E+02	1.72E+02		1.72E+02
N	1897456	Chlorothalonil	mg/kg	2.99E+04	1.42E+04	1.42E+04	1.93E+04	3.38E+03	3.38E+03	2.48E+03	3.38E+03	2.48E+03
N	95498	Chlorotoluene, o-	mg/kg	5.93E+03		5.93E+03	2.47E+03		2.47E+03	4.83E+02		4.83E+02
N	101213	Chlorpropham	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.30E+04		3.30E+04
N	2921882	Chlorpyrifos	mg/kg	5.98E+03		5.98E+03	3.86E+03		3.86E+03	4.96E+02		4.96E+02
N	5598130	Chlorpyrifos Methyl	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	64902723	Chlorsulfuron	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	60238564	Chlorthiophos	mg/kg	1.59E+03		1.59E+03	1.03E+03		1.03E+03	1.32E+02		1.32E+02
Y	218019	Chrysene	mg/kg		1.46E+04	1.46E+04		4.24E+03	4.24E+03		4.24E+03	4.24E+03
N	8007452	Coke Oven Emissions	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
N	8001589	Creosote	mg/kg									
N	108394	Cresol, m-	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	95487	Cresol, o-	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	106445	Cresol, p-	mg/kg	1.25E+04		1.25E+04	7.12E+03		7.12E+03	8.81E+02		8.81E+02
N	123739	Crotonaldehyde, trans-	mg/kg		1.98E+01	1.98E+01		5.01E+00	5.01E+00		5.01E+00	5.01E+00
N	98828	Cumene	mg/kg	3.19E+04		3.19E+04	1.33E+04		1.33E+04	2.59E+03		2.59E+03
N	21725462	Cyanazine	mg/kg	3.98E+03	1.87E+02	1.87E+02	2.58E+03	4.43E+01	4.43E+01	3.30E+02	4.43E+01	4.43E+01
N	460195	Cyanogen	mg/kg	1.25E+03		1.25E+03	5.11E+02		5.11E+02	1.05E+02		1.05E+02
N	506683	Cyanogen Bromide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.66E+04		1.66E+04
N	506774	Cyanogen Chloride	mg/kg	1.00E+05		1.00E+05	7.62E+04		7.62E+04	9.20E+03		9.20E+03
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/kg		6.81E+03	6.81E+03		1.62E+03	1.62E+03		1.62E+03	1.62E+03
N	108941	Cyclohexanone	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	108918	Cyclohexylamine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.30E+04		3.30E+04
N	542927	Cyclopentadiene	mg/kg									
N	68085858	Cyhalothrin/karate	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	52315078	Cypermethrin	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	66215278	Cyromazine	mg/kg	1.49E+04		1.49E+04	9.66E+03		9.66E+03	1.24E+03		1.24E+03
N	72548	DDD	mg/kg		8.34E+02	8.34E+02		1.71E+02	1.71E+02		1.71E+02	1.71E+02
N	72559	DDE	mg/kg		5.89E+02	5.89E+02		1.21E+02	1.21E+02		1.21E+02	1.21E+02
N	50293	DDT	mg/kg	1.33E+03	5.89E+02	5.89E+02	7.30E+02	1.21E+02	1.21E+02	8.96E+01	1.21E+02	8.96E+01
N	1861321	Dacthal	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	75990	Dalapon	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	1163195	Decabromodiphenyl Ether	mg/kg	2.97E+04		2.97E+04	1.52E+04		1.52E+04	1.84E+03		1.84E+03
N	8065483	Demeton	mg/kg	7.97E+01		7.97E+01	5.15E+01		5.15E+01	6.61E+00		6.61E+00
N	103231	Di(2-ethylhexyl)adipate	mg/kg	1.00E+05	1.00E+05		1.00E+05	3.10E+04	3.10E+04	9.91E+04	3.10E+04	3.10E+04
N	2303164	Diallate	mg/kg		3.59E+03	3.59E+03		6.96E+02	6.96E+02		6.96E+02	6.96E+02
N	505293	Diathane, 1,4-	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	333415	Diazinon	mg/kg	1.79E+03		1.79E+03	1.16E+03		1.16E+03	1.49E+02		1.49E+02
Y	53703	Dibenz[a,h]anthracene	mg/kg		1.46E+01	1.46E+01		4.24E+00	4.24E+00		4.24E+00	4.24E+00
N	132649	Dibenzofuran	mg/kg	7.97E+03		7.97E+03	5.15E+03		5.15E+03	6.61E+02		6.61E+02
N	96128	Dibromo-3-chloropropane, 1,2-	mg/kg	8.73E+01	1.56E+02	8.73E+01	3.98E+01	3.03E+01	3.03E+01	6.21E+00	3.03E+01	6.21E+00
N	106376	Dibromobenzene, 1,4-	mg/kg	2.97E+04		2.97E+04	1.52E+04		1.52E+04	1.84E+03		1.84E+03
N	124481	Dibromochloromethane	mg/kg	7.31E+03	2.65E+02	2.65E+02	3.13E+03	6.67E+01	6.67E+01	6.03E+02	6.67E+01	6.67E+01
N	594183	Dibromodichloromethane	mg/kg									
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/kg									
N	106934	Dibromoethane, 1,2-	mg/kg	3.33E+01	2.46E+00	2.46E+00	1.41E+01	4.83E-01	4.83E-01	2.62E+00	4.83E-01	4.83E-01
N	74953	Dibromomethane (Methylene Bromide)	mg/kg	1.50E+03		1.50E+03	6.17E+02		6.17E+02	1.24E+02		1.24E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment . .ction Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary				Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
COPC?	Parameter	Chemical	Units	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	84742	Dibutyl Phthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1918009	Dicamba	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	764410	Dichloro-2-butene, 1,4-	mg/kg		6.83E+02	6.83E+02		3.14E+00	3.14E+00		3.33E+00	3.33E+00		3.33E+00	3.33E+00
N	79436	Dichloroacetic Acid	mg/kg												
N	95501	Dichlorobenzene, 1,2-	mg/kg	1.00E+05		1.00E+05	1.29E+04		1.29E+04	4.96E+04		4.96E+04	7.50E+03		7.50E+03
N	541731	Dichlorobenzene, 1,3-	mg/kg	6.46E+03		6.46E+03	2.66E+03		2.66E+03	1.03E+04		1.03E+04	1.16E+03		1.16E+03
N	106467	Dichlorobenzene, 1,4-	mg/kg	5.78E+04	1.00E+05	5.78E+04	5.90E+03	8.30E+02	8.30E+02	2.27E+04	8.92E+02	8.92E+02	3.42E+03	8.92E+02	8.92E+02
N	91941	Dichlorobenzidine, 3,3'-	mg/kg		3.51E+04	3.51E+04		4.68E+02	4.68E+02		3.48E+02	3.48E+02		3.48E+02	3.48E+02
N	75718	Dichlorodifluoromethane	mg/kg	1.41E+04		1.41E+04	1.13E+03		1.13E+03	4.36E+03		4.36E+03	6.70E+02		6.70E+02
N	75343	Dichloroethane, 1,1-	mg/kg	6.41E+04		6.41E+04	5.52E+03		5.52E+03	2.13E+04		2.13E+04	3.25E+03		3.25E+03
N	107062	Dichloroethane, 1,2-	mg/kg	1.11E+03	1.84E+04	1.11E+03	8.88E+01	6.39E+01	6.39E+01	3.41E+02	6.99E+01	6.99E+01	5.25E+01	6.99E+01	5.25E+01
Y	75354	Dichloroethylene, 1,1-	mg/kg	2.51E+03	3.41E+03	2.51E+03	2.07E+02	1.21E+01	1.21E+01	7.96E+02	1.32E+01	1.32E+01	1.22E+02	1.32E+01	1.32E+01
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/kg	6.46E+04		6.46E+04	2.66E+04		2.66E+04	1.00E+05		1.00E+05	1.16E+04		1.16E+04
Y	156592	Dichloroethylene, 1,2-cis-	mg/kg	5.44E+03		5.44E+03	4.63E+02		4.63E+02	1.78E+03		1.78E+03	2.73E+02		2.73E+02
Y	156605	Dichloroethylene, 1,2-trans-	mg/kg	8.83E+03		8.83E+03	7.43E+02		7.43E+02	2.86E+03		2.86E+03	4.38E+02		4.38E+02
N	120832	Dichlorophenol, 2,4-	mg/kg	2.16E+04		2.16E+04	8.98E+03		8.98E+03	3.48E+04		3.48E+04	3.90E+03		3.90E+03
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/kg	7.18E+04		7.18E+04	2.96E+04		2.96E+04	1.00E+05		1.00E+05	1.28E+04		1.28E+04
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/kg	5.42E+04		5.42E+04	1.80E+04		1.80E+04	6.49E+04		6.49E+04	7.80E+03		7.80E+03
N	78875	Dichloropropane, 1,2-	mg/kg	7.54E+02	2.26E+04	7.54E+02	6.51E+01	7.82E+01	6.51E+01	2.51E+02	8.55E+01	8.55E+01	3.83E+01	8.55E+01	3.83E+01
N	616239	Dichloropropanol, 2,3-	mg/kg	2.03E+04		2.03E+04	6.76E+03		6.76E+03	2.43E+04		2.43E+04	2.93E+03		2.93E+03
N	542756	Dichloropropene, 1,3-	mg/kg	2.11E+03	4.48E+04	2.11E+03	1.70E+02	1.83E+02	1.70E+02	6.55E+02	1.94E+02	1.94E+02	1.01E+02	1.94E+02	1.01E+02
N	62737	Dichlorvos	mg/kg	3.39E+03	5.45E+04	3.39E+03	1.13E+03	7.26E+02	7.26E+02	4.06E+03	5.40E+02	5.40E+02	4.88E+02	5.40E+02	4.88E+02
N	115322	Dicofol	mg/kg		3.59E+04	3.59E+04		4.78E+02	4.78E+02		3.56E+02	3.56E+02		3.56E+02	3.56E+02
N	77736	Dicyclopentadiene	mg/kg	2.71E+02		2.71E+02	2.17E+01		2.17E+01	8.34E+01		8.34E+01	1.28E+01		1.28E+01
N	60571	Dieldrin	mg/kg	3.39E+02	9.87E+02	3.39E+02	1.13E+02	1.32E+01	1.32E+01	4.06E+02	9.80E+00	9.80E+00	4.88E+01	9.80E+00	9.80E+00
N	84662	Diethyl Phthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	311455	Diethyl-p-nitrophenylphosphate	mg/kg												
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/kg												
N	112345	Diethylene Glycol Monobutyl Ether	mg/kg	3.87E+04		3.87E+04	1.29E+04		1.29E+04	4.64E+04		4.64E+04	5.57E+03		5.57E+03
N	111900	Diethylene Glycol Monoethyl Ether	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	617845	Diethylformamide	mg/kg	7.45E+04		7.45E+04	2.48E+04		2.48E+04	8.93E+04		8.93E+04	1.07E+04		1.07E+04
N	56531	Diethylstilbesterol	mg/kg		3.36E+00	3.36E+00		4.48E-02	4.48E-02		3.33E-02	3.33E-02		3.33E-02	3.33E-02
N	43222486	Difenzoquat	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.80E+04		7.80E+04
N	35367385	Diflubenzuron	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	75376	Difluoroethane, 1,1-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1445756	Diisopropyl Methylphosphonate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.80E+04		7.80E+04
N	55290647	Dimethipin	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	60515	Dimethoate	mg/kg	1.35E+03		1.35E+03	4.51E+02		4.51E+02	1.62E+03		1.62E+03	1.95E+02		1.95E+02
N	119904	Dimethoxybenzidine, 3,3'-	mg/kg		1.00E+05	1.00E+05		1.50E+04	1.50E+04		1.12E+04	1.12E+04		1.12E+04	1.12E+04
N	77781	Dimethyl Sulfate	mg/kg												
N	124403	Dimethylamine	mg/kg	4.09E+01		4.09E+01	1.68E+01		1.68E+01	6.50E+01		6.50E+01	7.32E+00		7.32E+00
N	21436964	Dimethylaniline HCl, 2,4-	mg/kg		2.72E+04	2.72E+04		3.63E+02	3.63E+02		2.70E+02	2.70E+02		2.70E+02	2.70E+02
N	95681	Dimethylaniline, 2,4-	mg/kg		2.11E+04	2.11E+04		2.81E+02	2.81E+02		2.09E+02	2.09E+02		2.09E+02	2.09E+02
N	121697	Dimethylaniline, N,N-	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	119937	Dimethylbenzidine, 3,3'-	mg/kg		1.72E+03	1.72E+03		2.29E+01	2.29E+01		1.70E+01	1.70E+01		1.70E+01	1.70E+01
N	107584407	Dimethylethyl Lead	mg/kg												
N	68122	Dimethylformamide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	57147	Dimethylhydrazine, 1,1-	mg/kg		5.27E+03	5.27E+03		7.01E+01	7.01E+01		5.22E+01	5.22E+01		5.22E+01	5.22E+01
N	540738	Dimethylhydrazine, 1,2-	mg/kg		4.27E+02	4.27E+02		5.69E+00	5.69E+00		4.24E+00	4.24E+00		4.24E+00	4.24E+00
N	105679	Dimethylphenol, 2,4-	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	576261	Dimethylphenol, 2,6-	mg/kg	4.06E+03		4.06E+03	1.35E+03		1.35E+03	4.87E+03		4.87E+03	5.85E+02		5.85E+02
N	95658	Dimethylphenol, 3,4-	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	131113	Dimethylphthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	120616	Dimethylterephthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	84742	Dibutyl Phthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.91E+04		1.91E+04
N	1918009	Dicamba	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	764410	Dichloro-2-butene, 1,4-	mg/kg		3.33E+00	3.33E+00		8.18E-01	8.18E-01		8.18E-01	8.18E-01
N	79436	Dichloroacetic Acid	mg/kg									
N	95501	Dichlorobenzene, 1,2-	mg/kg	2.18E+04		2.18E+04	9.04E+03		9.04E+03	1.79E+03		1.79E+03
N	541731	Dichlorobenzene, 1,3-	mg/kg	2.67E+03		2.67E+03	1.37E+03		1.37E+03	1.66E+02		1.66E+02
N	106467	Dichlorobenzene, 1,4-	mg/kg	9.93E+03	8.92E+02	8.92E+02	4.11E+03	2.22E+02	2.22E+02	8.00E+02	2.22E+02	2.22E+02
N	91941	Dichlorobenzidine, 3,3'-	mg/kg		3.48E+02	3.48E+02		8.27E+01	8.27E+01		8.27E+01	8.27E+01
N	75718	Dichlorodifluoromethane	mg/kg	1.98E+03		1.98E+03	8.09E+02		8.09E+02	1.67E+02		1.67E+02
N	75343	Dichloroethane, 1,1-	mg/kg	9.60E+03		9.60E+03	3.92E+03		3.92E+03	7.97E+02		7.97E+02
N	107062	Dichloroethane, 1,2-	mg/kg	1.56E+02	6.99E+01	6.99E+01	6.34E+01	1.78E+01	1.78E+01	1.31E+01	1.78E+01	1.31E+01
Y	75354	Dichloroethylene, 1,1-	mg/kg	3.62E+02	1.32E+01	1.32E+01	1.47E+02	3.36E+00	3.36E+00	3.03E+01	3.36E+00	3.36E+00
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/kg	2.67E+04		2.67E+04	1.37E+04		1.37E+04	1.66E+03		1.66E+03
Y	156592	Dichloroethylene, 1,2-cis-	mg/kg	8.06E+02		8.06E+02	3.29E+02		3.29E+02	6.71E+01		6.71E+01
Y	156605	Dichloroethylene, 1,2-trans-	mg/kg	1.30E+03		1.30E+03	5.28E+02		5.28E+02	1.08E+02		1.08E+02
N	120832	Dichlorophenol, 2,4-	mg/kg	9.08E+03		9.08E+03	4.60E+03		4.60E+03	5.54E+02		5.54E+02
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/kg	2.97E+04		2.97E+04	1.52E+04		1.52E+04	1.84E+03		1.84E+03
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/kg	1.59E+04		1.59E+04	1.03E+04		1.03E+04	1.32E+03		1.32E+03
N	78875	Dichloropropane, 1,2-	mg/kg	1.13E+02	8.55E+01	8.55E+01	4.62E+01	2.18E+01	2.18E+01	9.39E+00	2.18E+01	9.39E+00
N	616239	Dichloropropanol, 2,3-	mg/kg	5.98E+03		5.98E+03	3.86E+03		3.86E+03	4.96E+02		4.96E+02
N	542756	Dichloropropene, 1,3-	mg/kg	2.98E+02	1.94E+02	1.94E+02	1.22E+02	4.92E+01	4.92E+01	2.51E+01	4.92E+01	2.51E+01
N	62737	Dichlorvos	mg/kg	9.96E+02	5.40E+02	5.40E+02	6.44E+02	1.28E+02	1.28E+02	8.26E+01	1.28E+02	8.26E+01
N	115322	Dicofol	mg/kg		3.56E+02	3.56E+02		8.46E+01	8.46E+01		8.46E+01	8.46E+01
N	77736	Dicyclopentadiene	mg/kg	3.80E+01		3.80E+01	1.55E+01		1.55E+01	3.21E+00		3.21E+00
N	60571	Dieldrin	mg/kg	9.96E+01	9.80E+00	9.80E+00	6.44E+01	2.33E+00	2.33E+00	8.26E+00	2.33E+00	2.33E+00
N	84662	Diethyl Phthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	311455	Diethyl-p-nitrophenylphosphate	mg/kg									
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/kg									
N	112345	Diethylene Glycol Monobutyl Ether	mg/kg	1.14E+04		1.14E+04	7.36E+03		7.36E+03	9.44E+02		9.44E+02
N	111900	Diethylene Glycol Monoethyl Ether	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	617845	Diethylformamide	mg/kg	2.19E+04		2.19E+04	1.42E+04		1.42E+04	1.82E+03		1.82E+03
N	56531	Diethylstilbesterol	mg/kg		3.33E-02	3.33E-02		7.92E-03	7.92E-03		7.92E-03	7.92E-03
N	43222486	Difenzoquat	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.32E+04		1.32E+04
N	35367385	Diflubenzuron	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	75376	Difluoroethane, 1,1-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1445756	Diisopropyl Methylphosphonate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.32E+04		1.32E+04
N	55290647	Dimethipin	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	60515	Dimethoate	mg/kg	3.98E+02		3.98E+02	2.58E+02		2.58E+02	3.30E+01		3.30E+01
N	119904	Dimethoxybenzidine, 3,3'-	mg/kg		1.12E+04	1.12E+04		2.66E+03	2.66E+03		2.66E+03	2.66E+03
N	77781	Dimethyl Sulfate	mg/kg									
N	124403	Dimethylamine	mg/kg	1.69E+01		1.69E+01	8.68E+00		8.68E+00	1.05E+00		1.05E+00
N	21436964	Dimethylaniline HCl, 2,4-	mg/kg		2.70E+02	2.70E+02		6.42E+01	6.42E+01		6.42E+01	6.42E+01
N	95681	Dimethylaniline, 2,4-	mg/kg		2.09E+02	2.09E+02		4.96E+01	4.96E+01		4.96E+01	4.96E+01
N	121697	Dimethylaniline, N,N-	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	119937	Dimethylbenzidine, 3,3'-	mg/kg		1.70E+01	1.70E+01		4.04E+00	4.04E+00		4.04E+00	4.04E+00
N	107584407	Dimethylethyl Lead	mg/kg									
N	68122	Dimethylformamide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	57147	Dimethylhydrazine, 1,1-	mg/kg		5.22E+01	5.22E+01		1.24E+01	1.24E+01		1.24E+01	1.24E+01
N	540738	Dimethylhydrazine, 1,2-	mg/kg		4.24E+00	4.24E+00		1.01E+00	1.01E+00		1.01E+00	1.01E+00
N	105679	Dimethylphenol, 2,4-	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	576261	Dimethylphenol, 2,6-	mg/kg	1.20E+03		1.20E+03	7.73E+02		7.73E+02	9.91E+01		9.91E+01
N	95658	Dimethylphenol, 3,4-	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	131113	Dimethylphthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	120616	Dimethylterephthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	534521	Dinitro-o-cresol, 4,6-	mg/kg												
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	528290	Dinitrobenzene, 1,2-	mg/kg	2.91E+03		2.91E+03	1.27E+03		1.27E+03	5.04E+03		5.04E+03	5.55E+02		5.55E+02
N	99650	Dinitrobenzene, 1,3-	mg/kg	7.02E+02		7.02E+02	2.64E+02		2.64E+02	9.87E+02		9.87E+02	1.14E+02		1.14E+02
N	100254	Dinitrobenzene, 1,4-	mg/kg	2.71E+03		2.71E+03	9.02E+02		9.02E+02	3.25E+03		3.25E+03	3.90E+02		3.90E+02
N	51285	Dinitrophenol, 2,4-	mg/kg	1.47E+04		1.47E+04	6.59E+03		6.59E+03	2.64E+04		2.64E+04	2.87E+03		2.87E+03
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/kg		2.48E+04	2.48E+04		4.18E+02	4.18E+02		3.36E+02	3.36E+02		3.36E+02	3.36E+02
N	121142	Dinitrotoluene, 2,4-	mg/kg	1.44E+04	2.48E+04	1.44E+04	6.10E+03	4.18E+02	4.18E+02	2.38E+04	3.36E+02	3.36E+02	2.65E+03	3.36E+02	3.36E+02
N	606202	Dinitrotoluene, 2,6-	mg/kg	7.22E+03	2.48E+04	7.22E+03	3.05E+03	4.18E+02	4.18E+02	1.19E+04	3.36E+02	3.36E+02	1.33E+03	3.36E+02	3.36E+02
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/kg												
N	88857	Dinoseb	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	123911	Dioxane, 1,4-	mg/kg		1.00E+05	1.00E+05		2.51E+04	2.51E+04		1.99E+04	1.99E+04		1.99E+04	1.99E+04
Y	1746016	Dioxins/Furans (Total)	mg/kg		8.08E-02	8.08E-02		6.19E-04	6.19E-04		4.15E-04	4.15E-04		4.15E-04	4.15E-04
N	957517	Diphenamid	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	127639	Diphenyl sulfone	mg/kg	6.09E+04		6.09E+04	2.03E+04		2.03E+04	7.30E+04		7.30E+04	8.78E+03		8.78E+03
N	122394	Diphenylamine	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
N	122667	Diphenylhydrazine, 1,2-	mg/kg		1.97E+04	1.97E+04		2.63E+02	2.63E+02		1.96E+02	1.96E+02		1.96E+02	1.96E+02
N	85007	Diquat	mg/kg	1.49E+04		1.49E+04	4.96E+03		4.96E+03	1.79E+04		1.79E+04	2.15E+03		2.15E+03
N	1937377	Direct Black 38	mg/kg		1.84E+03	1.84E+03		2.45E+01	2.45E+01		1.82E+01	1.82E+01		1.82E+01	1.82E+01
N	2602462	Direct Blue 6	mg/kg		1.95E+03	1.95E+03		2.60E+01	2.60E+01		1.94E+01	1.94E+01		1.94E+01	1.94E+01
N	16071866	Direct Brown 95	mg/kg		1.70E+03	1.70E+03		2.26E+01	2.26E+01		1.69E+01	1.69E+01		1.69E+01	1.69E+01
N	2610051	Direct Sky Blue	mg/kg												
N	298044	Disulfoton	mg/kg	2.71E+02		2.71E+02	9.02E+01		9.02E+01	3.25E+02		3.25E+02	3.90E+01		3.90E+01
N	330541	Diuron	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	2439103	Dodine	mg/kg	2.71E+04		2.71E+04	9.02E+03		9.02E+03	3.25E+04		3.25E+04	3.90E+03		3.90E+03
N	759944	EPTC	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
N	115297	Endosulfan	mg/kg	4.06E+04		4.06E+04	1.35E+04		1.35E+04	4.87E+04		4.87E+04	5.85E+03		5.85E+03
N	145733	Endothall	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	72208	Endrin	mg/kg	4.37E+02		4.37E+02	4.18E+01		4.18E+01	1.25E+02		1.25E+02	1.78E+01		1.78E+01
N	106898	Epichlorohydrin	mg/kg	1.08E+03	1.00E+05	1.08E+03	9.18E+01	5.76E+03	9.18E+01	3.53E+02	5.87E+03	3.53E+02	5.40E+01	5.87E+03	5.40E+01
N	106887	Epoxybutane, 1,2-	mg/kg	3.87E+04		3.87E+04	1.29E+04		1.29E+04	4.64E+04		4.64E+04	5.57E+03		5.57E+03
N	16672870	Ethephon	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	563122	Ethion	mg/kg	3.39E+03		3.39E+03	1.13E+03		1.13E+03	4.06E+03		4.06E+03	4.88E+02		4.88E+02
N	111159	Ethoxyethanol Acetate, 2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	110805	Ethoxyethanol, 2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	141786	Ethyl Acetate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.09E+04		8.09E+04
N	140885	Ethyl Acrylate	mg/kg		7.75E+04	7.75E+04		3.02E+02	3.02E+02		3.22E+02	3.22E+02		3.22E+02	3.22E+02
N	75003	Ethyl Chloride	mg/kg	1.00E+05	1.00E+05		3.12E+04	3.60E+02	3.60E+02	1.00E+05	3.96E+02	3.96E+02	1.83E+04	3.96E+02	3.96E+02
N	60297	Ethyl Ether	mg/kg	1.00E+05		1.00E+05	1.89E+04		1.89E+04	7.27E+04		7.27E+04	1.11E+04		1.11E+04
N	97632	Ethyl Methacrylate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/kg	6.77E+01		6.77E+01	2.25E+01		2.25E+01	8.11E+01		8.11E+01	9.75E+00		9.75E+00
Y	100414	Ethylbenzene	mg/kg	1.00E+05	1.00E+05		2.32E+04	2.12E+03	2.12E+03	8.95E+04	2.34E+03	2.34E+03	1.34E+04	2.34E+03	2.34E+03
N	109784	Ethylene Cyanohydrin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	107153	Ethylene Diamine	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	107211	Ethylene Glycol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	111762	Ethylene Glycol Monobutyl Ether	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	75218	Ethylene Oxide	mg/kg		5.33E+03	5.33E+03		2.31E+01	2.31E+01		2.46E+01	2.46E+01		2.46E+01	2.46E+01
N	96457	Ethylene Thiourea	mg/kg	5.42E+02	1.00E+05	5.42E+02	1.80E+02	1.91E+03	1.80E+02	6.49E+02	1.42E+03	6.49E+02	7.80E+01	1.42E+03	7.80E+01
N	84720	Ethylphthalyl Ethyl Glycolate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	101200480	Express	mg/kg	5.42E+04		5.42E+04	1.80E+04		1.80E+04	6.49E+04		6.49E+04	7.80E+03		7.80E+03
N	22224926	Fenamiphos	mg/kg	1.69E+03		1.69E+03	5.64E+02		5.64E+02	2.03E+03		2.03E+03	2.44E+02		2.44E+02
N	39515418	Fenpropathrin	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
N	2164172	Fluometuron	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
Y	206440	Fluoranthene	mg/kg	1.00E+05		1.00E+05	6.50E+04		6.50E+04	1.00E+05		1.00E+05	2.80E+04		2.80E+04

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	534521	Dinitro-o-cresol, 4,6-	mg/kg									
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	528290	Dinitrobenzene, 1,2-	mg/kg	1.34E+03		1.34E+03	6.36E+02		6.36E+02	7.56E+01		7.56E+01
N	99650	Dinitrobenzene, 1,3-	mg/kg	2.50E+02		2.50E+02	1.42E+02		1.42E+02	1.76E+01		1.76E+01
N	100254	Dinitrobenzene, 1,4-	mg/kg	7.97E+02		7.97E+02	5.15E+02		5.15E+02	6.61E+01		6.61E+01
N	51285	Dinitrophenol, 2,4-	mg/kg	7.09E+03		7.09E+03	3.24E+03		3.24E+03	3.82E+02		3.82E+02
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/kg		3.36E+02	3.36E+02		6.33E+01	6.33E+01		6.33E+01	6.33E+01
N	121142	Dinitrotoluene, 2,4-	mg/kg	6.23E+03	3.36E+02	3.36E+02	3.10E+03	6.33E+01	6.33E+01	3.72E+02	6.33E+01	6.33E+01
N	606202	Dinitrotoluene, 2,6-	mg/kg	3.12E+03	3.36E+02	3.36E+02	1.55E+03	6.33E+01	6.33E+01	1.86E+02	6.33E+01	6.33E+01
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/kg									
N	88857	Dinoseb	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	123911	Dioxane, 1,4-	mg/kg		1.99E+04	1.99E+04		3.86E+03	3.86E+03		3.86E+03	3.86E+03
Y	1746016	Dioxins/Furans (Total)	mg/kg		4.15E-04	4.15E-04		1.49E-04	1.49E-04		1.49E-04	1.49E-04
N	957517	Diphenamid	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	127639	Diphenyl sulfone	mg/kg	1.79E+04		1.79E+04	1.16E+04		1.16E+04	1.49E+03		1.49E+03
N	122394	Diphenylamine	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
N	122667	Diphenylhydrazine, 1,2-	mg/kg		1.96E+02	1.96E+02		4.65E+01	4.65E+01		4.65E+01	4.65E+01
N	85007	Diquat	mg/kg	4.38E+03		4.38E+03	2.83E+03		2.83E+03	3.63E+02		3.63E+02
N	1937377	Direct Black 38	mg/kg		1.82E+01	1.82E+01		4.33E+00	4.33E+00		4.33E+00	4.33E+00
N	2602462	Direct Blue 6	mg/kg		1.94E+01	1.94E+01		4.59E+00	4.59E+00		4.59E+00	4.59E+00
N	16071866	Direct Brown 95	mg/kg		1.69E+01	1.69E+01		4.00E+00	4.00E+00		4.00E+00	4.00E+00
N	2610051	Direct Sky Blue	mg/kg									
N	298044	Disulfoton	mg/kg	7.97E+01		7.97E+01	5.15E+01		5.15E+01	6.61E+00		6.61E+00
N	330541	Diuron	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	2439103	Dodine	mg/kg	7.97E+03		7.97E+03	5.15E+03		5.15E+03	6.61E+02		6.61E+02
N	759944	EPTC	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
N	115297	Endosulfan	mg/kg	1.20E+04		1.20E+04	7.73E+03		7.73E+03	9.91E+02		9.91E+02
N	145733	Endothall	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	72208	Endrin	mg/kg	2.71E+01		2.71E+01	3.55E+01		3.55E+01	6.59E+00		6.59E+00
N	106898	Epichlorohydrin	mg/kg	1.59E+02	5.87E+03	1.59E+02	6.52E+01	1.39E+03	6.52E+01	1.33E+01	1.39E+03	1.33E+01
N	106887	Epoxybutane, 1,2-	mg/kg	1.14E+04		1.14E+04	7.36E+03		7.36E+03	9.44E+02		9.44E+02
N	16672870	Ethephon	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	563122	Ethion	mg/kg	9.96E+02		9.96E+02	6.44E+02		6.44E+02	8.26E+01		8.26E+01
N	111159	Ethoxyethanol Acetate, 2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.96E+04		4.96E+04
N	110805	Ethoxyethanol, 2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.61E+04		6.61E+04
N	141786	Ethyl Acetate	mg/kg	1.00E+05		1.00E+05	9.76E+04		9.76E+04	1.92E+04		1.92E+04
N	140885	Ethyl Acrylate	mg/kg		3.22E+02	3.22E+02		8.22E+01	8.22E+01		8.22E+01	8.22E+01
N	75003	Ethyl Chloride	mg/kg	5.37E+04	3.96E+02	3.96E+02	2.21E+04	1.02E+02	1.02E+02	4.45E+03	1.02E+02	1.02E+02
N	60297	Ethyl Ether	mg/kg	3.24E+04		3.24E+04	1.33E+04		1.33E+04	2.68E+03		2.68E+03
N	97632	Ethyl Methacrylate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.66E+04		1.66E+04
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/kg	1.99E+01		1.99E+01	1.29E+01		1.29E+01	1.65E+00		1.65E+00
Y	100414	Ethylbenzene	mg/kg	3.89E+04	2.34E+03	2.34E+03	1.61E+04	6.01E+02	6.01E+02	3.10E+03	6.01E+02	6.01E+02
N	109784	Ethylene Cyanohydrin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.96E+04		4.96E+04
N	107153	Ethylene Diamine	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	107211	Ethylene Glycol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	111762	Ethylene Glycol Monobutyl Ether	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.26E+04		8.26E+04
N	75218	Ethylene Oxide	mg/kg		2.46E+01	2.46E+01		6.11E+00	6.11E+00		6.11E+00	6.11E+00
N	96457	Ethylene Thiourea	mg/kg	1.59E+02	1.42E+03	1.59E+02	1.03E+02	3.38E+02	1.03E+02	1.32E+01	3.38E+02	1.32E+01
N	84720	Ethylphthalyl Ethyl Glycolate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	101200480	Express	mg/kg	1.59E+04		1.59E+04	1.03E+04		1.03E+04	1.32E+03		1.32E+03
N	22224926	Fenamiphos	mg/kg	4.98E+02		4.98E+02	3.22E+02		3.22E+02	4.13E+01		4.13E+01
N	39515418	Fenpropathrin	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
N	2164172	Fluometuron	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
Y	206440	Fluoranthene	mg/kg	5.18E+04		5.18E+04	4.11E+04		4.11E+04	5.66E+03		5.66E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action va' 's of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
Y	86737	Fluorene	mg/kg	1.00E+05		1.00E+05	7.09E+04		7.09E+04	1.00E+05		1.00E+05	3.25E+04		3.25E+04
N	59756604	Fluridone	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.80E+04		7.80E+04
N	56425913	Flurprimidol	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	66332965	Flutolanil	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	5.85E+04		5.85E+04
N	69409945	Fluvalinate	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	133073	Folpet	mg/kg	1.00E+05	1.00E+05		1.00E+05	6.01E+04	6.01E+04	1.00E+05	4.48E+04	4.48E+04	9.75E+04	4.48E+04	4.48E+04
N	72178020	Fomesafen	mg/kg		8.32E+04	8.32E+04		1.11E+03	1.11E+03		8.25E+02	8.25E+02		8.25E+02	8.25E+02
N	944229	Fonofos	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	50000	Formaldehyde	mg/kg	1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05	
N	64186	Formic Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	39148248	Fosetyl-AL	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	110009	Furan	mg/kg	4.13E+02		4.13E+02	3.46E+01		3.46E+01	1.33E+02		1.33E+02	2.04E+01		2.04E+01
N	67458	Furazolidone	mg/kg		4.16E+03	4.16E+03		5.54E+01	5.54E+01		4.12E+01	4.12E+01		4.12E+01	4.12E+01
N	98011	Furfural	mg/kg	2.03E+04		2.03E+04	6.76E+03		6.76E+03	2.43E+04		2.43E+04	2.93E+03		2.93E+03
N	531828	Furium	mg/kg		3.16E+02	3.16E+02		4.21E+00	4.21E+00		3.13E+00	3.13E+00		3.13E+00	3.13E+00
N	60568050	Furmecyclox	mg/kg		1.00E+05	1.00E+05		7.01E+03	7.01E+03		5.22E+03	5.22E+03		5.22E+03	5.22E+03
N	77182822	Glufosinate, Ammonium	mg/kg	2.71E+03		2.71E+03	9.02E+02		9.02E+02	3.25E+03		3.25E+03	3.90E+02		3.90E+02
N	765344	Glycidyl	mg/kg	2.71E+03		2.71E+03	9.02E+02		9.02E+02	3.25E+03		3.25E+03	3.90E+02		3.90E+02
N	1071836	Glyphosate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	42874033	Goal	mg/kg	2.03E+04		2.03E+04	6.76E+03		6.76E+03	2.43E+04		2.43E+04	2.93E+03		2.93E+03
N	69806402	Haloxyfop, Methyl	mg/kg	3.39E+02		3.39E+02	1.13E+02		1.13E+02	4.06E+02		4.06E+02	4.88E+01		4.88E+01
N	79277273	Harmony	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	76448	Heptachlor	mg/kg	3.55E+03	3.68E+03	3.55E+03	1.40E+03	5.80E+01	5.80E+01	5.31E+03	4.54E+01	4.54E+01	6.07E+02	4.54E+01	4.54E+01
N	1024573	Heptachlor Epoxide	mg/kg	9.23E+01	1.82E+03	9.23E+01	3.63E+01	2.87E+01	2.87E+01	1.38E+02	2.24E+01	2.24E+01	1.58E+01	2.24E+01	1.58E+01
N	142825	Heptane, N-	mg/kg												
N	87821	Hexabromobenzene	mg/kg	1.44E+04		1.44E+04	5.91E+03		5.91E+03	2.28E+04		2.28E+04	2.57E+03		2.57E+03
N	118741	Hexachlorobenzene	mg/kg	5.42E+03	9.87E+03	5.42E+03	1.80E+03	1.32E+02	1.32E+02	6.49E+03	9.80E+01	9.80E+01	7.80E+02	9.80E+01	9.80E+01
N	87683	Hexachlorobutadiene	mg/kg	1.35E+03	1.00E+05	1.35E+03	4.51E+02	2.70E+03	4.51E+02	1.62E+03	2.01E+03	1.62E+03	1.95E+02	2.01E+03	1.95E+02
N	319846	Hexachlorocyclohexane, Alpha-	mg/kg		2.71E+03	2.71E+03		4.82E+01	4.82E+01		3.94E+01	3.94E+01		3.94E+01	3.94E+01
N	319857	Hexachlorocyclohexane, Beta-	mg/kg		9.42E+03	9.42E+03		1.63E+02	1.63E+02		1.32E+02	1.32E+02		1.32E+02	1.32E+02
N	319868	Hexachlorocyclohexane, Delta-	mg/kg												
N	6108107	Hexachlorocyclohexane, Epsilon	mg/kg												
N	58899	Hexachlorocyclohexane, Gamma-	mg/kg	2.19E+03	1.31E+04	2.19E+03	9.75E+02	2.33E+02	2.33E+02	3.88E+03	1.91E+02	1.91E+02	4.25E+02	1.91E+02	1.91E+02
N	608731	Hexachlorocyclohexane, Technical	mg/kg		9.48E+03	9.48E+03		1.69E+02	1.69E+02		1.38E+02	1.38E+02		1.38E+02	1.38E+02
N	77474	Hexachlorocyclopentadiene	mg/kg	4.06E+04		4.06E+04	1.35E+04		1.35E+04	4.87E+04		4.87E+04	5.85E+03		5.85E+03
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/kg		2.55E+00	2.55E+00		3.39E-02	3.39E-02		2.53E-02	2.53E-02		2.53E-02	2.53E-02
N	67721	Hexachloroethane	mg/kg	6.77E+03	1.00E+05	6.77E+03	2.25E+03	1.50E+04	2.25E+03	8.11E+03	1.12E+04	8.11E+03	9.75E+02	1.12E+04	9.75E+02
N	70304	Hexachlorophene	mg/kg	2.03E+03		2.03E+03	6.76E+02		6.76E+02	2.43E+03		2.43E+03	2.93E+02		2.93E+02
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/kg	2.20E+04	1.00E+05	2.20E+04	9.89E+03	2.80E+03	2.80E+03	3.96E+04	2.30E+03	2.30E+03	4.31E+03	2.30E+03	2.30E+03
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/kg	1.93E+01		1.93E+01	6.44E+00		6.44E+00	2.32E+01		2.32E+01	2.79E+00		2.79E+00
N	110543	Hexane, N-	mg/kg	1.17E+04		1.17E+04	9.58E+02		9.58E+02	3.69E+03		3.69E+03	5.66E+02		5.66E+02
N	591786	Hexanone, 2-	mg/kg												
N	51235042	Hexazinone	mg/kg	1.00E+05		1.00E+05	7.44E+04		7.44E+04	1.00E+05		1.00E+05	3.22E+04		3.22E+04
Y	37871004	HpCDD, 2,3,7,8-	mg/kg		8.08E+00	8.08E+00		6.19E-02	6.19E-02		4.15E-02	4.15E-02		4.15E-02	4.15E-02
Y	38998753	HpCDF, 2,3,7,8-	mg/kg		1.05E+01	1.05E+01		1.40E-01	1.40E-01		1.04E-01	1.04E-01		1.04E-01	1.04E-01
Y	34465468	HxCDD, 2,3,7,8-	mg/kg		8.08E-01	8.08E-01		6.19E-03	6.19E-03		4.15E-03	4.15E-03		4.15E-03	4.15E-03
Y	55684941	HxCDF, 2,3,7,8-	mg/kg		1.05E+00	1.05E+00		1.40E-02	1.40E-02		1.04E-02	1.04E-02		1.04E-02	1.04E-02
N	302012	Hydrazine	mg/kg		5.27E+03	5.27E+03		7.01E+01	7.01E+01		5.22E+01	5.22E+01		5.22E+01	5.22E+01
N	10034932	Hydrazine Sulfate	mg/kg		5.27E+03	5.27E+03		7.01E+01	7.01E+01		5.22E+01	5.22E+01		5.22E+01	5.22E+01
N	123319	Hydroquinone	mg/kg	1.00E+05		1.00E+05	9.02E+04		9.02E+04	1.00E+05		1.00E+05	3.90E+04		3.90E+04
N	35554440	Imazalil	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	81335377	Imazaquin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	193395	Indeno[1,2,3-cd]pyrene	mg/kg		1.98E+04	1.98E+04		2.08E+02	2.08E+02		1.46E+02	1.46E+02		1.46E+02	1.46E+02
N	36734197	Iprodione	mg/kg	1.00E+05		1.00E+05	9.02E+04		9.02E+04	1.00E+05		1.00E+05	3.90E+04		3.90E+04

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
Y	86737	Fluorene	mg/kg	7.01E+04		7.01E+04	4.23E+04		4.23E+04	5.82E+03		5.82E+03
N	59756604	Fluridone	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.32E+04		1.32E+04
N	56425913	Flurprimidol	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	66332965	Flutolanil	mg/kg	1.00E+05		1.00E+05	7.73E+04		7.73E+04	9.91E+03		9.91E+03
N	69409945	Fluvalinate	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	133073	Folpet	mg/kg	1.00E+05	4.48E+04	4.48E+04	1.00E+05	1.06E+04	1.06E+04	1.65E+04	1.06E+04	1.06E+04
N	72178020	Fomesafen	mg/kg		8.25E+02	8.25E+02		1.96E+02	1.96E+02		1.96E+02	1.96E+02
N	944229	Fonofos	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	50000	Formaldehyde	mg/kg	1.00E+05	1.00E+05		1.00E+05	1.00E+05		2.76E+04	1.00E+05	2.76E+04
N	64186	Formic Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	39148248	Fosetyl-AL	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	110009	Furan	mg/kg	6.02E+01		6.02E+01	2.46E+01		2.46E+01	5.04E+00		5.04E+00
N	67458	Furazolidone	mg/kg		4.12E+01	4.12E+01		9.79E+00	9.79E+00		9.79E+00	9.79E+00
N	98011	Furfural	mg/kg	5.98E+03		5.98E+03	3.86E+03		3.86E+03	4.96E+02		4.96E+02
N	531828	Furium	mg/kg		3.13E+00	3.13E+00		7.44E-01	7.44E-01		7.44E-01	7.44E-01
N	60568050	Furmecyclox	mg/kg		5.22E+03	5.22E+03		1.24E+03	1.24E+03		1.24E+03	1.24E+03
N	77182822	Glufosinate, Ammonium	mg/kg	7.97E+02		7.97E+02	5.15E+02		5.15E+02	6.61E+01		6.61E+01
N	765344	Glycidyl	mg/kg	7.97E+02		7.97E+02	5.15E+02		5.15E+02	6.61E+01		6.61E+01
N	1071836	Glyphosate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	42874033	Goal	mg/kg	5.98E+03		5.98E+03	3.86E+03		3.86E+03	4.96E+02		4.96E+02
N	69806402	*Haloxyfop, Methyl*	mg/kg	9.96E+01		9.96E+01	6.44E+01		6.44E+01	8.26E+00		8.26E+00
N	79277273	Harmony	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	76448	Heptachlor	mg/kg	1.36E+03	4.54E+01	4.54E+01	7.37E+02	9.20E+00	9.20E+00	9.01E+01	9.20E+00	9.20E+00
N	1024573	Heptachlor Epoxide	mg/kg	3.54E+01	2.24E+01	2.24E+01	1.92E+01	4.55E+00	4.55E+00	2.34E+00	4.55E+00	2.34E+00
N	142825	Heptane, N-	mg/kg									
N	87821	Hexabromobenzene	mg/kg	5.94E+03		5.94E+03	3.05E+03		3.05E+03	3.68E+02		3.68E+02
N	118741	Hexachlorobenzene	mg/kg	1.59E+03	9.80E+01	9.80E+01	1.03E+03	2.33E+01	2.33E+01	1.32E+02	2.33E+01	2.33E+01
N	87683	Hexachlorobutadiene	mg/kg	3.98E+02	2.01E+03	3.98E+02	2.58E+02	4.77E+02	2.58E+02	3.30E+01	4.77E+02	3.30E+01
N	319846	Hexachlorocyclohexane, Alpha-	mg/kg		3.94E+01	3.94E+01		7.03E+00	7.03E+00		7.03E+00	7.03E+00
N	319857	Hexachlorocyclohexane, Beta-	mg/kg		1.32E+02	1.32E+02		2.43E+01	2.43E+01		2.43E+01	2.43E+01
N	319868	Hexachlorocyclohexane, Delta-	mg/kg									
N	6108107	Hexachlorocyclohexane, Epsilon	mg/kg									
N	58899	Hexachlorocyclohexane, Gamma-	mg/kg	1.04E+03	1.91E+02	1.91E+02	4.83E+02	3.41E+01	3.41E+01	5.71E+01	3.41E+01	3.41E+01
N	608731	Hexachlorocyclohexane, Technical	mg/kg		1.38E+02	1.38E+02		2.46E+01	2.46E+01		2.46E+01	2.46E+01
N	77474	Hexachlorocyclopentadiene	mg/kg	1.19E+04		1.19E+04	7.73E+03		7.73E+03	9.91E+02		9.91E+02
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/kg		2.53E-02	2.53E-02		6.00E-03	6.00E-03		6.00E-03	6.00E-03
N	67721	Hexachloroethane	mg/kg	1.99E+03	1.12E+04	1.99E+03	1.29E+03	2.66E+03	1.29E+03	1.65E+02	2.66E+03	1.65E+02
N	70304	Hexachlorophene	mg/kg	5.98E+02		5.98E+02	3.86E+02		3.86E+02	4.96E+01		4.96E+01
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/kg	1.06E+04	2.30E+03	2.30E+03	4.87E+03	4.05E+02	4.05E+02	5.74E+02	4.05E+02	4.05E+02
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/kg	5.69E+00		5.69E+00	3.68E+00		3.68E+00	4.72E-01		4.72E-01
N	110543	Hexane, N-	mg/kg	1.68E+03		1.68E+03	6.83E+02		6.83E+02	1.41E+02		1.41E+02
N	591786	Hexanone, 2-	mg/kg									
N	51235042	Hexazinone	mg/kg	6.57E+04		6.57E+04	4.25E+04		4.25E+04	5.45E+03		5.45E+03
Y	37871004	HpCDD, 2,3,7,8-	mg/kg		4.15E-02	4.15E-02		1.49E-02	1.49E-02		1.49E-02	1.49E-02
Y	38998753	HpCDF, 2,3,7,8-	mg/kg		1.04E-01	1.04E-01		2.48E-02	2.48E-02		2.48E-02	2.48E-02
Y	34465468	HxCDD, 2,3,7,8-	mg/kg		4.15E-03	4.15E-03		1.49E-03	1.49E-03		1.49E-03	1.49E-03
Y	55684941	HxCDF, 2,3,7,8-	mg/kg		1.04E-02	1.04E-02		2.48E-03	2.48E-03		2.48E-03	2.48E-03
N	302012	Hydrazine	mg/kg		5.22E+01	5.22E+01		1.24E+01	1.24E+01		1.24E+01	1.24E+01
N	10034932	Hydrazine Sulfate	mg/kg		5.22E+01	5.22E+01		1.24E+01	1.24E+01		1.24E+01	1.24E+01
N	123319	Hydroquinone	mg/kg	7.97E+04		7.97E+04	5.15E+04		5.15E+04	6.61E+03		6.61E+03
N	35554440	Imazalil	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	81335377	Imazaquin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.13E+04		4.13E+04
Y	193395	Indeno[1,2,3-cd]pyrene	mg/kg		1.46E+02	1.46E+02		4.24E+01	4.24E+01		4.24E+01	4.24E+01
N	36734197	Iprodione	mg/kg	7.97E+04		7.97E+04	5.15E+04		5.15E+04	6.61E+03		6.61E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	78831	Isobutyl Alcohol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	78591	Isophorone	mg/kg	1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05	
N	33820530	Isopropalin	mg/kg	1.00E+05		1.00E+05	3.38E+04		3.38E+04	1.00E+05		1.00E+05	1.46E+04		1.46E+04
N	67630	Isopropanol	mg/kg												
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	82558507	Isoxaben	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	143500	Kepone	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	23950585	Kerb	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.32E+04		7.32E+04
N	77501634	Lactofen	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N		Lead Alkyls	mg/kg												
N	330552	Linuron	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	83055996	Londax	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	94746	MCPA	mg/kg	3.39E+03		3.39E+03	1.13E+03		1.13E+03	4.06E+03		4.06E+03	4.88E+02		4.88E+02
N	94815	MCPB	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	93652	MCPP	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	121755	Malathion	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	108316	Maleic Anhydride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	123331	Maleic Hydrazide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	109773	Malononitrile	mg/kg	1.44E+02		1.44E+02	5.91E+01		5.91E+01	2.28E+02		2.28E+02	2.57E+01		2.57E+01
N	8018017	Mancozeb	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	12427382	Maneb	mg/kg	3.39E+04	1.00E+05	3.39E+04	1.13E+04	3.51E+03	3.51E+03	4.06E+04	2.61E+03	2.61E+03	4.88E+03	2.61E+03	2.61E+03
N	950107	Mephosfolan	mg/kg	6.09E+02		6.09E+02	2.03E+02		2.03E+02	7.30E+02		7.30E+02	8.78E+01		8.78E+01
N	24307264	Mepiquat Chloride	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	149304	Mercaptobenzothiazole, 2-	mg/kg	1.00E+05	1.00E+05		1.00E+05	7.26E+03	7.26E+03	1.00E+05	5.40E+03	5.40E+03	9.75E+04	5.40E+03	5.40E+03
N	150505	Merphos	mg/kg	2.03E+02		2.03E+02	6.76E+01		6.76E+01	2.43E+02		2.43E+02	2.93E+01		2.93E+01
N	78488	Merphos Oxide	mg/kg	2.03E+02		2.03E+02	6.76E+01		6.76E+01	2.43E+02		2.43E+02	2.93E+01		2.93E+01
N	57837191	Metalaxyl	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	5.85E+04		5.85E+04
N	126987	Methacrylonitrile	mg/kg	2.78E+02		2.78E+02	3.24E+01		3.24E+01	1.25E+02		1.25E+02	1.84E+01		1.84E+01
N	10265926	Methamidophos	mg/kg	3.39E+02		3.39E+02	1.13E+02		1.13E+02	4.06E+02		4.06E+02	4.88E+01		4.88E+01
N	67561	Methanol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	950378	Methidathion	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	16752775	Methomyl	mg/kg	1.00E+05		1.00E+05	2.58E+04		2.58E+04	9.62E+04		9.62E+04	1.31E+04		1.31E+04
N	99592	Methoxy-5-nitroaniline, 2-	mg/kg		1.00E+05	1.00E+05		4.57E+03	4.57E+03		3.41E+03	3.41E+03		3.41E+03	3.41E+03
N	72435	Methoxychlor	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	110496	Methoxyethanol Acetate, 2-	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	109864	Methoxyethanol, 2-	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	79209	Methyl Acetate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.57E+04		7.57E+04
N	96333	Methyl Acrylate	mg/kg	1.00E+05		1.00E+05	3.60E+04		3.60E+04	1.00E+05		1.00E+05	1.78E+04		1.78E+04
N	78933	Methyl Ethyl Ketone	mg/kg	1.00E+05		1.00E+05	3.94E+04		3.94E+04	1.00E+05		1.00E+05	2.31E+04		2.31E+04
N	60344	Methyl Hydrazine	mg/kg		1.44E+04	1.44E+04		1.91E+02	1.91E+02		1.42E+02	1.42E+02		1.42E+02	1.42E+02
N	108101	Methyl Isobutyl Ketone	mg/kg	2.62E+04		2.62E+04	2.18E+03		2.18E+03	8.38E+03		8.38E+03	1.28E+03		1.28E+03
N	74931	Methyl Mercaptan	mg/kg	3.86E+03		3.86E+03	1.29E+03		1.29E+03	4.62E+03		4.62E+03	5.56E+02		5.56E+02
N	80626	Methyl Methacrylate	mg/kg	1.00E+05		1.00E+05	3.52E+04		3.52E+04	1.00E+05		1.00E+05	2.08E+04		2.08E+04
N	298000	Methyl Parathion	mg/kg	1.69E+03		1.69E+03	5.64E+02		5.64E+02	2.03E+03		2.03E+03	2.44E+02		2.44E+02
N	993135	Methyl Phosphonic Acid	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	25013154	Methyl Styrene (Mixed Isomers)	mg/kg	4.31E+04		4.31E+04	1.77E+04		1.77E+04	6.85E+04		6.85E+04	7.71E+03		7.71E+03
N	79221	Methyl chlorocarbonate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/kg	1.00E+05		1.00E+05	6.54E+04		6.54E+04	1.00E+05		1.00E+05	3.87E+04		3.87E+04
N	99558	Methyl-5-Nitroaniline, 2-	mg/kg		1.00E+05	1.00E+05		6.38E+03	6.38E+03		4.75E+03	4.75E+03		4.75E+03	4.75E+03
N	636215	Methylaniline Hydrochloride, 2-	mg/kg		8.78E+04	8.78E+04		1.17E+03	1.17E+03		8.71E+02	8.71E+02		8.71E+02	8.71E+02
N	108872	Methylcyclohexane	mg/kg	1.00E+05		1.00E+05	2.26E+04		2.26E+04	8.69E+04		8.69E+04	1.33E+04		1.33E+04
N	75092	Methylene Chloride	mg/kg	1.00E+05	1.00E+05		2.94E+04	2.16E+03	2.16E+03	1.00E+05	2.34E+03	2.34E+03	1.65E+04	2.34E+03	2.34E+03
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/kg	4.74E+03	1.00E+05	4.74E+03	1.58E+03	1.62E+03	1.58E+03	5.68E+03	1.21E+03	1.21E+03	6.83E+02	1.21E+03	6.83E+02
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/kg		1.00E+05	1.00E+05		4.57E+03	4.57E+03		3.41E+03	3.41E+03		3.41E+03	3.41E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	78831	Isobutyl Alcohol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.55E+04		2.55E+04
N	78591	Isophorone	mg/kg	1.00E+05	1.00E+05		1.00E+05	3.92E+04	3.92E+04	3.30E+04	3.92E+04	3.30E+04
N	33820530	Isopropalin	mg/kg	2.99E+04		2.99E+04	1.93E+04		1.93E+04	2.48E+03		2.48E+03
N	67630	Isopropanol	mg/kg									
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	82558507	Isoxaben	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	143500	Kepone	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	23950585	Kerb	mg/kg	1.00E+05		1.00E+05	9.66E+04		9.66E+04	1.24E+04		1.24E+04
N	77501634	Lactofen	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N		Lead Alkyls	mg/kg									
N	330552	Linuron	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	83055996	Londax	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.30E+04		3.30E+04
N	94746	MCPA	mg/kg	9.96E+02		9.96E+02	6.44E+02		6.44E+02	8.26E+01		8.26E+01
N	94815	MCPB	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	93652	MCPP	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	121755	Malathion	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	108316	Maleic Anhydride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	123331	Maleic Hydrazide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.26E+04		8.26E+04
N	109773	Malononitrile	mg/kg	5.94E+01		5.94E+01	3.05E+01		3.05E+01	3.68E+00		3.68E+00
N	8018017	Mancozeb	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	12427382	Maneb	mg/kg	9.96E+03	2.61E+03	2.61E+03	6.44E+03	6.20E+02	6.20E+02	8.26E+02	6.20E+02	6.20E+02
N	950107	Mephosfolan	mg/kg	1.79E+02		1.79E+02	1.16E+02		1.16E+02	1.49E+01		1.49E+01
N	24307264	Mepiquat Chloride	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	149304	Mercaptobenzothiazole, 2-	mg/kg	1.00E+05	5.40E+03	5.40E+03	1.00E+05	1.28E+03	1.28E+03	1.65E+04	1.28E+03	1.28E+03
N	150505	Merphos	mg/kg	5.98E+01		5.98E+01	3.86E+01		3.86E+01	4.96E+00		4.96E+00
N	78488	Merphos Oxide	mg/kg	5.98E+01		5.98E+01	3.86E+01		3.86E+01	4.96E+00		4.96E+00
N	57837191	Metalaxyl	mg/kg	1.00E+05		1.00E+05	7.73E+04		7.73E+04	9.91E+03		9.91E+03
N	126987	Methacrylonitrile	mg/kg	5.25E+01		5.25E+01	2.22E+01		2.22E+01	4.16E+00		4.16E+00
N	10265926	Methamidophos	mg/kg	9.96E+01		9.96E+01	6.44E+01		6.44E+01	8.26E+00		8.26E+00
N	67561	Methanol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.20E+04		9.20E+04
N	950378	Methidathion	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	16752775	Methomyl	mg/kg	3.12E+04		3.12E+04	1.65E+04		1.65E+04	2.60E+03		2.60E+03
N	99592	Methoxy-5-nitroaniline, 2-	mg/kg		3.41E+03	3.41E+03		8.09E+02	8.09E+02		8.09E+02	8.09E+02
N	72435	Methoxychlor	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	110496	Methoxyethanol Acetate, 2-	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	109864	Methoxyethanol, 2-	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	79209	Methyl Acetate	mg/kg	1.00E+05		1.00E+05	9.19E+04		9.19E+04	1.82E+04		1.82E+04
N	96333	Methyl Acrylate	mg/kg	4.15E+04		4.15E+04	2.27E+04		2.27E+04	3.46E+03		3.46E+03
N	78933	Methyl Ethyl Ketone	mg/kg	6.80E+04		6.80E+04	2.79E+04		2.79E+04	5.66E+03		5.66E+03
N	60344	Methyl Hydrazine	mg/kg		1.42E+02	1.42E+02		3.38E+01	3.38E+01		3.38E+01	3.38E+01
N	108101	Methyl Isobutyl Ketone	mg/kg	3.80E+03		3.80E+03	1.55E+03		1.55E+03	3.18E+02		3.18E+02
N	74931	Methyl Mercaptan	mg/kg	1.14E+03		1.14E+03	7.34E+02		7.34E+02	9.42E+01		9.42E+01
N	80626	Methyl Methacrylate	mg/kg	6.14E+04		6.14E+04	2.51E+04		2.51E+04	5.15E+03		5.15E+03
N	298000	Methyl Parathion	mg/kg	4.98E+02		4.98E+02	3.22E+02		3.22E+02	4.13E+01		4.13E+01
N	993135	Methyl Phosphonic Acid	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	25013154	Methyl Styrene (Mixed Isomers)	mg/kg	1.78E+04		1.78E+04	9.14E+03		9.14E+03	1.10E+03		1.10E+03
N	79221	Methyl chlorocarbonate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/kg	1.00E+05		1.00E+05	4.67E+04		4.67E+04	9.68E+03		9.68E+03
N	99558	Methyl-5-Nitroaniline, 2-	mg/kg		4.75E+03	4.75E+03		1.13E+03	1.13E+03		1.13E+03	1.13E+03
N	636215	Methylaniline Hydrochloride, 2-	mg/kg		8.71E+02	8.71E+02		2.07E+02	2.07E+02		2.07E+02	2.07E+02
N	108872	Methylcyclohexane	mg/kg	3.94E+04		3.94E+04	1.61E+04		1.61E+04	3.30E+03		3.30E+03
N	75092	Methylene Chloride	mg/kg	4.69E+04	2.34E+03	2.34E+03	1.97E+04	5.84E+02	5.84E+02	3.54E+03	5.84E+02	5.84E+02
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/kg	1.39E+03	1.21E+03	1.21E+03	9.02E+02	2.86E+02	2.86E+02	1.16E+02	2.86E+02	1.16E+02
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/kg		3.41E+03	3.41E+03		8.09E+02	8.09E+02		8.09E+02	8.09E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	101779	Methylenebisbenzenamine, 4,4'-	mg/kg		6.32E+04	6.32E+04		8.42E+02	8.42E+02		6.27E+02	6.27E+02		6.27E+02	6.27E+02
N	101688	Methylenediphenyl Diisocyanate	mg/kg	1.23E+03		1.23E+03	5.07E+02		5.07E+02	1.96E+03		1.96E+03	2.20E+02		2.20E+02
N	98839	Methylstyrene, Alpha-	mg/kg	5.56E+04		5.56E+04	4.88E+03		4.88E+03	1.88E+04		1.88E+04	2.87E+03		2.87E+03
N	1762283	Methyltriethyl Lead	mg/kg												
N	51218452	Metolachlor	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	21087649	Metribuzin	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
N	2385855	Mirex	mg/kg	1.35E+03	8.78E+03	1.35E+03	4.51E+02	1.17E+02	1.17E+02	1.62E+03	8.71E+01	8.71E+01	1.95E+02	8.71E+01	8.71E+01
N	2212671	Molinate	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	10599903	Monochloramine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	25154421	Monochlorobutanes	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	300765	Naled	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
Y	91203	Naphthalene	mg/kg	9.09E+03		9.09E+03	7.66E+02		7.66E+02	2.95E+03		2.95E+03	4.51E+02		4.51E+02
N	90120	Naphthalene, 1-Methyl	mg/kg												
N	91576	Naphthalene, 2-Methyl	mg/kg												
N	15299997	Napropamide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	2429745	Niagara Blue 4B	mg/kg												
N	13463393	Nickel Carbonyl	mg/kg												
N	1929824	Nitrapyrin	mg/kg	1.02E+04		1.02E+04	3.38E+03		3.38E+03	1.22E+04		1.22E+04	1.46E+03		1.46E+03
N	88744	Nitroaniline, 2-	mg/kg	3.87E+02		3.87E+02	1.29E+02		1.29E+02	4.64E+02		4.64E+02	5.57E+01		5.57E+01
N	98953	Nitrobenzene	mg/kg	2.13E+03		2.13E+03	3.26E+02		3.26E+02	1.26E+03		1.26E+03	1.80E+02		1.80E+02
N	67209	Nitrofurantoin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.83E+04		6.83E+04
N	59870	Nitrofurazone	mg/kg		1.05E+04	1.05E+04		1.40E+02	1.40E+02		1.04E+02	1.04E+02		1.04E+02	1.04E+02
N	55630	Nitroglycerin	mg/kg	9.48E+04		9.48E+04	3.16E+04		3.16E+04	1.00E+05		1.00E+05	1.37E+04		1.37E+04
N	556887	Nitroguanidine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	100027	Nitrophenol, 4-	mg/kg	5.86E+04		5.86E+04	2.64E+04		2.64E+04	1.00E+05		1.00E+05	1.15E+04		1.15E+04
N	79469	Nitropropane, 2-	mg/kg	1.25E+04	5.44E+02	5.44E+02	1.33E+03	2.31E+00	2.31E+00	5.11E+03	2.47E+00	2.47E+00	7.65E+02	2.47E+00	2.47E+00
N	759739	Nitroso-N-ethylurea, N-	mg/kg		1.13E+02	1.13E+02		1.50E+00	1.50E+00		1.12E+00	1.12E+00		1.12E+00	1.12E+00
N	684935	Nitroso-N-methylurea, N-	mg/kg												
N	924163	Nitroso-di-N-butylamine, N-	mg/kg		2.93E+03	2.93E+03		3.90E+01	3.90E+01		2.90E+01	2.90E+01		2.90E+01	2.90E+01
N	621647	Nitroso-di-N-propylamine, N-	mg/kg		1.96E+03	1.96E+03		1.84E+01	1.84E+01		1.27E+01	1.27E+01		1.27E+01	1.27E+01
N	1116547	Nitrosodiethanolamine, N-	mg/kg		5.64E+03	5.64E+03		7.51E+01	7.51E+01		5.60E+01	5.60E+01		5.60E+01	5.60E+01
N	55185	Nitrosodiethylamine, N-	mg/kg		1.05E+02	1.05E+02		1.40E+00	1.40E+00		1.04E+00	1.04E+00		1.04E+00	1.04E+00
N	62759	Nitrosodimethylamine, N-	mg/kg		3.10E+02	3.10E+02		4.13E+00	4.13E+00		3.07E+00	3.07E+00		3.07E+00	3.07E+00
N	86306	Nitrosodiphenylamine, N-	mg/kg		1.00E+05	1.00E+05		2.63E+04	2.63E+04		1.82E+04	1.82E+04		1.82E+04	1.82E+04
N	10595956	Nitrosomethylethylamine, N-	mg/kg		7.18E+02	7.18E+02		9.56E+00	9.56E+00		7.12E+00	7.12E+00		7.12E+00	7.12E+00
N	4549400	Nitrosomethylvinylamine, N-	mg/kg												
N	930552	Nitrosopyrrolidine, N-	mg/kg		7.52E+03	7.52E+03		1.00E+02	1.00E+02		7.46E+01	7.46E+01		7.46E+01	7.46E+01
N	119324	Nitrotoluene, 4-Amino-2-	mg/kg												
N	99081	Nitrotoluene, m-	mg/kg	3.80E+04		3.80E+04	5.29E+03		5.29E+03	2.04E+04		2.04E+04	2.94E+03		2.94E+03
N	88722	Nitrotoluene, o-	mg/kg	3.61E+04		3.61E+04	4.85E+03		4.85E+03	1.87E+04		1.87E+04	2.71E+03		2.71E+03
N	99990	Nitrotoluene, p-	mg/kg	2.29E+04		2.29E+04	2.47E+03		2.47E+03	9.51E+03		9.51E+03	1.42E+03		1.42E+03
N	27314132	Norflurazon	mg/kg	1.00E+05		1.00E+05	9.02E+04		9.02E+04	1.00E+05		1.00E+05	3.90E+04		3.90E+04
N	85509199	Nustar	mg/kg	4.74E+03		4.74E+03	1.58E+03		1.58E+03	5.68E+03		5.68E+03	6.83E+02		6.83E+02
Y	3268879	OCDD	mg/kg		8.08E+01	8.08E+01		6.19E-01	6.19E-01		4.15E-01	4.15E-01		4.15E-01	4.15E-01
Y	39001020	OCDF	mg/kg		1.05E+02	1.05E+02		1.40E+00	1.40E+00		1.04E+00	1.04E+00		1.04E+00	1.04E+00
N	32536520	Octabromodiphenyl Ether	mg/kg	2.03E+04		2.03E+04	6.76E+03		6.76E+03	2.43E+04		2.43E+04	2.93E+03		2.93E+03
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/kg	1.00E+05		1.00E+05	4.55E+04		4.55E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	152169	Octamethylpyrophosphoramide	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	117840	Octyl Phthalate, di-N-	mg/kg	1.00E+05		1.00E+05	6.27E+04		6.27E+04	1.00E+05		1.00E+05	2.73E+04		2.73E+04
N	19044883	Oryzalin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	19666309	Oxadiazon	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	23135220	Oxamyl	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
N	76738620	Paclobutrazol	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	1910425	Paraquat	mg/kg	3.05E+04		3.05E+04	1.01E+04		1.01E+04	3.65E+04		3.65E+04	4.39E+03		4.39E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	101779	Methylenebisbenzenamine, 4,4'-	mg/kg		6.27E+02	6.27E+02		1.49E+02	1.49E+02		1.49E+02	1.49E+02
N	101688	Methylenediphenyl Diisocyanate	mg/kg	5.09E+02		5.09E+02	2.61E+02		2.61E+02	3.15E+01		3.15E+01
N	98839	Methylstyrene, Alpha-	mg/kg	8.42E+03		8.42E+03	3.46E+03		3.46E+03	7.00E+02		7.00E+02
N	1762283	Methyltriethyl Lead	mg/kg									
N	51218452	Metolachlor	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.48E+04		2.48E+04
N	21087649	Metribuzin	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
N	2385855	Mirex	mg/kg	3.98E+02	8.71E+01	8.71E+01	2.58E+02	2.07E+01	2.07E+01	3.30E+01	2.07E+01	2.07E+01
N	2212671	Molinate	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	10599903	Monochloramine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	25154421	Monochlorobutanes	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.61E+04		6.61E+04
N	300765	Naled	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
Y	91203	Naphthalene	mg/kg	1.33E+03		1.33E+03	5.45E+02		5.45E+02	1.11E+02		1.11E+02
N	90120	Naphthalene, 1-Methyl	mg/kg									
N	91576	Naphthalene, 2-Methyl	mg/kg									
N	15299997	Napropamide	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	2429745	Niagara Blue 4B	mg/kg									
N	13463393	Nickel Carbonyl	mg/kg									
N	1929824	Nitrapyrin	mg/kg	2.99E+03		2.99E+03	1.93E+03		1.93E+03	2.48E+02		2.48E+02
N	88744	Nitroaniline, 2-	mg/kg	1.14E+02		1.14E+02	7.36E+01		7.36E+01	9.44E+00		9.44E+00
N	98953	Nitrobenzene	mg/kg	5.07E+02		5.07E+02	2.14E+02		2.14E+02	3.69E+01		3.69E+01
N	67209	Nitrofurantoin	mg/kg	1.00E+05		1.00E+05	9.02E+04		9.02E+04	1.16E+04		1.16E+04
N	59870	Nitrofurazone	mg/kg		1.04E+02	1.04E+02		2.48E+01	2.48E+01		2.48E+01	2.48E+01
N	55630	Nitroglycerin	mg/kg	2.79E+04		2.79E+04	1.80E+04		1.80E+04	2.31E+03		2.31E+03
N	556887	Nitroguanidine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	100027	Nitrophenol, 4-	mg/kg	2.84E+04		2.84E+04	1.30E+04		1.30E+04	1.53E+03		1.53E+03
N	79469	Nitropropane, 2-	mg/kg	2.20E+03	2.47E+00	2.47E+00	9.21E+02	6.14E-01	6.14E-01	1.77E+02	6.14E-01	6.14E-01
N	759739	Nitroso-N-ethylurea, N-	mg/kg		1.12E+00	1.12E+00		2.66E-01	2.66E-01		2.66E-01	2.66E-01
N	684935	Nitroso-N-methylurea, N-	mg/kg									
N	924163	Nitroso-di-N-butylamine, N-	mg/kg		2.90E+01	2.90E+01		6.89E+00	6.89E+00		6.89E+00	6.89E+00
N	621647	Nitroso-di-N-propylamine, N-	mg/kg		1.27E+01	1.27E+01		3.99E+00	3.99E+00		3.99E+00	3.99E+00
N	1116547	Nitrosodiethanolamine, N-	mg/kg		5.60E+01	5.60E+01		1.33E+01	1.33E+01		1.33E+01	1.33E+01
N	55185	Nitrosodiethylamine, N-	mg/kg		1.04E+00	1.04E+00		2.48E-01	2.48E-01		2.48E-01	2.48E-01
N	62759	Nitrosodimethylamine, N-	mg/kg		3.07E+00	3.07E+00		7.30E-01	7.30E-01		7.30E-01	7.30E-01
N	86306	Nitrosodiphenylamine, N-	mg/kg		1.82E+04	1.82E+04		5.71E+03	5.71E+03		5.71E+03	5.71E+03
N	10595956	Nitrosomethylethylamine, N-	mg/kg		7.12E+00	7.12E+00		1.69E+00	1.69E+00		1.69E+00	1.69E+00
N	4549400	Nitrosomethylvinylamine, N-	mg/kg									
N	930552	Nitrosopyrrolidine, N-	mg/kg		7.46E+01	7.46E+01		1.77E+01	1.77E+01		1.77E+01	1.77E+01
N	119324	Nitrotoluene, 4-Amino-2-	mg/kg									
N	99081	Nitrotoluene, m-	mg/kg	8.19E+03		8.19E+03	3.53E+03		3.53E+03	6.28E+02		6.28E+02
N	88722	Nitrotoluene, o-	mg/kg	7.59E+03		7.59E+03	3.26E+03		3.26E+03	5.86E+02		5.86E+02
N	99990	Nitrotoluene, p-	mg/kg	4.08E+03		4.08E+03	1.71E+03		1.71E+03	3.28E+02		3.28E+02
N	27314132	Norflurazon	mg/kg	7.97E+04		7.97E+04	5.15E+04		5.15E+04	6.61E+03		6.61E+03
N	85509199	Nustar	mg/kg	1.39E+03		1.39E+03	9.02E+02		9.02E+02	1.16E+02		1.16E+02
Y	3268879	OCDD	mg/kg		4.15E-01	4.15E-01		1.49E-01	1.49E-01		1.49E-01	1.49E-01
Y	39001020	OCDF	mg/kg		1.04E+00	1.04E+00		2.48E-01	2.48E-01		2.48E-01	2.48E-01
N	32536520	Octabromodiphenyl Ether	mg/kg	5.98E+03		5.98E+03	3.86E+03		3.86E+03	4.96E+02		4.96E+02
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/kg	3.27E+04		3.27E+04	3.28E+04		3.28E+04	5.06E+03		5.06E+03
N	152169	Octamethylpyrophosphoramide	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	117840	Octyl Phthalate, di-N-	mg/kg	6.53E+04		6.53E+04	3.15E+04		3.15E+04	3.76E+03		3.76E+03
N	19044883	Oryzalin	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	19666309	Oxadiazon	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	23135220	Oxamyl	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
N	76738620	Paclobutrazol	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	1910425	Paraquat	mg/kg	8.96E+03		8.96E+03	5.80E+03		5.80E+03	7.43E+02		7.43E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action val · of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	56382	Parathion	mg/kg	4.06E+04		4.06E+04	1.35E+04		1.35E+04	4.87E+04		4.87E+04	5.85E+03		5.85E+03
Y	36088229	PeCDD, 2,3,7,8-	mg/kg		1.62E-01	1.62E-01		1.24E-03	1.24E-03		8.29E-04	8.29E-04		8.29E-04	8.29E-04
Y	57117416	PeCDF, 1,2,3,7,8-	mg/kg		2.11E-01	2.11E-01		2.81E-03	2.81E-03		2.09E-03	2.09E-03		2.09E-03	2.09E-03
Y	57117314	PeCDF, 2,3,4,7,8-	mg/kg		2.11E+00	2.11E+00		2.81E-02	2.81E-02		2.09E-02	2.09E-02		2.09E-02	2.09E-02
N	1114712	Pebulate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	40487421	Pendimethalin	mg/kg	1.00E+05		1.00E+05	9.02E+04		9.02E+04	1.00E+05		1.00E+05	3.90E+04		3.90E+04
N	32534819	Pentabromodiphenyl Ether	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	608935	Pentachlorobenzene	mg/kg	5.74E+03		5.74E+03	2.36E+03		2.36E+03	9.13E+03		9.13E+03	1.03E+03		1.03E+03
N	25329355	Pentachlorocyclopentadiene	mg/kg												
N	82688	Pentachloronitrobenzene	mg/kg	2.15E+04	6.44E+04	2.15E+04	8.87E+03	1.06E+03	1.06E+03	3.42E+04	8.43E+02	8.43E+02	3.85E+03	8.43E+02	8.43E+02
N	87865	Pentachlorophenol	mg/kg	1.00E+05	1.00E+05		9.89E+04	2.56E+03	2.56E+03	1.00E+05	2.11E+03	2.11E+03	4.31E+04	2.11E+03	2.11E+03
N	71410	Pentyl Alcohol, N-	mg/kg												
N	7601903	Perchlorate	mg/kg	3.92E+03		3.92E+03	2.62E+03		2.62E+03	1.32E+04		1.32E+04	1.15E+03		1.15E+03
N	52645531	Permethrin	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
Y	85018	Phenanthrene	mg/kg												
N	13684634	Phenmedipham	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	108952	Phenol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	92842	Phenothiazine	mg/kg	1.35E+04		1.35E+04	4.51E+03		4.51E+03	1.62E+04		1.62E+04	1.95E+03		1.95E+03
N	108452	Phenylenediamine, m-	mg/kg	4.06E+04		4.06E+04	1.35E+04		1.35E+04	4.87E+04		4.87E+04	5.85E+03		5.85E+03
N	95545	Phenylenediamine, o-	mg/kg		1.00E+05	1.00E+05		4.48E+03	4.48E+03		3.33E+03	3.33E+03		3.33E+03	3.33E+03
N	106503	Phenylenediamine, p-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	62384	Phenylmercuric Acetate	mg/kg	5.42E+02		5.42E+02	1.80E+02		1.80E+02	6.49E+02		6.49E+02	7.80E+01		7.80E+01
N	90437	Phenylphenol, 2-	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		8.08E+04	8.08E+04		8.08E+04	8.08E+04
N	298022	Phorate	mg/kg	1.35E+03		1.35E+03	4.51E+02		4.51E+02	1.62E+03		1.62E+03	1.95E+02		1.95E+02
N	732116	Phosmet	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	100210	Phthalic Acid, P-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	85449	Phthalic Anhydride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1918021	Picloram	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.83E+04		6.83E+04
N	29232937	Pirimiphos, Methyl	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	59536651	Polybrominated Biphenyls	mg/kg	5.10E+01	1.91E+03	5.10E+01	2.23E+01	3.34E+01	2.23E+01	8.82E+01	2.72E+01	2.72E+01	9.71E+00	2.72E+01	9.71E+00
Y	1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/kg		5.83E+03	5.83E+03		4.25E+01	4.25E+01		2.83E+01	2.83E+01		2.83E+01	2.83E+01
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		1.00E+05	1.00E+05		1.21E+03	1.21E+03		8.07E+02	8.07E+02		8.07E+02	8.07E+02
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/kg	1.23E+03		1.23E+03	5.07E+02		5.07E+02	1.96E+03		1.96E+03	2.20E+02		2.20E+02
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		1.98E+03	1.98E+03		2.08E+01	2.08E+01		1.46E+01	1.46E+01		1.46E+01	1.46E+01
N	67747095	Prochloraz	mg/kg	6.09E+04	1.00E+05	6.09E+04	2.03E+04	1.40E+03	1.40E+03	7.30E+04	1.04E+03	1.04E+03	8.78E+03	1.04E+03	1.04E+03
N	26399360	Profluralin	mg/kg	4.06E+04		4.06E+04	1.35E+04		1.35E+04	4.87E+04		4.87E+04	5.85E+03		5.85E+03
N	1610180	Prometon	mg/kg	1.00E+05		1.00E+05	3.38E+04		3.38E+04	1.00E+05		1.00E+05	1.46E+04		1.46E+04
N	7287196	Prometryn	mg/kg	2.71E+04		2.71E+04	9.02E+03		9.02E+03	3.25E+04		3.25E+04	3.90E+03		3.90E+03
N	1918167	Propachlor	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	709988	Propanil	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	2312358	Propargite	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	107197	Propargyl Alcohol	mg/kg	1.44E+04		1.44E+04	5.91E+03		5.91E+03	2.28E+04		2.28E+04	2.57E+03		2.57E+03
N	139402	Propazine	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	122429	Propham	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	60207901	Propiconazole	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	103651	Propylbenzene, n-	mg/kg	7.18E+04		7.18E+04	2.96E+04		2.96E+04	1.00E+05		1.00E+05	1.28E+04		1.28E+04
N	57556	Propylene Glycol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1569024	Propylene Glycol Monoethyl Ether	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	107982	Propylene Glycol Monomethyl Ether	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	75569	Propylene Oxide	mg/kg	9.21E+03	5.34E+04	9.21E+03	8.38E+02	4.46E+02	4.46E+02	3.22E+03	4.27E+02	4.27E+02	4.90E+02	4.27E+02	4.27E+02
N	81335775	Pursuit	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	51630581	Pydrin	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
Y	129000	Pyrene	mg/kg	1.00E+05		1.00E+05	4.87E+04		4.87E+04	1.00E+05		1.00E+05	2.10E+04		2.10E+04

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	56382	Parathion	mg/kg	1.20E+04		1.20E+04	7.73E+03		7.73E+03	9.91E+02		9.91E+02
Y	36088229	PeCDD, 2,3,7,8-	mg/kg		8.29E-04	8.29E-04		2.99E-04	2.99E-04		2.99E-04	2.99E-04
Y	57117416	PeCDF, 1,2,3,7,8-	mg/kg		2.09E-03	2.09E-03		4.96E-04	4.96E-04		4.96E-04	4.96E-04
Y	57117314	PeCDF, 2,3,4,7,8-	mg/kg		2.09E-02	2.09E-02		4.96E-03	4.96E-03		4.96E-03	4.96E-03
N	1114712	Pebulate	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	40487421	Pendimethalin	mg/kg	7.97E+04		7.97E+04	5.15E+04		5.15E+04	6.61E+03		6.61E+03
N	32534819	Pentabromodiphenyl Ether	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	608935	Pentachlorobenzene	mg/kg	2.37E+03		2.37E+03	1.22E+03		1.22E+03	1.47E+02		1.47E+02
N	25329355	Pentachlorocyclopentadiene	mg/kg									
N	82688	Pentachloronitrobenzene	mg/kg	8.90E+03	8.43E+02	8.43E+02	4.57E+03	1.63E+02	1.63E+02	5.52E+02	1.63E+02	1.63E+02
N	87865	Pentachlorophenol	mg/kg	1.00E+05	2.11E+03	2.11E+03	4.87E+04	3.71E+02	3.71E+02	5.74E+03	3.71E+02	3.71E+02
N	71410	Pentyl Alcohol, N-	mg/kg									
N	7601903	Perchlorate	mg/kg	4.72E+03		4.72E+03	1.02E+03		1.02E+03	1.09E+02		1.09E+02
N	52645531	Permethrin	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
Y	85018	Phenanthrene	mg/kg									
N	13684634	Phenmedipham	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.13E+04		4.13E+04
N	108952	Phenol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	92842	Phenothiazine	mg/kg	3.98E+03		3.98E+03	2.58E+03		2.58E+03	3.30E+02		3.30E+02
N	108452	Phenylenediamine, m-	mg/kg	1.20E+04		1.20E+04	7.73E+03		7.73E+03	9.91E+02		9.91E+02
N	95545	Phenylenediamine, o-	mg/kg		3.33E+03	3.33E+03		7.92E+02	7.92E+02		7.92E+02	7.92E+02
N	106503	Phenylenediamine, p-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.14E+04		3.14E+04
N	62384	Phenylmercuric Acetate	mg/kg	1.59E+02		1.59E+02	1.03E+02		1.03E+02	1.32E+01		1.32E+01
N	90437	Phenylphenol, 2-	mg/kg		8.08E+04	8.08E+04		1.92E+04	1.92E+04		1.92E+04	1.92E+04
N	298022	Phorate	mg/kg	3.98E+02		3.98E+02	2.58E+02		2.58E+02	3.30E+01		3.30E+01
N	732116	Phosmet	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	100210	Phthalic Acid, P-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	85449	Phthalic Anhydride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1918021	Picloram	mg/kg	1.00E+05		1.00E+05	9.02E+04		9.02E+04	1.16E+04		1.16E+04
N	29232937	Pirimiphos, Methyl	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	59536651	Polybrominated Biphenyls	mg/kg	2.34E+01	2.72E+01	2.34E+01	1.11E+01	4.93E+00	4.93E+00	1.32E+00	4.93E+00	1.32E+00
Y	1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/kg		2.83E+01	2.83E+01		1.05E+01	1.05E+01		1.05E+01	1.05E+01
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		8.07E+02	8.07E+02		3.00E+02	3.00E+02		3.00E+02	3.00E+02
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/kg	5.09E+02		5.09E+02	2.61E+02		2.61E+02	3.15E+01		3.15E+01
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		1.46E+01	1.46E+01		4.24E+00	4.24E+00		4.24E+00	4.24E+00
N	67747095	Prochloraz	mg/kg	1.79E+04	1.04E+03	1.04E+03	1.16E+04	2.48E+02	2.48E+02	1.49E+03	2.48E+02	2.48E+02
N	26399360	Profluralin	mg/kg	1.20E+04		1.20E+04	7.73E+03		7.73E+03	9.91E+02		9.91E+02
N	1610180	Prometon	mg/kg	2.99E+04		2.99E+04	1.93E+04		1.93E+04	2.48E+03		2.48E+03
N	7287196	Prometryn	mg/kg	7.97E+03		7.97E+03	5.15E+03		5.15E+03	6.61E+02		6.61E+02
N	1918167	Propachlor	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	709988	Propanil	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	2312358	Propargite	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	107197	Propargyl Alcohol	mg/kg	5.94E+03		5.94E+03	3.05E+03		3.05E+03	3.68E+02		3.68E+02
N	139402	Propazine	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	122429	Propham	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	60207901	Propiconazole	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	103651	Propylbenzene, n-	mg/kg	2.97E+04		2.97E+04	1.52E+04		1.52E+04	1.84E+03		1.84E+03
N	57556	Propylene Glycol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	1569024	Propylene Glycol Monoethyl Ether	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	107982	Propylene Glycol Monomethyl Ether	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	75569	Propylene Oxide	mg/kg	1.43E+03	4.27E+02	4.27E+02	5.91E+02	9.53E+01	9.53E+01	1.19E+02	9.53E+01	9.53E+01
N	81335775	Pursuit	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.13E+04		4.13E+04
N	51630581	Pydrin	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
Y	129000	Pyrene	mg/kg	3.89E+04		3.89E+04	3.09E+04		3.09E+04	4.25E+03		4.25E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	110861	Pyridine	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	13593038	Quinalphos	mg/kg	3.39E+03		3.39E+03	1.13E+03		1.13E+03	4.06E+03		4.06E+03	4.88E+02		4.88E+02
N	91225	Quinoline	mg/kg		1.32E+03	1.32E+03		1.75E+01	1.75E+01		1.31E+01	1.31E+01		1.31E+01	1.31E+01
N		Refractory Ceramic Fibers	mg/kg												
N	10453868	Resmethrin	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	299843	Ronnel	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
N	83794	Rotenone	mg/kg	2.71E+04		2.71E+04	9.02E+03		9.02E+03	3.25E+04		3.25E+04	3.90E+03		3.90E+03
N	78587050	Savey	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
N	7783008	Selenious Acid	mg/kg	3.62E+04		3.62E+04	1.54E+04		1.54E+04	6.03E+04		6.03E+04	6.71E+03		6.71E+03
N	14124675	Selenite	mg/kg												
N	630104	Selenourea	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	74051802	Sethoxydim	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.78E+04		8.78E+04
N	122349	Simazine	mg/kg	3.39E+04	1.00E+05	3.39E+04	1.13E+04	1.75E+03	1.75E+03	4.06E+04	1.31E+03	1.31E+03	4.88E+03	1.31E+03	1.31E+03
N	62476599	Sodium Acifluorfen	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	148185	Sodium Diethyldithiocarbamate	mg/kg	1.00E+05	5.85E+04	5.85E+04	6.76E+04	7.79E+02	7.79E+02	1.00E+05	5.81E+02	5.81E+02	2.93E+04	5.81E+02	5.81E+02
N	62748	Sodium Fluoroacetate	mg/kg	1.35E+02		1.35E+02	4.51E+01		4.51E+01	1.62E+02		1.62E+02	1.95E+01		1.95E+01
N	961115	Stirofos (Tetrachlorovinphos)	mg/kg	1.00E+05	1.00E+05		6.76E+04	8.77E+03	8.77E+03	1.00E+05	6.53E+03	6.53E+03	2.93E+04	6.53E+03	6.53E+03
N	57249	Strychnine	mg/kg	2.03E+03		2.03E+03	6.76E+02		6.76E+02	2.43E+03		2.43E+03	2.93E+02		2.93E+02
N	100425	Styrene	mg/kg	1.00E+05		1.00E+05	5.62E+04		5.62E+04	1.00E+05		1.00E+05	3.21E+04		3.21E+04
N	88671890	Systhane	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
Y	1746016	TCDD, 2,3,7,8-	mg/kg		8.08E-02	8.08E-02		6.19E-04	6.19E-04		4.15E-04	4.15E-04		4.15E-04	4.15E-04
Y	51207319	TCDF, 2,3,7,8-	mg/kg		1.05E+00	1.05E+00		1.40E-02	1.40E-02		1.04E-02	1.04E-02		1.04E-02	1.04E-02
N	21564170	TCMTB	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	34014181	Tebuthiuron	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.83E+04		6.83E+04
N	3383968	Temephos	mg/kg	1.00E+05		1.00E+05	4.51E+04		4.51E+04	1.00E+05		1.00E+05	1.95E+04		1.95E+04
N	5902512	Terbacil	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	13071799	Terbufos	mg/kg	1.69E+02		1.69E+02	5.64E+01		5.64E+01	2.03E+02		2.03E+02	2.44E+01		2.44E+01
N	886500	Terbutryn	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	1920907	Tetrabutyl Lead	mg/kg												
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/kg	2.15E+03		2.15E+03	8.87E+02		8.87E+02	3.42E+03		3.42E+03	3.85E+02		3.85E+02
N	630206	Tetrachloroethane, 1,1,1,2-	mg/kg	7.95E+04	1.00E+05	7.95E+04	9.05E+03	1.08E+03	1.08E+03	3.48E+04	1.15E+03	1.15E+03	5.17E+03	1.15E+03	1.15E+03
N	79345	Tetrachloroethane, 1,1,2,2-	mg/kg	1.00E+05	2.35E+04	2.35E+04	1.27E+04	9.73E+01	9.73E+01	4.87E+04	1.04E+02	1.04E+02	7.30E+03	1.04E+02	1.04E+02
Y	127184	Tetrachloroethylene	mg/kg	4.01E+04	1.00E+05	4.01E+04	5.84E+03	1.46E+03	1.46E+03	2.26E+04	1.48E+03	1.48E+03	3.25E+03	1.48E+03	1.48E+03
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/kg	1.00E+05		1.00E+05	6.76E+04		6.76E+04	1.00E+05		1.00E+05	2.93E+04		2.93E+04
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/kg		8.38E+02	8.38E+02		1.38E+01	1.38E+01		1.10E+01	1.10E+01		1.10E+01	1.10E+01
N	3689245	Tetraethyl Dithiopyrophosphate	mg/kg	3.39E+03		3.39E+03	1.13E+03		1.13E+03	4.06E+03		4.06E+03	4.88E+02		4.88E+02
N	78002	Tetraethyl Lead	mg/kg	6.77E-01		6.77E-01	2.25E-01		2.25E-01	8.11E-01		8.11E-01	9.75E-02		9.75E-02
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	109999	Tetrahydrofuran	mg/kg	1.00E+05	1.00E+05		1.00E+05	2.77E+04	2.77E+04	1.00E+05	2.06E+04	2.06E+04	1.00E+05	2.06E+04	2.06E+04
N	75741	Tetramethyl Lead	mg/kg												
N	3440753	Tetrapropyl Lead	mg/kg												
N	1314325	Thallic Oxide	mg/kg	4.74E+02		4.74E+02	1.58E+02		1.58E+02	5.68E+02		5.68E+02	6.83E+01		6.83E+01
N	563688	Thallium Acetate	mg/kg	6.09E+02		6.09E+02	2.03E+02		2.03E+02	7.30E+02		7.30E+02	8.78E+01		8.78E+01
N	6533739	Thallium Carbonate	mg/kg	5.42E+02		5.42E+02	1.80E+02		1.80E+02	6.49E+02		6.49E+02	7.80E+01		7.80E+01
N	28249776	Thiobencarb	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	39196184	Thiofanox	mg/kg	2.03E+03		2.03E+03	6.76E+02		6.76E+02	2.43E+03		2.43E+03	2.93E+02		2.93E+02
N	23564058	Thiophanate, Methyl	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.80E+04		7.80E+04
N	137268	Thiram	mg/kg	3.39E+04		3.39E+04	1.13E+04		1.13E+04	4.06E+04		4.06E+04	4.88E+03		4.88E+03
N	108883	Toluene	mg/kg	8.66E+04		8.66E+04	7.28E+03		7.28E+03	2.80E+04		2.80E+04	4.29E+03		4.29E+03
N	26471625	Toluene diisocyanate mixture (TDI)	mg/kg	1.35E+02		1.35E+02	4.51E+01		4.51E+01	1.62E+02		1.62E+02	1.95E+01		1.95E+01
N	95807	Toluene-2,4-diamine	mg/kg		4.94E+03	4.94E+03		6.58E+01	6.58E+01		4.90E+01	4.90E+01		4.90E+01	4.90E+01
N	95705	Toluene-2,5-diamine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	823405	Toluene-2,6-diamine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/kg		6.58E+04	6.58E+04		8.77E+02	8.77E+02		6.53E+02	6.53E+02		6.53E+02	6.53E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target EI.CR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	110861	Pyridine	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	13593038	Quinalphos	mg/kg	9.96E+02		9.96E+02	6.44E+02		6.44E+02	8.26E+01		8.26E+01
N	91225	Quinoline	mg/kg		1.31E+01	1.31E+01		3.10E+00	3.10E+00		3.10E+00	3.10E+00
N		Refractory Ceramic Fibers	mg/kg									
N	10453868	Resmethrin	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	299843	Ronnel	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
N	83794	Rotenone	mg/kg	7.97E+03		7.97E+03	5.15E+03		5.15E+03	6.61E+02		6.61E+02
N	78587050	Savey	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
N	7783008	Selenious Acid	mg/kg	1.59E+04		1.59E+04	7.81E+03		7.81E+03	9.34E+02		9.34E+02
N	14124675	Selenite	mg/kg									
N	630104	Selenourea	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	74051802	Sethoxydim	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.49E+04		1.49E+04
N	122349	Simazine	mg/kg	9.96E+03	1.31E+03	1.31E+03	6.44E+03	3.10E+02	3.10E+02	8.26E+02	3.10E+02	3.10E+02
N	62476599	Sodium Acifluorfen	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	148185	Sodium Diethyldithiocarbamate	mg/kg	5.98E+04	5.81E+02	5.81E+02	3.86E+04	1.38E+02	1.38E+02	4.96E+03	1.38E+02	1.38E+02
N	62748	Sodium Fluoroacetate	mg/kg	3.98E+01		3.98E+01	2.58E+01		2.58E+01	3.30E+00		3.30E+00
N	961115	Stirofos (Tetrachlorovinphos)	mg/kg	5.98E+04	6.53E+03	6.53E+03	3.86E+04	1.55E+03	1.55E+03	4.96E+03	1.55E+03	1.55E+03
N	57249	Strychnine	mg/kg	5.98E+02		5.98E+02	3.86E+02		3.86E+02	4.96E+01		4.96E+01
N	100425	Styrene	mg/kg	9.20E+04		9.20E+04	3.87E+04		3.87E+04	7.35E+03		7.35E+03
N	88671890	Systhane	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
Y	1746016	TCDD, 2,3,7,8-	mg/kg		4.15E-04	4.15E-04		1.49E-04	1.49E-04		1.49E-04	1.49E-04
Y	51207319	TCDF, 2,3,7,8-	mg/kg		1.04E-02	1.04E-02		2.48E-03	2.48E-03		2.48E-03	2.48E-03
N	21564170	TCMTB	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	34014181	Tebuthiuron	mg/kg	1.00E+05		1.00E+05	9.02E+04		9.02E+04	1.16E+04		1.16E+04
N	3383968	Temephos	mg/kg	3.98E+04		3.98E+04	2.58E+04		2.58E+04	3.30E+03		3.30E+03
N	5902512	Terbacil	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	13071799	Terbufos	mg/kg	4.98E+01		4.98E+01	3.22E+01		3.22E+01	4.13E+00		4.13E+00
N	886500	Terbutryn	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	1920907	Tetrabutyl Lead	mg/kg									
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/kg	8.90E+02		8.90E+02	4.57E+02		4.57E+02	5.52E+01		5.52E+01
N	630206	Tetrachloroethane, 1,1,1,2-	mg/kg	1.48E+04	1.15E+03	1.15E+03	6.22E+03	2.83E+02	2.83E+02	1.17E+03	2.83E+02	2.83E+02
N	79345	Tetrachloroethane, 1,1,2,2-	mg/kg	2.09E+04	1.04E+02	1.04E+02	8.82E+03	2.61E+01	2.61E+01	1.71E+03	2.61E+01	2.61E+01
Y	127184	Tetrachloroethylene	mg/kg	9.21E+03	1.48E+03	1.48E+03	3.86E+03	3.34E+02	3.34E+02	6.78E+02	3.34E+02	3.34E+02
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/kg	5.98E+04		5.98E+04	3.86E+04		3.86E+04	4.96E+03		4.96E+03
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/kg		1.10E+01	1.10E+01		2.12E+00	2.12E+00		2.12E+00	2.12E+00
N	3689245	Tetraethyl Dithiopyrophosphate	mg/kg	9.96E+02		9.96E+02	6.44E+02		6.44E+02	8.26E+01		8.26E+01
N	78002	Tetraethyl Lead	mg/kg	1.99E-01		1.99E-01	1.29E-01		1.29E-01	1.65E-02		1.65E-02
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	109999	Tetrahydrofuran	mg/kg	1.00E+05	2.06E+04	2.06E+04	1.00E+05	4.90E+03	4.90E+03	3.47E+04	4.90E+03	4.90E+03
N	75741	Tetramethyl Lead	mg/kg									
N	3440753	Tetrapropyl Lead	mg/kg									
N	1314325	Thallic Oxide	mg/kg	1.39E+02		1.39E+02	9.02E+01		9.02E+01	1.16E+01		1.16E+01
N	563688	Thallium Acetate	mg/kg	1.79E+02		1.79E+02	1.16E+02		1.16E+02	1.49E+01		1.49E+01
N	6533739	Thallium Carbonate	mg/kg	1.59E+02		1.59E+02	1.03E+02		1.03E+02	1.32E+01		1.32E+01
N	28249776	Thiobencarb	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	39196184	Thiofanox	mg/kg	5.98E+02		5.98E+02	3.86E+02		3.86E+02	4.96E+01		4.96E+01
N	23564058	Thiophanate, Methyl	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.32E+04		1.32E+04
N	137268	Thiram	mg/kg	9.96E+03		9.96E+03	6.44E+03		6.44E+03	8.26E+02		8.26E+02
N	108883	Toluene	mg/kg	1.27E+04		1.27E+04	5.18E+03		5.18E+03	1.06E+03		1.06E+03
N	26471625	Toluene diisocyanate mixture (TDI)	mg/kg	3.98E+01		3.98E+01	2.58E+01		2.58E+01	3.30E+00		3.30E+00
N	95807	Toluene-2,4-diamine	mg/kg		4.90E+01	4.90E+01		1.16E+01	1.16E+01		1.16E+01	1.16E+01
N	95705	Toluene-2,5-diamine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.91E+04		9.91E+04
N	823405	Toluene-2,6-diamine	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.30E+04		3.30E+04
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/kg		6.53E+02	6.53E+02		1.55E+02	1.55E+02		1.55E+02	1.55E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action values are the lesser of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	106490	Toluidine, p-	mg/kg		4.10E+04	4.10E+04		2.16E+02	2.16E+02		2.17E+02	2.17E+02		2.17E+02	2.17E+02
N	8001352	Toxaphene	mg/kg		1.44E+04	1.44E+04		1.91E+02	1.91E+02		1.42E+02	1.42E+02		1.42E+02	1.42E+02
N	66841256	Tralomethrin	mg/kg	5.08E+04		5.08E+04	1.69E+04		1.69E+04	6.09E+04		6.09E+04	7.32E+03		7.32E+03
N	2303175	Triallate	mg/kg	8.80E+04		8.80E+04	2.93E+04		2.93E+04	1.00E+05		1.00E+05	1.27E+04		1.27E+04
N	82097505	Triasulfuron	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	615543	Tribromobenzene, 1,2,4-	mg/kg	3.59E+04		3.59E+04	1.48E+04		1.48E+04	5.71E+04		5.71E+04	6.42E+03		6.42E+03
N	594150	Tribromochloromethane	mg/kg												
N	49690940	Tribromodiphenyl Ether	mg/kg												
N	56359	Tributyltin Oxide	mg/kg	2.03E+03		2.03E+03	6.76E+02		6.76E+02	2.43E+03		2.43E+03	2.93E+02		2.93E+02
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/kg												
N	76039	Trichloroacetic Acid	mg/kg												
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/kg		1.00E+05	1.00E+05		7.26E+03	7.26E+03		5.40E+03	5.40E+03		5.40E+03	5.40E+03
N	634935	Trichloroaniline, 2,4,6-	mg/kg		1.00E+05	1.00E+05		6.19E+03	6.19E+03		4.61E+03	4.61E+03		4.61E+03	4.61E+03
N	120821	Trichlorobenzene, 1,2,4-	mg/kg	6.38E+04		6.38E+04	1.79E+04		1.79E+04	7.03E+04		7.03E+04	8.86E+03		8.86E+03
N	71556	Trichloroethane, 1,1,1-	mg/kg	8.52E+04		8.52E+04	9.38E+03		9.38E+03	3.61E+04		3.61E+04	5.38E+03		5.38E+03
N	79005	Trichloroethane, 1,1,2-	mg/kg	4.45E+03	4.62E+04	4.45E+03	4.07E+02	1.69E+02	1.69E+02	1.56E+03	1.84E+02	1.84E+02	2.38E+02	1.84E+02	1.84E+02
Y	79016	Trichloroethylene	mg/kg	3.49E+03	1.00E+05	3.49E+03	2.98E+02	7.43E+02	2.98E+02	1.14E+03	7.70E+02	7.70E+02	1.73E+02	7.70E+02	1.73E+02
N	75694	Trichlorofluoromethane	mg/kg	5.78E+04		5.78E+04	4.73E+03		4.73E+03	1.82E+04		1.82E+04	2.79E+03		2.79E+03
N	95954	Trichlorophenol, 2,4,5-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.75E+04		9.75E+04
N	88062	Trichlorophenol, 2,4,6-	mg/kg		1.00E+05	1.00E+05		1.91E+04	1.91E+04		1.42E+04	1.42E+04		1.42E+04	1.42E+04
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/kg	5.42E+04		5.42E+04	1.80E+04		1.80E+04	6.49E+04		6.49E+04	7.80E+03		7.80E+03
N	93765	*Trichlorophenoxyacetic* Acid, 2,4,5-	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	598776	Trichloropropane, 1,1,2-	mg/kg	1.68E+03		1.68E+03	1.40E+02		1.40E+02	5.37E+02		5.37E+02	8.23E+01		8.23E+01
N	96184	Trichloropropane, 1,2,3-	mg/kg	1.09E+03	7.21E+01	7.21E+01	8.88E+01	2.37E-01	2.37E-01	3.42E+02	2.60E-01	2.60E-01	5.25E+01	2.60E-01	2.60E-01
N	96195	Trichloropropene, 1,2,3-	mg/kg	3.59E+04		3.59E+04	1.48E+04		1.48E+04	5.71E+04		5.71E+04	6.42E+03		6.42E+03
N	2077465	Trichlorotoluene, 2,3,6-	mg/kg												
N	2014837	Trichlorotoluene, alpha 2,6-	mg/kg												
N	58138082	Tridiphane	mg/kg	2.03E+04		2.03E+04	6.76E+03		6.76E+03	2.43E+04		2.43E+04	2.93E+03		2.93E+03
N	5224237	Triethyl Lead	mg/kg												
N	121448	Triethylamine	mg/kg	5.78E+03		5.78E+03	6.85E+02		6.85E+02	2.64E+03		2.64E+03	3.89E+02		3.89E+02
N	1582098	Trifluralin	mg/kg	5.08E+04	1.00E+05	5.08E+04	1.69E+04	2.73E+04	1.69E+04	6.09E+04	2.04E+04	2.04E+04	7.32E+03	2.04E+04	7.32E+03
N	7442139	Trimethyl Lead	mg/kg												
N	512561	Trimethyl Phosphate	mg/kg		1.00E+05	1.00E+05		5.69E+03	5.69E+03		4.24E+03	4.24E+03		4.24E+03	4.24E+03
N	95636	Trimethylbenzene, 1,2,4-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.42E+04		6.42E+04
N	108678	Trimethylbenzene, 1,3,5-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	6.42E+04		6.42E+04
N	1762261	Trimethylethyl Lead	mg/kg												
N	99354	Trinitrobenzene, 1,3,5-	mg/kg	1.00E+05		1.00E+05	7.92E+04		7.92E+04	1.00E+05		1.00E+05	3.43E+04		3.43E+04
N	479458	Trinitrophenylmethylnitramine	mg/kg	6.77E+04		6.77E+04	2.25E+04		2.25E+04	8.11E+04		8.11E+04	9.75E+03		9.75E+03
N	118967	Trinitrotoluene, 2,4,6-	mg/kg	3.47E+03	1.00E+05	3.47E+03	1.26E+03	7.84E+03	1.26E+03	4.65E+03	5.98E+03	4.65E+03	5.46E+02	5.98E+03	5.46E+02
N	6618037	Tripropyl Lead	mg/kg												
N	1929777	Vernolate	mg/kg	6.77E+03		6.77E+03	2.25E+03		2.25E+03	8.11E+03		8.11E+03	9.75E+02		9.75E+02
N	50471448	*Vinclozolin*	mg/kg	1.00E+05		1.00E+05	5.64E+04		5.64E+04	1.00E+05		1.00E+05	2.44E+04		2.44E+04
N	108054	Vinyl Acetate	mg/kg	5.50E+04		5.50E+04	4.42E+03		4.42E+03	1.70E+04		1.70E+04	2.62E+03		2.62E+03
N	593602	Vinyl Bromide	mg/kg	6.80E+02	1.68E+04	6.80E+02	5.97E+01	5.91E+01	5.91E+01	2.30E+02	6.45E+01	6.45E+01	3.50E+01	6.45E+01	3.50E+01
Y	75014	Vinyl Chloride	mg/kg	4.73E+03	6.92E+03	4.73E+03	4.59E+02	4.14E+01	4.14E+01	1.77E+03	4.29E+01	4.29E+01	2.67E+02	4.29E+01	4.29E+01
N	81812	Warfarin	mg/kg	2.03E+03		2.03E+03	6.76E+02		6.76E+02	2.43E+03		2.43E+03	2.93E+02		2.93E+02
Y	1330207	Xylene, Mixture	mg/kg	1.00E+05		1.00E+05	2.20E+04		2.20E+04	8.48E+04		8.48E+04	1.30E+04		1.30E+04
Y	108383	Xylene, m-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.86E+04		8.86E+04
Y	95476	Xylene, o-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.92E+04		8.92E+04
Y	106423	Xylene, p-	mg/kg												
N	12122677	Zineb	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.88E+04		4.88E+04
Y	14596102	Am-241	pCi/g		4.02E+04	4.02E+04		5.16E+02	5.16E+02		1.16E+03	1.16E+03		1.16E+03	1.16E+03
Y	10198400	Co-60	pCi/g		5.51E+02	5.51E+02		1.77E+00	1.77E+00		3.67E+00	3.67E+00		3.67E+00	3.67E+00

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	106490	Toluidine, p-	mg/kg		2.17E+02	2.17E+02		5.46E+01	5.46E+01		5.46E+01	5.46E+01
N	8001352	Toxaphene	mg/kg		1.42E+02	1.42E+02		3.38E+01	3.38E+01		3.38E+01	3.38E+01
N	66841256	Tralomethrin	mg/kg	1.49E+04		1.49E+04	9.66E+03		9.66E+03	1.24E+03		1.24E+03
N	2303175	Triallate	mg/kg	2.59E+04		2.59E+04	1.67E+04		1.67E+04	2.15E+03		2.15E+03
N	82097505	Triasulfuron	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	615543	Tribromobenzene, 1,2,4-	mg/kg	1.48E+04		1.48E+04	7.62E+03		7.62E+03	9.20E+02		9.20E+02
N	594150	Tribromochloromethane	mg/kg									
N	49690940	Tribromodiphenyl Ether	mg/kg									
N	56359	Tributyltin Oxide	mg/kg	5.98E+02		5.98E+02	3.86E+02		3.86E+02	4.96E+01		4.96E+01
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.86E+04		3.86E+04
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/kg									
N	76039	Trichloroacetic Acid	mg/kg									
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/kg		5.40E+03	5.40E+03		1.28E+03	1.28E+03		1.28E+03	1.28E+03
N	634935	Trichloroaniline, 2,4,6-	mg/kg		4.61E+03	4.61E+03		1.09E+03	1.09E+03		1.09E+03	1.09E+03
N	120821	Trichlorobenzene, 1,2,4-	mg/kg	2.32E+04		2.32E+04	1.03E+04		1.03E+04	1.44E+03		1.44E+03
N	71556	Trichloroethane, 1,1,1-	mg/kg	1.55E+04		1.55E+04	6.47E+03		6.47E+03	1.23E+03		1.23E+03
N	79005	Trichloroethane, 1,1,2-	mg/kg	6.96E+02	1.84E+02	1.84E+02	2.87E+02	4.66E+01	4.66E+01	5.74E+01	4.66E+01	4.66E+01
Y	79016	Trichloroethylene	mg/kg	4.86E+02	7.70E+02	4.86E+02	2.13E+02	2.08E+02	2.08E+02	4.34E+01	2.08E+02	4.34E+01
N	75694	Trichlorofluoromethane	mg/kg	8.17E+03		8.17E+03	3.38E+03		3.38E+03	6.95E+02		6.95E+02
N	95954	Trichlorophenol, 2,4,5-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.65E+04		1.65E+04
N	88062	Trichlorophenol, 2,4,6-	mg/kg		1.42E+04	1.42E+04		3.38E+03	3.38E+03		3.38E+03	3.38E+03
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/kg	1.59E+04		1.59E+04	1.03E+04		1.03E+04	1.32E+03		1.32E+03
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	598776	Trichloropropane, 1,1,2-	mg/kg	2.43E+02		2.43E+02	9.93E+01		9.93E+01	2.04E+01		2.04E+01
N	96184	Trichloropropane, 1,2,3-	mg/kg	1.55E+02	2.60E-01	2.60E-01	6.33E+01	6.68E-02	6.68E-02	1.31E+01	6.68E-02	6.68E-02
N	96195	Trichloropropene, 1,2,3-	mg/kg	1.48E+04		1.48E+04	7.62E+03		7.62E+03	9.20E+02		9.20E+02
N	2077465	Trichlorotoluene, 2,3,6-	mg/kg									
N	2014837	Trichlorotoluene, alpha 2,6-	mg/kg									
N	58138082	Tridiphane	mg/kg	5.98E+03		5.98E+03	3.86E+03		3.86E+03	4.96E+02		4.96E+02
N	5224237	Triethyl Lead	mg/kg									
N	121448	Triethylamine	mg/kg	1.11E+03		1.11E+03	4.68E+02		4.68E+02	8.74E+01		8.74E+01
N	1582098	Trifluralin	mg/kg	1.49E+04	2.04E+04	1.49E+04	9.66E+03	4.83E+03	4.83E+03	1.24E+03	4.83E+03	1.24E+03
N	7442139	Trimethyl Lead	mg/kg									
N	512561	Trimethyl Phosphate	mg/kg		4.24E+03	4.24E+03		1.01E+03	1.01E+03		1.01E+03	1.01E+03
N	95636	Trimethylbenzene, 1,2,4-	mg/kg	1.00E+05		1.00E+05	7.62E+04		7.62E+04	9.20E+03		9.20E+03
N	108678	Trimethylbenzene, 1,3,5-	mg/kg	1.00E+05		1.00E+05	7.62E+04		7.62E+04	9.20E+03		9.20E+03
N	1762261	Trimethylethyl Lead	mg/kg									
N	99354	Trinitrobenzene, 1,3,5-	mg/kg	7.49E+04		7.49E+04	4.27E+04		4.27E+04	5.29E+03		5.29E+03
N	479458	Trinitrophenylmethylnitramine	mg/kg	1.99E+04		1.99E+04	1.29E+04		1.29E+04	1.65E+03		1.65E+03
N	118967	*Trinitrotoluene, 2,4,6-*	mg/kg	1.17E+03	5.98E+03	1.17E+03	6.92E+02	1.31E+03	6.92E+02	8.65E+01	1.31E+03	8.65E+01
N	6618037	Tripropyl Lead	mg/kg									
N	1929777	Vernolate	mg/kg	1.99E+03		1.99E+03	1.29E+03		1.29E+03	1.65E+02		1.65E+02
N	50471448	Vinclozolin	mg/kg	4.98E+04		4.98E+04	3.22E+04		3.22E+04	4.13E+03		4.13E+03
N	108054	Vinyl Acetate	mg/kg	7.75E+03		7.75E+03	3.16E+03		3.16E+03	6.53E+02		6.53E+02
N	593602	Vinyl Bromide	mg/kg	1.03E+02	6.45E+01	6.45E+01	4.23E+01	1.64E+01	1.64E+01	8.55E+00	1.64E+01	8.55E+00
Y	75014	Vinyl Chloride	mg/kg	7.83E+02	4.29E+01	4.29E+01	3.21E+02	9.96E+00	9.96E+00	6.34E+01	9.96E+00	9.96E+00
N	81812	Warfarin	mg/kg	5.98E+02		5.98E+02	3.86E+02		3.86E+02	4.96E+01		4.96E+01
Y	1330207	Xylene, Mixture	mg/kg	3.86E+04		3.86E+04	1.57E+04		1.57E+04	3.24E+03		3.24E+03
Y	108383	Xylene, m-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.16E+04		2.16E+04
Y	95476	Xylene, o-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.17E+04		2.17E+04
Y	106423	Xylene, p-	mg/kg									
N	12122677	Zineb	mg/kg	9.96E+04		9.96E+04	6.44E+04		6.44E+04	8.26E+03		8.26E+03
Y	14596102	Am-241	pCi/g		1.16E+03	1.16E+03		8.36E+01	8.36E+01		8.36E+01	8.36E+01
Y	10198400	Co-60	pCi/g		3.67E+00	3.67E+00		2.63E-01	2.63E-01		2.63E-01	2.63E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action valu · of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
Y	10045973	Cs-137+D	pCi/g		2.65E+03	2.65E+03		8.58E+00	8.58E+00		1.78E+01	1.78E+01		1.78E+01	1.78E+01
Y	13994202	Np-237+D	pCi/g		7.58E+03	7.58E+03		2.71E+01	2.71E+01		5.65E+01	5.65E+01		5.65E+01	5.65E+01
Y	13981163	Pu-238	pCi/g		3.83E+04	3.83E+04		1.17E+03	1.17E+03		3.10E+03	3.10E+03		3.10E+03	3.10E+03
Y	15117483	Pu-239	pCi/g		3.77E+04	3.77E+04		1.15E+03	1.15E+03		3.03E+03	3.03E+03		3.03E+03	3.03E+03
Y	14119336	Pu-240	pCi/g		3.76E+04	3.76E+04		1.15E+03	1.15E+03		3.05E+03	3.05E+03		3.05E+03	3.05E+03
Y	13982633	Ra-226+D	pCi/g		7.63E+02	7.63E+02		2.56E+00	2.56E+00		5.34E+00	5.34E+00		5.34E+00	5.34E+00
Y	14859677	Rn-222+D	pCi/g		1.06E+12	1.06E+12		3.39E+09	3.39E+09		7.06E+09	7.06E+09		7.06E+09	7.06E+09
Y	10098972	Sr-90+D	pCi/g		5.99E+04	5.99E+04		7.44E+02	7.44E+02		1.67E+03	1.67E+03		1.67E+03	1.67E+03
Y	14133767	Tc-99	pCi/g		1.34E+06	1.34E+06		3.62E+04	3.62E+04		9.26E+04	9.26E+04		9.26E+04	9.26E+04
Y	14274829	Th-228+D	pCi/g		8.25E+02	8.25E+02		2.80E+00	2.80E+00		5.84E+00	5.84E+00		5.84E+00	5.84E+00
Y	14269637	Th-230	pCi/g		5.12E+04	5.12E+04		1.49E+03	1.49E+03		3.90E+03	3.90E+03		3.90E+03	3.90E+03
Y	N2608	Th-232	pCi/g		4.50E+04	4.50E+04		1.35E+03	1.35E+03		3.57E+03	3.57E+03		3.57E+03	3.57E+03
Y	13966295	U-234	pCi/g		6.58E+04	6.58E+04		1.98E+03	1.98E+03		5.22E+03	5.22E+03		5.22E+03	5.22E+03
Y	15117961	U-235+D	pCi/g		1.05E+04	1.05E+04		3.95E+01	3.95E+01		8.26E+01	8.26E+01		8.26E+01	8.26E+01
Y	24678828	U-238+D	pCi/g		2.72E+04	2.72E+04		1.71E+02	1.71E+02		3.64E+02	3.64E+02		3.64E+02	3.64E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based values.

Table A.14. Soil/Sediment Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
Y	10045973	Cs-137+D	pCi/g		1.78E+01	1.78E+01		1.28E+00	1.28E+00		1.28E+00	1.28E+00
Y	13994202	Np-237+D	pCi/g		5.65E+01	5.65E+01		4.05E+00	4.05E+00		4.05E+00	4.05E+00
Y	13981163	Pu-238	pCi/g		3.10E+03	3.10E+03		2.27E+02	2.27E+02		2.27E+02	2.27E+02
Y	15117483	Pu-239	pCi/g		3.03E+03	3.03E+03		2.22E+02	2.22E+02		2.22E+02	2.22E+02
Y	14119336	Pu-240	pCi/g		3.05E+03	3.05E+03		2.23E+02	2.23E+02		2.23E+02	2.23E+02
Y	13982633	Ra-226+D	pCi/g		5.34E+00	5.34E+00		3.82E-01	3.82E-01		3.82E-01	3.82E-01
Y	14859677	Rn-222+D	pCi/g		7.06E+09	7.06E+09		1.51E+09	1.51E+09		1.51E+09	1.51E+09
Y	10098972	Sr-90+D	pCi/g		1.67E+03	1.67E+03		1.20E+02	1.20E+02		1.20E+02	1.20E+02
Y	14133767	Tc-99	pCi/g		9.26E+04	9.26E+04		6.74E+03	6.74E+03		6.74E+03	6.74E+03
Y	14274829	Th-228+D	pCi/g		5.84E+00	5.84E+00		4.18E-01	4.18E-01		4.18E-01	4.18E-01
Y	14269637	Th-230	pCi/g		3.90E+03	3.90E+03		2.85E+02	2.85E+02		2.85E+02	2.85E+02
Y	N2608	Th-232	pCi/g		3.57E+03	3.57E+03		2.61E+02	2.61E+02		2.61E+02	2.61E+02
Y	13966295	U-234	pCi/g		5.22E+03	5.22E+03		3.81E+02	3.81E+02		3.81E+02	3.81E+02
Y	15117961	U-235+D	pCi/g		8.26E+01	8.26E+01		5.91E+00	5.91E+00		5.91E+00	5.91E+00
Y	24678828	U-238+D	pCi/g		3.64E+02	3.64E+02		2.61E+01	2.61E+01		2.61E+01	2.61E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value[illegible]s of hazard- and cancer-based values.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	7429905	Aluminum	mg/L	1.08E+02		1.08E+02	4.47E+01		4.47E+01
N	20859738	Aluminum Phosphide	mg/L	4.34E-02		4.34E-02	1.80E-02		1.80E-02
N	7664417	Ammonia	mg/L	1.39E+00		1.39E+00	2.88E-01		2.88E-01
N	7773060	Ammonium Sulfamate	mg/L	2.17E+01		2.17E+01	9.01E+00		9.01E+00
Y	7440360	Antimony (metallic)	mg/L	4.02E-02		4.02E-02	1.69E-02		1.69E-02
N	1314609	Antimony Pentoxide	mg/L	5.43E-02		5.43E-02	2.25E-02		2.25E-02
N	304610	Antimony Potassium Tartrate	mg/L	9.77E-02		9.77E-02	4.05E-02		4.05E-02
N	1332816	Antimony Tetroxide	mg/L	4.34E-02		4.34E-02	1.80E-02		1.80E-02
N	1309644	Antimony Trioxide	mg/L	4.34E-02		4.34E-02	1.80E-02		1.80E-02
N		Arsenic Salts	mg/L						
Y	7440382	Arsenic, Inorganic	mg/L	3.27E-02	3.50E-03	3.50E-03	1.36E-02	3.50E-03	3.50E-03
N	7784421	Arsine	mg/L		3.48E-03	3.48E-03		3.48E-03	3.48E-03
N	1332214	Asbestos	mg/L						
N	7440393	Barium	mg/L	7.47E+00		7.47E+00	3.11E+00		3.11E+00
N	542621	Barium Cyanide	mg/L	1.09E+01		1.09E+01	4.50E+00		4.50E+00
Y	7440417	Beryllium and compounds	mg/L	1.85E-01		1.85E-01	7.93E-02		7.93E-02
N	7440428	Boron And Borates Only	mg/L	9.84E+00		9.84E+00	4.08E+00		4.08E+00
N	7637072	Boron Trifluoride	mg/L						
Y	7440439	Cadmium (Water)	mg/L	4.63E-02		4.63E-02	1.98E-02		1.98E-02
N	592018	Calcium Cyanide	mg/L	4.34E+00		4.34E+00	1.80E+00		1.80E+00
N	16887006	Chloride	mg/L						
N	7782505	Chlorine	mg/L	1.09E+01		1.09E+01	4.50E+00		4.50E+00
N	7758192	Chlorite (Sodium Salt)	mg/L	3.26E+00		3.26E+00	1.35E+00		1.35E+00
Y	16065831	Chromium (III) (Insoluble Salts)	mg/L	1.21E+02		1.21E+02	5.28E+01		5.28E+01
Y	7440473	Chromium (Total)	mg/L	1.21E+02		1.21E+02	5.28E+01		5.28E+01
N		Chromium Salts	mg/L						
Y	18540299	Chromium VI (chromic acid mists)	mg/L	3.01E-01		3.01E-01	1.27E-01		1.27E-01
N	7440484	Cobalt	mg/L	6.56E+00		6.56E+00	2.72E+00		2.72E+00
Y	7440508	Copper	mg/L	4.03E+00		4.03E+00	1.67E+00		1.67E+00
N	544923	Copper Cyanide	mg/L	5.43E-01		5.43E-01	2.25E-01		2.25E-01
N	57125	Cyanide (CN-)	mg/L	2.03E+00		2.03E+00	8.53E-01		8.53E-01
N	7782414	Fluorine (Soluble Fluoride)	mg/L	6.56E+00		6.56E+00	2.72E+00		2.72E+00
N	7647010	Hydrogen Chloride	mg/L	2.78E-01		2.78E-01	5.76E-02		5.76E-02
N	74908	Hydrogen Cyanide	mg/L	4.09E-02		4.09E-02	8.55E-03		8.55E-03
N	7783064	Hydrogen Sulfide	mg/L	1.33E-02		1.33E-02	2.82E-03		2.82E-03
Y	7439896	Iron	mg/L	3.25E+01		3.25E+01	1.35E+01		1.35E+01
Y	7439921	Lead And Compounds	mg/L			3.00E-02			3.00E-02
N	7439932	Lithium	mg/L	2.19E+00		2.19E+00	9.06E-01		9.06E-01
N	7439954	Magnesium	mg/L						
Y	7439965	Manganese	mg/L	2.51E+00		2.51E+00	1.05E+00		1.05E+00
N	7487947	Mercuric Chloride	mg/L	3.20E-02		3.20E-02	1.33E-02		1.33E-02
N	1344485	Mercuric Sulfide	mg/L						
N	7439976	Mercury (elemental)	mg/L						
Y	7439976	Mercury, Inorganic Salts	mg/L	3.20E-02		3.20E-02	1.33E-02		1.33E-02
N	22967926	Methyl Mercury	mg/L	1.09E-02		1.09E-02	4.53E-03		4.53E-03
Y	7439987	Molybdenum	mg/L	5.45E-01		5.45E-01	2.26E-01		2.26E-01
N		Nickel Refinery Dust	mg/L						
Y	7440020	Nickel Soluble Salts	mg/L	2.18E+00		2.18E+00	9.02E-01		9.02E-01
N	12035722	Nickel Subsulfide	mg/L						
N	14797558	Nitrate	mg/L	1.75E+02		1.75E+02	7.24E+01		7.24E+01
N	10102439	Nitric Oxide	mg/L	1.09E+01		1.09E+01	4.50E+00		4.50E+00
N	14797650	Nitrite	mg/L	1.09E+01		1.09E+01	4.52E+00		4.52E+00
N	10102440	Nitrogen Dioxide	mg/L	1.09E+02		1.09E+02	4.50E+01		4.50E+01
N	7803512	Phosphine	mg/L	3.26E-02		3.26E-02	1.35E-02		1.35E-02
N	7664382	Phosphoric Acid	mg/L						
N	151508	Potassium Cyanide	mg/L	5.45E+00		5.45E+00	2.26E+00		2.26E+00
N	506616	Potassium Silver Cyanide	mg/L	2.17E+01		2.17E+01	9.01E+00		9.01E+00
Y	7782492	Selenium	mg/L	5.45E-01		5.45E-01	2.26E-01		2.26E-01
N	7446346	Selenium Sulfide	mg/L						
Y	7440224	Silver	mg/L	5.42E-01		5.42E-01	2.25E-01		2.25E-01
N	506649	Silver Cyanide	mg/L	1.09E+01		1.09E+01	4.50E+00		4.50E+00
N	7440235	Sodium	mg/L						
N	26628228	Sodium Azide	mg/L	4.34E-01		4.34E-01	1.80E-01		1.80E-01
N	143339	Sodium Cyanide	mg/L	4.37E+00		4.37E+00	1.81E+00		1.81E+00
N	13718268	Sodium Metavanadate	mg/L	1.09E-01		1.09E-01	4.50E-02		4.50E-02
N	7440246	Strontium, Stable	mg/L	6.51E+01		6.51E+01	2.70E+01		2.70E+01
N	14808798	Sulfate	mg/L						
N	10102451	Thallium (I) Nitrate	mg/L	9.77E-03		9.77E-03	4.05E-03		4.05E-03
N	7440280	Thallium (Soluble Salts)	mg/L						
Y	7791120	Thallium Chloride	mg/L	8.68E-03		8.68E-03	3.60E-03		3.60E-03
N	12039520	Thallium Selenite	mg/L	9.77E-03		9.77E-03	4.05E-03		4.05E-03
N	7446186	Thallium Sulfate	mg/L	8.68E-03		8.68E-03	3.60E-03		3.60E-03
N	7440291	Thorium	mg/L						
N	7440315	Tin	mg/L	6.45E+01		6.45E+01	2.68E+01		2.68E+01
N	7440326	Titanium	mg/L						
Y	7440611	Uranium (Soluble Salts)	mg/L	6.56E-02		6.56E-02	2.72E-02		2.72E-02
N	1314621	Vanadium Pentoxide	mg/L	9.77E-01		9.77E-01	4.05E-01		4.05E-01
N	36907423	Vanadium Sulfate	mg/L	2.17E+00		2.17E+00	9.01E-01		9.01E-01
Y	7440622	Vanadium, Metallic	mg/L	6.49E-01		6.49E-01	2.78E-01		2.78E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	27774136	Vanadyl Sulfate	mg/L	2.17E+00		2.17E+00	9.01E-01		9.01E-01
N	7723140	White Phosphorus	mg/L	2.17E-03		2.17E-03	9.01E-04		9.01E-04
Y	7440666	Zinc (Metallic)	mg/L	3.26E+01		3.26E+01	1.35E+01		1.35E+01
N	557211	Zinc Cyanide	mg/L	5.43E+00		5.43E+00	2.25E+00		2.25E+00
N	1314847	Zinc Phosphide	mg/L	3.26E-02		3.26E-02	1.35E-02		1.35E-02
N	7440677	Zirconium	mg/L						
N	1596845	ALAR	mg/L	1.64E+01		1.64E+01	6.80E+00		6.80E+00
Y	83329	Acenaphthene	mg/L	1.39E+00		1.39E+00	4.07E-01		4.07E-01
Y	208968	Acenaphthylene	mg/L						
N	30560191	Acephate	mg/L	4.38E-01	6.06E-01	4.38E-01	1.81E-01	6.06E-01	1.81E-01
N	75070	Acetaldehyde	mg/L	1.25E-01	2.34E-01	1.25E-01	2.59E-02	2.34E-01	2.59E-02
N	34256821	Acetochlor	mg/L	2.14E+00		2.14E+00	8.92E-01		8.92E-01
N	67641	Acetone	mg/L	3.37E+00		3.37E+00	8.24E-01		8.24E-01
N	75865	Acetone Cyanohydrin	mg/L	8.74E-02		8.74E-02	3.62E-02		3.62E-02
N	75058	Acetonitrile	mg/L	3.67E-01		3.67E-01	1.06E-01		1.06E-01
N	98862	Acetophenone	mg/L	2.78E-04		2.78E-04	5.76E-05		5.76E-05
N	107028	Acrolein	mg/L	2.78E-04		2.78E-04	5.76E-05		5.76E-05
N	79061	Acrylamide	mg/L	2.19E-02	1.17E-03	1.17E-03	9.07E-03	1.17E-03	1.17E-03
N	79107	Acrylic Acid	mg/L	5.46E+01		5.46E+01	2.26E+01		2.26E+01
Y	107131	Acrylonitrile	mg/L	2.22E-02	4.26E-03	4.26E-03	5.11E-03	4.26E-03	4.26E-03
N	15972608	Alachlor	mg/L	1.08E+00	6.48E-02	6.48E-02	4.47E-01	6.48E-02	6.48E-02
N	116063	Aldicarb	mg/L	1.09E-01		1.09E-01	4.53E-02		4.53E-02
N	1646884	Aldicarb Sulfone	mg/L	1.09E-01		1.09E-01	4.54E-02		4.54E-02
N	309002	Aldrin	mg/L	3.27E-03	3.08E-04	3.08E-04	1.35E-03	3.08E-04	3.08E-04
N	74223646	Ally	mg/L	2.74E+01		2.74E+01	1.13E+01		1.13E+01
N	107186	Allyl Alcohol	mg/L	5.46E-01		5.46E-01	2.26E-01		2.26E-01
N	107051	Allyl Chloride	mg/L	5.39E+00		5.39E+00	2.24E+00		2.24E+00
N	67485294	Amdro	mg/L	3.29E-02		3.29E-02	1.36E-02		1.36E-02
N	834128	Ametryn	mg/L	9.83E-01		9.83E-01	4.07E-01		4.07E-01
N	591275	Aminophenol, m-	mg/L	7.65E+00		7.65E+00	3.17E+00		3.17E+00
N	504245	Aminopyridine, 4-	mg/L	2.18E-03		2.18E-03	9.05E-04		9.05E-04
N	33089611	Amitraz	mg/L	1.44E-01		1.44E-01	6.59E-02		6.59E-02
N	62533	Aniline	mg/L	6.67E-01	8.11E-01	6.67E-01	2.84E-01	8.11E-01	2.84E-01
Y	120127	Anthracene	mg/L	8.70E+00		8.70E+00	2.30E+00		2.30E+00
N	74115245	Apollo	mg/L	1.40E+00		1.40E+00	5.83E-01		5.83E-01
N	140578	Aramite	mg/L	4.69E+00	1.82E-01	1.82E-01	2.00E+00	1.82E-01	1.82E-01
Y	12674112	Aroclor 1016	mg/L	2.96E-03	5.28E-03	2.96E-03	1.40E-03	5.28E-03	1.40E-03
Y	11104282	Aroclor 1221	mg/L		1.12E-02	1.12E-02		1.12E-02	1.12E-02
Y	11141165	Aroclor 1232	mg/L		1.28E-02	1.28E-02		1.28E-02	1.28E-02
Y	53469219	Aroclor 1242	mg/L		1.23E-02	1.23E-02		1.23E-02	1.23E-02
Y	12672296	Aroclor 1248	mg/L		7.75E-03	7.75E-03		7.75E-03	7.75E-03
Y	11097691	Aroclor 1254	mg/L	1.28E-03	7.93E-03	1.28E-03	5.82E-04	7.93E-03	5.82E-04
Y	11096825	Aroclor 1260	mg/L		4.28E-03	4.28E-03		4.28E-03	4.28E-03
N	76578148	Assure	mg/L	9.48E-01		9.48E-01	3.96E-01		3.96E-01
N	3337711	Asulam	mg/L	5.47E+00		5.47E+00	2.27E+00		2.27E+00
N	1912249	Atrazine	mg/L	3.73E+00	2.31E-02	2.31E-02	1.55E+00	2.31E-02	2.31E-02
N	65195553	Avermectin B1	mg/L	4.38E-02		4.38E-02	1.81E-02		1.81E-02
N	103333	Azobenzene	mg/L		3.83E-02	3.83E-02		3.83E-02	3.83E-02
N	114261	Baygon	mg/L	4.36E-01		4.36E-01	1.81E-01		1.81E-01
N	43121433	Bayleton	mg/L	3.27E+00		3.27E+00	1.36E+00		1.36E+00
N	68359375	Baythroid	mg/L	2.17E+00		2.17E+00	9.39E-01		9.39E-01
N	1861401	Benefin	mg/L	2.97E+01		2.97E+01	1.26E+01		1.26E+01
N	17804352	Benomyl	mg/L	5.45E+00		5.45E+00	2.26E+00		2.26E+00
N	25057890	Bentazon	mg/L	3.28E+00		3.28E+00	1.36E+00		1.36E+00
Y	56553	Benz[a]anthracene	mg/L		1.32E-03	1.32E-03		1.32E-03	1.32E-03
N	100527	Benzaldehyde	mg/L	1.05E+01		1.05E+01	4.39E+00		4.39E+00
Y	71432	Benzene	mg/L	6.54E-02	3.85E-02	3.85E-02	1.51E-02	3.85E-02	1.51E-02
N	29224553	Benzene, Ethyldimethyl	mg/L						
N	25550145	Benzene, Ethylmethyl	mg/L						
N	768003	Benzene, Methylpropenyl	mg/L						
N	28729546	Benzene, Methylpropyl	mg/L						
N	25551137	Benzene, Trimethyl	mg/L						
N	108985	Benzenethiol	mg/L	3.28E-04		3.28E-04	8.14E-05		8.14E-05
N	92875	Benzidine	mg/L	3.28E-01	2.28E-05	2.28E-05	1.36E-01	2.28E-05	2.28E-05
Y	50328	Benzo[a]pyrene	mg/L		9.51E-05	9.51E-05		9.51E-05	9.51E-05
Y	205992	Benzo[b]fluoranthene	mg/L		9.51E-04	9.51E-04		9.51E-04	9.51E-04
N	191242	Benzo[g,h,i]perylene	mg/L						
Y	207089	Benzo[k]fluoranthene	mg/L		1.68E-02	1.68E-02		1.68E-02	1.68E-02
N	65850	Benzoic Acid	mg/L	4.32E+02		4.32E+02	1.80E+02		1.80E+02
N	98077	Benzotrichloride	mg/L		3.86E-04	3.86E-04		3.86E-04	3.86E-04
N	100516	Benzyl Alcohol	mg/L	3.23E+01		3.23E+01	1.34E+01		1.34E+01
N	100447	Benzyl Chloride	mg/L		7.84E-03	7.84E-03		7.84E-03	7.84E-03
N	141662	Bidrin	mg/L	1.09E-02		1.09E-02	4.54E-03		4.54E-03
N	82657043	Biphenthrin	mg/L	1.64E+00		1.64E+00	6.80E-01		6.80E-01
N	92524	Biphenyl, 1,1'-	mg/L	1.40E+00		1.40E+00	3.77E-01		3.77E-01
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/L		7.23E-02	7.23E-02		7.23E-02	7.23E-02
N	111911	Bis(2-chloroethoxy)methane	mg/L						
N	111444	Bis(2-chloroethyl)ether	mg/L		1.18E-03	1.18E-03		1.18E-03	1.18E-03
N	39638329	Bis(2-chloroisopropyl)ether	mg/L	1.34E+00	3.04E-02	3.04E-02	3.29E-01	3.04E-02	3.04E-02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	117817	Bis(2-ethylhexyl)phthalate	mg/L	1.80E+00	3.12E-01	3.12E-01	7.73E-01	3.12E-01	3.12E-01
N	542881	Bis(chloromethyl)ether	mg/L		6.17E-06	6.17E-06		6.17E-06	6.17E-06
N	80057	Bisphenol A	mg/L	4.97E+00		4.97E+00	2.10E+00		2.10E+00
N	108861	Bromobenzene	mg/L	1.33E-01		1.33E-01	2.83E-02		2.83E-02
N	74975	Bromochloromethane	mg/L						
N	75274	Bromodichloromethane	mg/L	6.71E-01	2.16E-02	2.16E-02	1.65E-01	2.16E-02	2.16E-02
N	101553	Bromodiphenyl Ether, p-	mg/L						
N	75252	Bromoform	mg/L	2.17E+00	6.62E-01	6.62E-01	9.02E-01	6.62E-01	6.62E-01
N	74839	Bromomethane	mg/L	4.77E-02		4.77E-02	1.17E-02		1.17E-02
N	2104963	Bromophos	mg/L	4.55E-01		4.55E-01	1.95E-01		1.95E-01
N	75627	Bromotrichloromethane	mg/L						
N	1689845	Bromoxynil	mg/L	2.19E+00		2.19E+00	9.07E-01		9.07E-01
N	1689992	Bromoxynil Octanoate	mg/L	1.45E+00		1.45E+00	6.47E-01		6.47E-01
N	106990	Butadiene, 1,3-	mg/L		1.11E-03	1.11E-03		1.11E-03	1.11E-03
N	71363	Butanol, N-	mg/L	1.09E+01		1.09E+01	4.50E+00		4.50E+00
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/L						
N	85687	Butyl Benzyl Phthlate	mg/L	1.81E+01		1.81E+01	7.77E+00		7.77E+00
N	2008415	Butylate	mg/L	4.25E+00		4.25E+00	1.85E+00		1.85E+00
N	104518	Butylbenzene, N-	mg/L	3.37E-01		3.37E-01	8.25E-02		8.25E-02
N	135988	Butylbenzene, sec-	mg/L	3.37E-01		3.37E-01	8.25E-02		8.25E-02
N	98066	Butylbenzene-tert	mg/L	3.37E-01		3.37E-01	8.25E-02		8.25E-02
N	507200	Butylchloride, t-	mg/L						
N	85701	Butylphthalyl Butylglycolate	mg/L	1.04E+02		1.04E+02	4.35E+01		4.35E+01
N	75605	Cacodylic Acid	mg/L	3.28E-01		3.28E-01	1.36E-01		1.36E-01
N	105602	Caprolactam	mg/L	5.47E+01		5.47E+01	2.27E+01		2.27E+01
N	2425061	Captafol	mg/L	2.18E-01	6.11E-01	2.18E-01	9.05E-02	6.11E-01	9.05E-02
N	133062	Captan	mg/L	1.42E+01	1.50E+00	1.50E+00	5.88E+00	1.50E+00	1.50E+00
N	63252	Carbaryl	mg/L	1.08E+01		1.08E+01	4.47E+00		4.47E+00
N	86748	Carbazole	mg/L		2.16E-01	2.16E-01		2.16E-01	2.16E-01
N	1563662	Carbofuran	mg/L	5.45E-01		5.45E-01	2.26E-01		2.26E-01
N	75150	Carbon Disulfide	mg/L	4.99E+00		4.99E+00	1.37E+00		1.37E+00
Y	56235	Carbon Tetrachloride	mg/L	2.31E-02	1.81E-02	1.81E-02	5.70E-03	1.81E-02	5.70E-03
N	55285148	Carbosulfan	mg/L	1.10E+00		1.10E+00	4.54E-01		4.54E-01
N	5234684	Carboxin	mg/L	1.09E+01		1.09E+01	4.51E+00		4.51E+00
N	75876	Chloral	mg/L	1.09E+01		1.09E+01	4.52E+00		4.52E+00
N	133904	Chloramben	mg/L	1.63E+00		1.63E+00	6.76E-01		6.76E-01
N	118752	Chloranil	mg/L		1.30E-02	1.30E-02		1.30E-02	1.30E-02
N	57749	Chlordane	mg/L	4.61E-02	1.28E-02	1.28E-02	1.97E-02	1.28E-02	1.28E-02
N	90982324	Chlorimuron, Ethyl-	mg/L	2.19E+00		2.19E+00	9.06E-01		9.06E-01
N	10049044	Chlorine Dioxide	mg/L	3.29E+00		3.29E+00	1.36E+00		1.36E+00
N	75683	Chloro-1,1-difluoroethane, 1-	mg/L	4.79E+02		4.79E+02	1.18E+02		1.18E+02
N	126998	Chloro-1,3-butadiene, 2-	mg/L	9.31E-02		9.31E-02	1.97E-02		1.97E-02
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/L		1.12E-02	1.12E-02		1.12E-02	1.12E-02
N	95692	Chloro-2-methylaniline, 4-	mg/L		8.76E-03	8.76E-03		8.76E-03	8.76E-03
N	79118	Chloroacetic Acid	mg/L	2.16E-01		2.16E-01	8.98E-02		8.98E-02
N	532274	Chloroacetophenone, 2-	mg/L	2.87E-04		2.87E-04	7.04E-05		7.04E-05
N	106478	Chloroaniline, p-	mg/L	3.94E-01		3.94E-01	1.67E-01		1.67E-01
N	108907	Chlorobenzene	mg/L	5.63E-01		5.63E-01	1.40E-01		1.40E-01
N	510156	Chlorobenzilate	mg/L	1.97E+00	1.77E-02	1.77E-02	8.33E-01	1.77E-02	1.77E-02
N	74113	Chlorobenzoic Acid, p-	mg/L	2.06E+01		2.06E+01	8.65E+00		8.65E+00
N	98566	Chlorobenzotrifluoride, 4-	mg/L	1.76E+00		1.76E+00	7.59E-01		7.59E-01
N	109693	Chlorobutane, 1-	mg/L	1.31E+01		1.31E+01	3.26E+00		3.26E+00
N	78864	Chlorobutane, 2-	mg/L						
N	41851507	Chlorocyclopentadiene	mg/L						
N	73506942	Chlorodibromoethane	mg/L		6.27E-02	6.27E-02		6.27E-02	6.27E-02
N	75456	Chlorodifluoromethane	mg/L	4.80E+02		4.80E+02	1.18E+02		1.18E+02
Y	67663	Chloroform	mg/L	4.15E-03	2.18E-02	4.15E-03	8.62E-04	2.18E-02	8.62E-04
N	74873	Chloromethane	mg/L	1.25E+00	1.67E-01	1.67E-01	2.59E-01	1.67E-01	1.67E-01
N	107302	Chloromethyl Methyl Ether	mg/L						
N	91587	Chloronaphthalene, Beta-	mg/L	2.29E+00		2.29E+00	6.09E-01		6.09E-01
N	88733	Chloronitrobenzene, o-	mg/L		5.35E-02	5.35E-02		5.35E-02	5.35E-02
N	121733	Chloronitrobenzene, p-	mg/L		7.42E-02	7.42E-02		7.42E-02	7.42E-02
N	95578	Chlorophenol, 2-	mg/L	1.62E-01		1.62E-01	4.05E-02		4.05E-02
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/L						
N	934736	Chlorophenyl Methyl Sulfoxide	mg/L						
N	75296	Chloropropane, 2-	mg/L	9.53E-01		9.53E-01	2.35E-01		2.35E-01
N	1897456	Chlorothalonil	mg/L	1.51E+00	4.41E-01	4.41E-01	6.35E-01	4.41E-01	4.41E-01
N	95498	Chlorotoluene, o-	mg/L	6.36E-01		6.36E-01	1.60E-01		1.60E-01
N	101213	Chlorpropham	mg/L	2.11E+01		2.11E+01	8.79E+00		8.79E+00
N	2921882	Chlorpyrifos	mg/L	2.55E-01		2.55E-01	1.11E-01		1.11E-01
N	5598130	Chlorpyrifos Methyl	mg/L	1.05E+00		1.05E+00	4.37E-01		4.37E-01
N	64902723	Chlorsulfuron	mg/L	5.47E+00		5.47E+00	2.27E+00		2.27E+00
N	60238564	Chlorthiophos	mg/L	8.76E-02		8.76E-02	3.63E-02		3.63E-02
Y	218019	Chrysene	mg/L		1.32E-01	1.32E-01		1.32E-01	1.32E-01
N	8007452	Coke Oven Emissions	mg/L						
N	8001589	Creosote	mg/L						
N	108394	Cresol, m-	mg/L	5.19E+00		5.19E+00	2.17E+00		2.17E+00
N	95487	Cresol, o-	mg/L	5.17E+00		5.17E+00	2.17E+00		2.17E+00
N	106445	Cresol, p-	mg/L	5.21E-01		5.21E-01	2.18E-01		2.18E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	123739	Crotonaldehyde, trans-	mg/L		6.98E-04	6.98E-04		6.98E-04	6.98E-04
N	98828	Cumene	mg/L	3.40E+00		3.40E+00	8.83E-01		8.83E-01
N	21725462	Cyanazine	mg/L	2.17E-01	6.22E-03	6.22E-03	9.01E-02	6.22E-03	6.22E-03
N	460195	Cyanogen	mg/L	1.35E+00		1.35E+00	3.30E-01		3.30E-01
N	506683	Cyanogen Bromide	mg/L	3.03E+00		3.03E+00	7.42E-01		7.42E-01
N	506774	Cyanogen Chloride	mg/L	1.68E+00		1.68E+00	4.12E-01		4.12E-01
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/L		2.27E-01	2.27E-01		2.27E-01	2.27E-01
N	108941	Cyclohexanone	mg/L	5.45E+02		5.45E+02	2.26E+02		2.26E+02
N	108918	Cyclohexylamine	mg/L	2.15E+01		2.15E+01	8.93E+00		8.93E+00
N	542927	Cyclopentadiene	mg/L						
N	68085858	Cyhalothrin/karate	mg/L	2.77E-01		2.77E-01	1.28E-01		1.28E-01
N	52315078	Cypermethrin	mg/L	8.03E-01		8.03E-01	3.52E-01		3.52E-01
N	66215278	Cyromazine	mg/L	8.21E-01		8.21E-01	3.40E-01		3.40E-01
N	72548	DDD	mg/L		1.31E-02	1.31E-02		1.31E-02	1.31E-02
N	72559	DDE	mg/L		9.79E-03	9.79E-03		9.79E-03	9.79E-03
N	50293	DDT	mg/L	2.59E-02	7.58E-03	7.58E-03	1.20E-02	7.58E-03	7.58E-03
N	1861321	Dacthal	mg/L	1.01E+00		1.01E+00	4.24E-01		4.24E-01
N	75990	Dalapon	mg/L	3.27E+00		3.27E+00	1.36E+00		1.36E+00
N	1163195	Decabromodiphenyl Ether	mg/L	1.09E+00		1.09E+00	4.54E-01		4.54E-01
N	8065483	Demeton	mg/L	4.38E-03		4.38E-03	1.81E-03		1.81E-03
N	103231	Di(2-ethylhexyl)adipate	mg/L	4.67E+00	3.31E-01	3.31E-01	2.39E+00	3.31E-01	3.31E-01
N	2303164	Diallate	mg/L		8.64E-02	8.64E-02		8.64E-02	8.64E-02
N	505293	Diathane, 1,4-	mg/L	1.08E+00		1.08E+00	4.49E-01		4.49E-01
N	333415	Diazinon	mg/L	9.41E-02		9.41E-02	3.94E-02		3.94E-02
Y	53703	Dibenz[a,h]anthracene	mg/L		4.56E-05	4.56E-05		4.56E-05	4.56E-05
N	132649	Dibenzofuran	mg/L	1.35E-01		1.35E-01	3.30E-02		3.30E-02
N	96128	Dibromo-3-chloropropane, 1,2-	mg/L	1.92E-03	3.71E-03	1.92E-03	4.70E-04	3.71E-03	4.70E-04
N	106376	Dibromobenzene, 1,4-	mg/L	1.01E+00		1.01E+00	4.27E-01		4.27E-01
N	124481	Dibromochloromethane	mg/L	6.71E-01	1.59E-02	1.59E-02	1.65E-01	1.59E-02	1.59E-02
N	594183	Dibromodichloromethane	mg/L						
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/L						
N	106934	Dibromoethane, 1,2-	mg/L	1.92E-03	6.00E-05	6.00E-05	4.70E-04	6.00E-05	6.00E-05
N	74953	Dibromomethane (Methylene Bromide)	mg/L	3.37E-01		3.37E-01	8.24E-02		8.24E-02
N	84742	Dibutyl Phthalate	mg/L	8.99E+00		8.99E+00	3.87E+00		3.87E+00
N	1918009	Dicamba	mg/L	3.15E+00		3.15E+00	1.32E+00		1.32E+00
N	764410	Dichloro-2-butene, 1,4-	mg/L		1.44E-04	1.44E-04		1.44E-04	1.44E-04
N	79436	Dichloroacetic Acid	mg/L						
N	95501	Dichlorobenzene, 1,2-	mg/L	2.10E+00		2.10E+00	4.98E-01		4.98E-01
N	541731	Dichlorobenzene, 1,3-	mg/L	2.86E-02		2.86E-02	7.22E-03		7.22E-03
N	106467	Dichlorobenzene, 1,4-	mg/L	9.73E-01	5.78E-02	5.78E-02	2.43E-01	5.78E-02	5.78E-02
N	91941	Dichlorobenzidine, 3,3'-	mg/L		1.11E-02	1.11E-02		1.11E-02	1.11E-02
N	75718	Dichlorodifluoromethane	mg/L	2.44E+00		2.44E+00	5.39E-01		5.39E-01
N	75343	Dichloroethane, 1,1-	mg/L	4.22E+00		4.22E+00	1.09E+00		1.09E+00
N	107062	Dichloroethane, 1,2-	mg/L	6.67E-02	1.47E-02	1.47E-02	1.40E-02	1.47E-02	1.40E-02
Y	75354	Dichloroethylene, 1,1-	mg/L	3.01E-01	4.70E-03	4.70E-03	7.38E-02	4.70E-03	4.70E-03
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	3.02E-01		3.02E-01	7.40E-02		7.40E-02
Y	156592	Dichloroethylene, 1,2-cis-	mg/L	3.34E-01		3.34E-01	8.20E-02		8.20E-02
Y	156605	Dichloroethylene, 1,2-trans-	mg/L	6.72E-01		6.72E-01	1.64E-01		1.64E-01
N	120832	Dichlorophenol, 2,4-	mg/L	2.90E-01		2.90E-01	1.23E-01		1.23E-01
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/L	1.08E+00		1.08E+00	4.50E-01		4.50E-01
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/L	8.62E-01		8.62E-01	3.58E-01		3.58E-01
N	78875	Dichloropropane, 1,2-	mg/L	3.82E-02	1.96E-02	1.96E-02	9.39E-03	1.96E-02	9.39E-03
N	616239	Dichloropropanol, 2,3-	mg/L	3.28E-01		3.28E-01	1.36E-01		1.36E-01
N	542756	Dichloropropene, 1,3-	mg/L	2.56E-01	3.69E-02	3.69E-02	5.52E-02	3.69E-02	3.69E-02
N	62737	Dichlorvos	mg/L	5.46E-02	1.81E-02	1.81E-02	2.26E-02	1.81E-02	1.81E-02
N	115322	Dicofol	mg/L		6.72E-03	6.72E-03		6.72E-03	6.72E-03
N	77736	Dicyclopentadiene	mg/L	2.78E-03		2.78E-03	5.76E-04		5.76E-04
N	60571	Dieldrin	mg/L	5.17E-03	3.12E-04	3.12E-04	2.17E-03	3.12E-04	3.12E-04
N	84662	Diethyl Phthalate	mg/L	8.68E+01		8.68E+01	3.60E+01		3.60E+01
N	311455	Diethyl-p-nitrophenylphosphate	mg/L						
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/L						
N	112345	Diethylene Glycol Monobutyl Ether	mg/L	6.26E-01		6.26E-01	2.59E-01		2.59E-01
N	111900	Diethylene Glycol Monoethyl Ether	mg/L	2.19E+02		2.19E+02	9.07E+01		9.07E+01
N	617845	Diethylformamide	mg/L	1.20E+00		1.20E+00	4.98E-01		4.98E-01
N	56531	Diethylstilbesterol	mg/L		5.12E-07	5.12E-07		5.12E-07	5.12E-07
N	43222486	Difenzoquat	mg/L	8.76E+00		8.76E+00	3.63E+00		3.63E+00
N	35367385	Diflubenzuron	mg/L	2.08E+00		2.08E+00	8.72E-01		8.72E-01
N	75376	Difluoroethane, 1,1-	mg/L	3.84E+02		3.84E+02	9.42E+01		9.42E+01
N	1445756	Diisopropyl Methylphosphonate	mg/L	8.73E+00		8.73E+00	3.62E+00		3.62E+00
N	55290647	Dimethipin	mg/L	2.19E+00		2.19E+00	9.07E-01		9.07E-01
N	60515	Dimethoate	mg/L	2.14E-02		2.14E-02	8.91E-03		8.91E-03
N	119904	Dimethoxybenzidine, 3,3'-	mg/L		3.75E-01	3.75E-01		3.75E-01	3.75E-01
N	77781	Dimethyl Sulfate	mg/L						
N	124403	Dimethylamine	mg/L	1.92E-04		1.92E-04	4.70E-05		4.70E-05
N	21436964	Dimethylaniline HCl, 2,4-	mg/L		9.09E-03	9.09E-03		9.09E-03	9.09E-03
N	95681	Dimethylaniline, 2,4-	mg/L		6.75E-03	6.75E-03		6.75E-03	6.75E-03
N	121697	Dimethylaniline, N,N-	mg/L	2.01E-01		2.01E-01	8.49E-02		8.49E-02
N	119937	Dimethylbenzidine, 3,3'-	mg/L		5.64E-04	5.64E-04		5.64E-04	5.64E-04
N	107584407	Dimethylethyl Lead	mg/L						

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	68122	Dimethylformamide	mg/L	1.09E+01		1.09E+01	4.53E+00		4.53E+00
N	57147	Dimethylhydrazine, 1,1-	mg/L		1.74E-03	1.74E-03		1.74E-03	1.74E-03
N	540738	Dimethylhydrazine, 1,2-	mg/L		1.42E-04	1.42E-04		1.42E-04	1.42E-04
N	105679	Dimethylphenol, 2,4-	mg/L	1.57E+00		1.57E+00	6.89E-01		6.89E-01
N	576261	Dimethylphenol, 2,6-	mg/L	6.21E-02		6.21E-02	2.60E-02		2.60E-02
N	95658	Dimethylphenol, 3,4-	mg/L	9.56E-02		9.56E-02	4.07E-02		4.07E-02
N	131113	Dimethylphthalate	mg/L	1.09E+03		1.09E+03	4.52E+02		4.52E+02
N	120616	Dimethylterephthalate	mg/L	1.03E+01		1.03E+01	4.32E+00		4.32E+00
N	534521	Dinitro-o-cresol, 4,6-	mg/L						
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/L	2.19E-01		2.19E-01	9.07E-02		9.07E-02
N	528290	Dinitrobenzene, 1,2-	mg/L	4.36E-02		4.36E-02	1.81E-02		1.81E-02
N	99650	Dinitrobenzene, 1,3-	mg/L	1.09E-02		1.09E-02	4.51E-03		4.51E-03
N	100254	Dinitrobenzene, 1,4-	mg/L	4.35E-02		4.35E-02	1.80E-02		1.80E-02
N	51285	Dinitrophenol, 2,4-	mg/L	2.18E-01		2.18E-01	9.03E-02		9.03E-02
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/L		7.69E-03	7.69E-03		7.69E-03	7.69E-03
N	121142	Dinitrotoluene, 2,4-	mg/L	2.17E-01	7.69E-03	7.69E-03	9.01E-02	7.69E-03	7.69E-03
N	606202	Dinitrotoluene, 2,6-	mg/L	1.09E-01	7.71E-03	7.71E-03	4.52E-02	7.71E-03	7.71E-03
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/L						
N	88857	Dinoseb	mg/L	9.94E-02		9.94E-02	4.20E-02		4.20E-02
N	123911	Dioxane, 1,4-	mg/L		4.79E-01	4.79E-01		4.79E-01	4.79E-01
Y	1746016	Dioxins/Furans (Total)	mg/L		6.09E-09	6.09E-09		6.09E-09	6.09E-09
N	957517	Diphenamid	mg/L	3.26E+00		3.26E+00	1.35E+00		1.35E+00
N	127639	Diphenyl sulfone	mg/L	9.86E-01		9.86E-01	4.08E-01		4.08E-01
N	122394	Diphenylamine	mg/L	2.29E+00		2.29E+00	9.81E-01		9.81E-01
N	122667	Diphenylhydrazine, 1,2-	mg/L		6.21E-03	6.21E-03		6.21E-03	6.21E-03
N	85007	Diquat	mg/L	2.41E-01		2.41E-01	9.98E-02		9.98E-02
N	1937377	Direct Black 38	mg/L		6.13E-04	6.13E-04		6.13E-04	6.13E-04
N	2602462	Direct Blue 6	mg/L		6.51E-04	6.51E-04		6.51E-04	6.51E-04
N	16071866	Direct Brown 95	mg/L		5.67E-04	5.67E-04		5.67E-04	5.67E-04
N	2610051	Direct Sky Blue	mg/L						
N	298044	Disulfoton	mg/L	3.98E-03		3.98E-03	1.68E-03		1.68E-03
N	330541	Diuron	mg/L	2.14E-01		2.14E-01	8.92E-02		8.92E-02
N	2439103	Dodine	mg/L	4.34E-01		4.34E-01	1.80E-01		1.80E-01
N	759944	EPTC	mg/L	2.51E+00		2.51E+00	1.06E+00		1.06E+00
N	115297	Endosulfan	mg/L	6.52E-01		6.52E-01	2.71E-01		2.71E-01
N	145733	Endothall	mg/L	2.16E+00		2.16E+00	8.99E-01		8.99E-01
N	72208	Endrin	mg/L	1.34E-02		1.34E-02	6.32E-03		6.32E-03
N	106898	Epichlorohydrin	mg/L	1.31E-02	2.38E-01	1.31E-02	2.79E-03	2.38E-01	2.79E-03
N	106887	Epoxybutane, 1,2-	mg/L	6.10E-01		6.10E-01	2.54E-01		2.54E-01
N	16672870	Ethephon	mg/L	5.47E-01		5.47E-01	2.27E-01		2.27E-01
N	563122	Ethion	mg/L	4.87E-02		4.87E-02	2.07E-02		2.07E-02
N	111159	Ethoxyethanol Acetate, 2-	mg/L	3.27E+01		3.27E+01	1.36E+01		1.36E+01
N	110805	Ethoxyethanol, 2-	mg/L	4.38E+01		4.38E+01	1.81E+01		1.81E+01
N	141786	Ethyl Acetate	mg/L	3.03E+01		3.03E+01	7.42E+00		7.42E+00
N	140885	Ethyl Acrylate	mg/L		2.79E-02	2.79E-02		2.79E-02	2.79E-02
N	75003	Ethyl Chloride	mg/L	3.29E+01	4.61E-01	4.61E-01	1.10E+01	4.61E-01	4.61E-01
N	60297	Ethyl Ether	mg/L	6.66E+00		6.66E+00	1.64E+00		1.64E+00
N	97632	Ethyl Methacrylate	mg/L	3.01E+00		3.01E+00	7.40E-01		7.40E-01
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/L	1.06E-03		1.06E-03	4.41E-04		4.41E-04
Y	100414	Ethylbenzene	mg/L	5.68E+00	4.68E-01	4.68E-01	1.69E+00	4.68E-01	4.68E-01
N	109784	Ethylene Cyanohydrin	mg/L	3.28E+01		3.28E+01	1.36E+01		1.36E+01
N	107153	Ethylene Diamine	mg/L	2.18E+00		2.18E+00	9.05E-01		9.05E-01
N	107211	Ethylene Glycol	mg/L	2.19E+02		2.19E+02	9.07E+01		9.07E+01
N	111762	Ethylene Glycol Monobutyl Ether	mg/L	5.25E+01		5.25E+01	2.19E+01		2.19E+01
N	75218	Ethylene Oxide	mg/L		2.58E-03	2.58E-03		2.58E-03	2.58E-03
N	96457	Ethylene Thiourea	mg/L	8.75E-03	4.79E-02	8.75E-03	3.63E-03	4.79E-02	3.63E-03
N	84720	Ethylphthalyl Ethyl Glycolate	mg/L	3.27E+02		3.27E+02	1.36E+02		1.36E+02
N	101200480	Express	mg/L	8.76E-01		8.76E-01	3.63E-01		3.63E-01
N	22224926	Fenamiphos	mg/L	2.68E-02		2.68E-02	1.11E-02		1.11E-02
N	39515418	Fenpropathrin	mg/L	1.73E+00		1.73E+00	7.76E-01		7.76E-01
N	2164172	Fluometuron	mg/L	1.40E+00		1.40E+00	5.84E-01		5.84E-01
Y	206440	Fluoranthene	mg/L	1.41E+00		1.41E+00	6.79E-01		6.79E-01
Y	86737	Fluorene	mg/L	1.05E+00		1.05E+00	2.92E-01		2.92E-01
N	59756604	Fluridone	mg/L	8.66E+00		8.66E+00	3.59E+00		3.59E+00
N	56425913	Flurprimidol	mg/L	2.15E+00		2.15E+00	8.93E-01		8.93E-01
N	66332965	Flutolanil	mg/L	6.57E+00		6.57E+00	2.72E+00		2.72E+00
N	69409945	Fluvalinate	mg/L	7.83E-01		7.83E-01	3.45E-01		3.45E-01
N	133073	Folpet	mg/L	1.08E+01	1.48E+00	1.48E+00	4.48E+00	1.48E+00	1.48E+00
N	72178020	Fomesafen	mg/L		2.77E-02	2.77E-02		2.77E-02	2.77E-02
N	944229	Fonofos	mg/L	1.92E-01		1.92E-01	8.18E-02		8.18E-02
N	50000	Formaldehyde	mg/L	1.63E+01		1.63E+01	6.78E+00		6.78E+00
N	64186	Formic Acid	mg/L	2.19E+02		2.19E+02	9.06E+01		9.06E+01
N	39148248	Fosetyl-AL	mg/L	3.29E+02		3.29E+02	1.36E+02		1.36E+02
N	110009	Furan	mg/L	3.35E-02		3.35E-02	8.23E-03		8.23E-03
N	67458	Furazolidone	mg/L		1.39E-03	1.39E-03		1.39E-03	1.39E-03
N	98011	Furfural	mg/L	2.35E-01		2.35E-01	1.03E-01		1.03E-01
N	531828	Furium	mg/L		1.05E-04	1.05E-04		1.05E-04	1.05E-04
N	60568050	Furmecyclox	mg/L		1.76E-01	1.76E-01		1.76E-01	1.76E-01
N	77182822	Glufosinate, Ammonium	mg/L	4.38E-02		4.38E-02	1.81E-02		1.81E-02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	765344	Glycidyl	mg/L	4.38E-02		4.38E-02	1.81E-02		1.81E-02
N	1071836	Glyphosate	mg/L	1.09E+01		1.09E+01	4.54E+00		4.54E+00
N	42874033	Goal	mg/L	2.99E-01		2.99E-01	1.26E-01		1.26E-01
N	69806402	Haloxyfop, Methyl	mg/L	5.41E-03		5.41E-03	2.25E-03		2.25E-03
N	79277273	Harmony	mg/L	1.42E+00		1.42E+00	5.90E-01		5.90E-01
N	76448	Heptachlor	mg/L	5.33E-02	1.14E-03	1.14E-03	2.22E-02	1.14E-03	1.14E-03
N	1024573	Heptachlor Epoxide	mg/L	1.25E-03	5.12E-04	5.12E-04	5.31E-04	5.12E-04	5.12E-04
N	142825	Heptane, N-	mg/L						
N	87821	Hexabromobenzene	mg/L	2.11E-01		2.11E-01	8.80E-02		8.80E-02
N	118741	Hexachlorobenzene	mg/L	4.97E-02	1.92E-03	1.92E-03	2.26E-02	1.92E-03	1.92E-03
N	87683	Hexachlorobutadiene	mg/L	1.53E-02	4.80E-02	1.53E-02	6.74E-03	4.80E-02	6.74E-03
N	319846	Hexachlorocyclohexane, Alpha-	mg/L		8.09E-04	8.09E-04		8.09E-04	8.09E-04
N	319857	Hexachlorocyclohexane, Beta-	mg/L		2.81E-03	2.81E-03		2.81E-03	2.81E-03
N	319868	Hexachlorocyclohexane, Delta-	mg/L						
N	6108107	Hexachlorocyclohexane, Epsilon	mg/L						
N	58899	Hexachlorocyclohexane, Gamma-	mg/L	3.20E-02	3.96E-03	3.96E-03	1.33E-02	3.96E-03	3.96E-03
N	608731	Hexachlorocyclohexane, Technical	mg/L		2.76E-03	2.76E-03		2.76E-03	2.76E-03
N	77474	Hexachlorocyclopentadiene	mg/L	5.94E-01		5.94E-01	2.51E-01		2.51E-01
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/L		3.36E-07	3.36E-07		3.36E-07	3.36E-07
N	67721	Hexachloroethane	mg/L	9.50E-02	3.29E-01	9.50E-02	4.05E-02	3.29E-01	4.05E-02
N	70304	Hexachlorophene	mg/L	5.74E-03		5.74E-03	2.87E-03		2.87E-03
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/L	3.18E-01	4.64E-02	4.64E-02	1.32E-01	4.64E-02	4.64E-02
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/L	3.11E-04		3.11E-04	1.29E-04		1.29E-04
N	110543	Hexane, N-	mg/L	1.60E+00		1.60E+00	4.31E-01		4.31E-01
N	591786	Hexanone, 2-	mg/L						
N	51235042	Hexazinone	mg/L	3.61E+00		3.61E+00	1.50E+00		1.50E+00
Y	37871004	HpCDD, 2,3,7,8-	mg/L		5.45E-07	5.45E-07		5.45E-07	5.45E-07
Y	38998753	HpCDF, 2,3,7,8-	mg/L		3.51E-06	3.51E-06		3.51E-06	3.51E-06
Y	34465468	HxCDD, 2,3,7,8-	mg/L		3.51E-07	3.51E-07		3.51E-07	3.51E-07
Y	55684941	HxCDF, 2,3,7,8-	mg/L		3.51E-07	3.51E-07		3.51E-07	3.51E-07
N	302012	Hydrazine	mg/L		1.76E-03	1.76E-03		1.76E-03	1.76E-03
N	10034932	Hydrazine Sulfate	mg/L		1.76E-03	1.76E-03		1.76E-03	1.76E-03
N	123319	Hydroquinone	mg/L	4.36E+00		4.36E+00	1.81E+00		1.81E+00
N	35554440	Imazalil	mg/L	1.35E+00		1.35E+00	5.65E-01		5.65E-01
N	81335377	Imazaquin	mg/L	2.73E+01		2.73E+01	1.13E+01		1.13E+01
Y	193395	Indeno[1,2,3-cd]pyrene	mg/L		6.31E-04	6.31E-04		6.31E-04	6.31E-04
N	36734197	Iprodione	mg/L	4.34E+00		4.34E+00	1.80E+00		1.80E+00
N	78831	Isobutyl Alcohol	mg/L	1.01E+01		1.01E+01	2.47E+00		2.47E+00
N	78591	Isophorone	mg/L	2.16E+01	5.47E+00	5.47E+00	8.96E+00	5.47E+00	5.47E+00
N	33820530	Isopropalin	mg/L	7.60E-01		7.60E-01	3.54E-01		3.54E-01
N	67630	Isopropanol	mg/L						
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/L	1.09E+01		1.09E+01	4.53E+00		4.53E+00
N	82558507	Isoxaben	mg/L	5.48E+00		5.48E+00	2.27E+00		2.27E+00
N	143500	Kepone	mg/L	1.97E+03		1.97E+03	8.17E+02		8.17E+02
N	23950585	Kerb	mg/L	7.82E+00		7.82E+00	3.27E+00		3.27E+00
N	77501634	Lactofen	mg/L	2.13E-01		2.13E-01	8.88E-02		8.88E-02
N		Lead Alkyls	mg/L						
N	330552	Linuron	mg/L	2.11E-01		2.11E-01	8.79E-02		8.79E-02
N	83055996	Londax	mg/L	2.19E+01		2.19E+01	9.07E+00		9.07E+00
N	94746	MCPA	mg/L	5.38E-02		5.38E-02	2.24E-02		2.24E-02
N	94815	MCPB	mg/L	1.01E+00		1.01E+00	4.25E-01		4.25E-01
N	93652	MCPP	mg/L	1.07E-01		1.07E-01	4.45E-02		4.45E-02
N	121755	Malathion	mg/L	2.17E+00		2.17E+00	9.02E-01		9.02E-01
N	108316	Maleic Anhydride	mg/L	1.09E+01		1.09E+01	4.53E+00		4.53E+00
N	123331	Maleic Hydrazide	mg/L	1.68E+01		1.68E+01	4.12E+00		4.12E+00
N	109773	Malononitrile	mg/L	2.19E-03		2.19E-03	9.06E-04		9.06E-04
N	8018017	Mancozeb	mg/L	3.29E+00		3.29E+00	1.36E+00		1.36E+00
N	12427382	Maneb	mg/L	5.47E-01	8.78E-02	8.78E-02	2.27E-01	8.78E-02	8.78E-02
N	950107	Mephosfolan	mg/L	9.85E-03		9.85E-03	4.08E-03		4.08E-03
N	24307264	Mepiquat Chloride	mg/L	3.29E+00		3.29E+00	1.36E+00		1.36E+00
N	149304	Mercaptobenzothiazole, 2-	mg/L	1.10E+01	1.82E-01	1.82E-01	4.54E+00	1.82E-01	1.82E-01
N	150505	Merphos	mg/L	1.09E-04		1.09E-04	5.66E-05		5.66E-05
N	78488	Merphos Oxide	mg/L	1.69E-03		1.69E-03	7.78E-04		7.78E-04
N	57837191	Metalaxyl	mg/L	6.56E+00		6.56E+00	2.72E+00		2.72E+00
N	126987	Methacrylonitrile	mg/L	5.14E-03		5.14E-03	1.39E-03		1.39E-03
N	10265926	Methamidophos	mg/L	5.47E-03		5.47E-03	2.27E-03		2.27E-03
N	67561	Methanol	mg/L	5.46E+01		5.46E+01	2.26E+01		2.26E+01
N	950378	Methidathion	mg/L	1.09E-01		1.09E-01	4.52E-02		4.52E-02
N	16752775	Methomyl	mg/L	8.42E-01		8.42E-01	2.06E-01		2.06E-01
N	99592	Methoxy-5-nitroaniline, 2-	mg/L		1.14E-01	1.14E-01		1.14E-01	1.14E-01
N	72435	Methoxychlor	mg/L	5.10E-01		5.10E-01	2.14E-01		2.14E-01
N	110496	Methoxyethanol Acetate, 2-	mg/L	2.19E-01		2.19E-01	9.06E-02		9.06E-02
N	109864	Methoxyethanol, 2-	mg/L	1.09E-01		1.09E-01	4.53E-02		4.53E-02
N	79209	Methyl Acetate	mg/L	3.36E+01		3.36E+01	8.24E+00		8.24E+00
N	96333	Methyl Acrylate	mg/L	1.01E+00		1.01E+00	2.47E-01		2.47E-01
N	78933	Methyl Ethyl Ketone	mg/L	1.15E+01		1.15E+01	2.60E+00		2.60E+00
N	60344	Methyl Hydrazine	mg/L		4.79E-03	4.79E-03		4.79E-03	4.79E-03
N	108101	Methyl Isobutyl Ketone	mg/L	9.86E-01		9.86E-01	2.17E-01		2.17E-01
N	74931	Methyl Mercaptan	mg/L	6.24E-02		6.24E-02	2.59E-02		2.59E-02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	80626	Methyl Methacrylate	mg/L	9.14E+00		9.14E+00	1.95E+00		1.95E+00
N	298000	Methyl Parathion	mg/L	2.73E-02		2.73E-02	1.13E-02		1.13E-02
N	993135	Methyl Phosphonic Acid	mg/L	2.19E+00		2.19E+00	9.07E-01		9.07E-01
N	25013154	Methyl Styrene (Mixed Isomers)	mg/L	2.76E-01		2.76E-01	7.73E-02		7.73E-02
N	79221	Methyl chlorocarbonate	mg/L	1.10E+02		1.10E+02	4.54E+01		4.54E+01
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/L	4.17E+01		4.17E+01	8.64E+00		8.64E+00
N	99558	Methyl-5-Nitroaniline, 2-	mg/L		1.57E-01	1.57E-01		1.57E-01	1.57E-01
N	636215	Methylaniline Hydrochloride, 2-	mg/L		2.91E-02	2.91E-02		2.91E-02	2.91E-02
N	108872	Methylcyclohexane	mg/L	2.79E+01		2.79E+01	6.95E+00		6.95E+00
N	75092	Methylene Chloride	mg/L	5.63E+00	4.26E-01	4.26E-01	2.06E+00	4.26E-01	4.26E-01
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/L	6.96E-02	3.70E-02	3.70E-02	2.94E-02	3.70E-02	2.94E-02
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/L		7.94E-02	7.94E-02		7.94E-02	7.94E-02
N	101779	Methylenebisbenzenamine, 4,4'-	mg/L		2.10E-02	2.10E-02		2.10E-02	2.10E-02
N	101688	Methylenediphenyl Diisocyanate	mg/L	1.82E-02		1.82E-02	7.60E-03		7.60E-03
N	98839	Methylstyrene, Alpha-	mg/L	2.22E+00		2.22E+00	5.61E-01		5.61E-01
N	1762283	Methyltriethyl Lead	mg/L						
N	51218452	Metolachlor	mg/L	1.61E+01		1.61E+01	6.69E+00		6.69E+00
N	21087649	Metribuzin	mg/L	2.72E+00		2.72E+00	1.13E+00		1.13E+00
N	2385855	Mirex	mg/L	2.15E-02	2.88E-03	2.88E-03	8.94E-03	2.88E-03	2.88E-03
N	2212671	Molinate	mg/L	1.89E-01		1.89E-01	8.05E-02		8.05E-02
N	10599903	Monochloramine	mg/L	1.10E+01		1.10E+01	4.54E+00		4.54E+00
N	25154421	Monochlorobutanes	mg/L	4.38E+01		4.38E+01	1.81E+01		1.81E+01
N	300765	Naled	mg/L	2.18E-01		2.18E-01	9.05E-02		9.05E-02
Y	91203	Naphthalene	mg/L	4.08E-02		4.08E-02	8.55E-03		8.55E-03
N	90120	Naphthalene, 1-Methyl	mg/L						
N	91576	Naphthalene, 2-Methyl	mg/L						
N	15299997	Napropamide	mg/L	1.09E+01		1.09E+01	4.53E+00		4.53E+00
N	2429745	Niagara Blue 4B	mg/L						
N	13463393	Nickel Carbonyl	mg/L						
N	1929824	Nitrapyrin	mg/L	1.58E-01		1.58E-01	6.61E-02		6.61E-02
N	88744	Nitroaniline, 2-	mg/L	6.14E-03		6.14E-03	2.55E-03		2.55E-03
N	98953	Nitrobenzene	mg/L	1.84E-02		1.84E-02	4.58E-03		4.58E-03
N	67209	Nitrofurantoin	mg/L	7.66E+00		7.66E+00	3.18E+00		3.18E+00
N	59870	Nitrofurazone	mg/L		3.51E-03	3.51E-03		3.51E-03	3.51E-03
N	55630	Nitroglycerin	mg/L	1.53E+00		1.53E+00	6.35E-01		6.35E-01
N	556887	Nitroguanidine	mg/L	1.09E+01		1.09E+01	4.54E+00		4.54E+00
N	100027	Nitrophenol, 4-	mg/L	8.67E-01		8.67E-01	3.60E-01		3.60E-01
N	79469	Nitropropane, 2-	mg/L	1.92E-01	1.43E-04	1.43E-04	4.71E-02	1.43E-04	1.43E-04
N	759739	Nitroso-N-ethylurea, N-	mg/L		3.76E-05	3.76E-05		3.76E-05	3.76E-05
N	684935	Nitroso-N-methylurea, N-	mg/L						
N	924163	Nitroso-di-N-butylamine, N-	mg/L		2.41E-04	2.41E-04		2.41E-04	2.41E-04
N	621647	Nitroso-di-N-propylamine, N-	mg/L		7.39E-04	7.39E-04		7.39E-04	7.39E-04
N	1116547	Nitrosodiethanolamine, N-	mg/L		1.88E-03	1.88E-03		1.88E-03	1.88E-03
N	55185	Nitrosodiethylamine, N-	mg/L		3.50E-05	3.50E-05		3.50E-05	3.50E-05
N	62759	Nitrosodimethylamine, N-	mg/L		1.03E-04	1.03E-04		1.03E-04	1.03E-04
N	86306	Nitrosodiphenylamine, N-	mg/L		9.47E-01	9.47E-01		9.47E-01	9.47E-01
N	10595956	Nitrosomethylethylamine, N-	mg/L		2.39E-04	2.39E-04		2.39E-04	2.39E-04
N	4549400	Nitrosomethylvinylamine, N-	mg/L						
N	930552	Nitrosopyrrolidine, N-	mg/L		2.51E-03	2.51E-03		2.51E-03	2.51E-03
N	119324	Nitrotoluene, 4-Amino-2-	mg/L						
N	99081	Nitrotoluene, m-	mg/L	3.34E-01		3.34E-01	8.21E-02		8.21E-02
N	88722	Nitrotoluene, o-	mg/L	3.34E-01		3.34E-01	8.21E-02		8.21E-02
N	99990	Nitrotoluene, p-	mg/L	3.34E-01		3.34E-01	8.21E-02		8.21E-02
N	27314132	Norflurazon	mg/L	4.36E+00		4.36E+00	1.81E+00		1.81E+00
N	85509199	Nustar	mg/L	7.67E-02		7.67E-02	3.18E-02		3.18E-02
Y	3268879	OCDD	mg/L		1.91E-06	1.91E-06		1.91E-06	1.91E-06
Y	39001020	OCDF	mg/L		2.03E-06	2.03E-06		2.03E-06	2.03E-06
N	32536520	Octabromodiphenyl Ether	mg/L	3.29E-01		3.29E-01	1.36E-01		1.36E-01
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/L	5.47E+00		5.47E+00	2.27E+00		2.27E+00
N	152169	Octamethylpyrophosphoramide	mg/L	2.19E-01		2.19E-01	9.07E-02		9.07E-02
N	117840	Octyl Phthalate, di-N-	mg/L	3.95E-02		3.95E-02	2.05E-02		2.05E-02
N	19044883	Oryzalin	mg/L	5.45E+00		5.45E+00	2.26E+00		2.26E+00
N	19666309	Oxadiazon	mg/L	4.81E-01		4.81E-01	2.04E-01		2.04E-01
N	23135220	Oxamyl	mg/L	2.74E+00		2.74E+00	1.13E+00		1.13E+00
N	76738620	Paclobutrazol	mg/L	1.39E+00		1.39E+00	5.80E-01		5.80E-01
N	1910425	Paraquat	mg/L	4.93E-01		4.93E-01	2.04E-01		2.04E-01
N	56382	Parathion	mg/L	6.19E-01		6.19E-01	2.59E-01		2.59E-01
Y	36088229	PeCDD, 2,3,7,8-	mg/L		2.50E-08	2.50E-08		2.50E-08	2.50E-08
Y	57117416	PeCDF, 1,2,3,7,8-	mg/L		1.48E-08	1.48E-08		1.48E-08	1.48E-08
Y	57117314	PeCDF, 2,3,4,7,8-	mg/L		1.29E-07	1.29E-07		1.29E-07	1.29E-07
N	1114712	Pebulate	mg/L	4.54E+00		4.54E+00	1.95E+00		1.95E+00
N	40487421	Pendimethalin	mg/L	2.71E+00		2.71E+00	1.22E+00		1.22E+00
N	32534819	Pentabromodiphenyl Ether	mg/L	2.19E-01		2.19E-01	9.07E-02		9.07E-02
N	608935	Pentachlorobenzene	mg/L	5.36E-02		5.36E-02	2.41E-02		2.41E-02
N	25329355	Pentachlorocyclopentadiene	mg/L						
N	82688	Pentachloronitrobenzene	mg/L	2.90E-01	1.80E-02	1.80E-02	1.23E-01	1.80E-02	1.80E-02
N	87865	Pentachlorophenol	mg/L	1.51E+00	2.08E-02	2.08E-02	7.03E-01	2.08E-02	2.08E-02
N	71410	Pentyl Alcohol, N-	mg/L						
N	7601903	Perchlorate	mg/L	5.48E-02		5.48E-02	2.27E-02		2.27E-02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	52645531	Permethrin	mg/L	5.43E+00		5.43E+00	2.25E+00		2.25E+00
Y	85018	Phenanthrene	mg/L						
N	13684634	Phenmedipham	mg/L	2.74E+01		2.74E+01	1.13E+01		1.13E+01
N	108952	Phenol	mg/L	6.50E+01		6.50E+01	2.70E+01		2.70E+01
N	92842	Phenothiazine	mg/L	2.19E-01		2.19E-01	9.07E-02		9.07E-02
N	108452	Phenylenediamine, m-	mg/L	6.57E-01		6.57E-01	2.72E-01		2.72E-01
N	95545	Phenylenediamine, o-	mg/L		1.12E-01	1.12E-01		1.12E-01	1.12E-01
N	106503	Phenylenediamine, p-	mg/L	2.08E+01		2.08E+01	8.62E+00		8.62E+00
N	62384	Phenylmercuric Acetate	mg/L	8.76E-03		8.76E-03	3.63E-03		3.63E-03
N	90437	Phenylphenol, 2-	mg/L		2.48E+00	2.48E+00		2.48E+00	2.48E+00
N	298022	Phorate	mg/L	2.18E-02		2.18E-02	9.05E-03		9.05E-03
N	732116	Phosmet	mg/L	2.17E+00		2.17E+00	9.02E-01		9.02E-01
N	100210	Phthalic Acid, P-	mg/L	1.08E+02		1.08E+02	4.50E+01		4.50E+01
N	85449	Phthalic Anhydride	mg/L	2.19E+02		2.19E+02	9.07E+01		9.07E+01
N	1918021	Picloram	mg/L	7.61E+00		7.61E+00	3.16E+00		3.16E+00
N	29232937	Pirimiphos, Methyl	mg/L	1.00E+00		1.00E+00	4.23E-01		4.23E-01
N	59536651	Polybrominated Biphenyls	mg/L	7.67E-04	5.92E-04	5.92E-04	3.18E-04	5.92E-04	3.18E-04
Y	1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		7.93E-03	7.93E-03		7.93E-03	7.93E-03
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		4.53E-02	4.53E-02		4.53E-02	4.53E-02
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/L	1.88E-02		1.88E-02	7.78E-03		7.78E-03
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		9.51E-05	9.51E-05		9.51E-05	9.51E-05
N	67747095	Prochloraz	mg/L	9.58E-01	3.42E-02	3.42E-02	3.99E-01	3.42E-02	3.42E-02
N	26399360	Profluralin	mg/L	4.46E-01		4.46E-01	1.98E-01		1.98E-01
N	1610180	Prometon	mg/L	1.62E+00		1.62E+00	6.74E-01		6.74E-01
N	7287196	Prometryn	mg/L	4.32E-01		4.32E-01	1.79E-01		1.79E-01
N	1918167	Propachlor	mg/L	1.41E+00		1.41E+00	5.84E-01		5.84E-01
N	709988	Propanil	mg/L	5.19E-01		5.19E-01	2.17E-01		2.17E-01
N	2312358	Propargite	mg/L	1.86E+00		1.86E+00	7.95E-01		7.95E-01
N	107197	Propargyl Alcohol	mg/L	2.19E-01		2.19E-01	9.07E-02		9.07E-02
N	139402	Propazine	mg/L	2.16E+00		2.16E+00	8.97E-01		8.97E-01
N	122429	Propham	mg/L	1.98E+00		1.98E+00	8.37E-01		8.37E-01
N	60207901	Propiconazole	mg/L	1.40E+00		1.40E+00	5.82E-01		5.82E-01
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/L	1.10E-01		1.10E-01	4.54E-02		4.54E-02
N	103651	Propylbenzene, n-	mg/L	3.37E-01		3.37E-01	8.25E-02		8.25E-02
N	57556	Propylene Glycol	mg/L	2.19E+03		2.19E+03	9.07E+02		9.07E+02
N	1569024	Propylene Glycol Monoethyl Ether	mg/L	7.67E+01		7.67E+01	3.18E+01		3.18E+01
N	107982	Propylene Glycol Monomethyl Ether	mg/L	7.65E+01		7.65E+01	3.17E+01		3.17E+01
N	75569	Propylene Oxide	mg/L	2.89E-01	1.89E-02	1.89E-02	7.07E-02	1.89E-02	1.89E-02
N	81335775	Pursuit	mg/L	2.74E+01		2.74E+01	1.13E+01		1.13E+01
N	51630581	Pydrin	mg/L	2.67E+00		2.67E+00	1.11E+00		1.11E+00
Y	129000	Pyrene	mg/L	1.14E+00		1.14E+00	5.47E-01		5.47E-01
N	110861	Pyridine	mg/L	1.07E-01		1.07E-01	4.47E-02		4.47E-02
N	13593038	Quinalphos	mg/L	5.39E-02		5.39E-02	2.24E-02		2.24E-02
N	91225	Quinoline	mg/L		4.25E-04	4.25E-04		4.25E-04	4.25E-04
N		Refractory Ceramic Fibers	mg/L						
N	10453868	Resmethrin	mg/L	4.36E-01		4.36E-01	2.20E-01		2.20E-01
N	299843	Ronnel	mg/L	4.16E+00		4.16E+00	1.81E+00		1.81E+00
N	83794	Rotenone	mg/L	4.29E-01		4.29E-01	1.78E-01		1.78E-01
N	78587050	Savey	mg/L	2.74E+00		2.74E+00	1.13E+00		1.13E+00
N	7783008	Selenious Acid	mg/L	5.48E-01		5.48E-01	2.27E-01		2.27E-01
N	14124675	Selenite	mg/L						
N	630104	Selenourea	mg/L	5.48E-01		5.48E-01	2.27E-01		2.27E-01
N	74051802	Sethoxydim	mg/L	9.04E+00		9.04E+00	3.81E+00		3.81E+00
N	122349	Simazine	mg/L	5.39E-01	4.33E-02	4.33E-02	2.24E-01	4.33E-02	4.33E-02
N	62476599	Sodium Acifluorfen	mg/L	1.42E+00		1.42E+00	5.90E-01		5.90E-01
N	148185	Sodium Diethyldithiocarbamate	mg/L	3.28E+00	1.95E-02	1.95E-02	1.36E+00	1.95E-02	1.95E-02
N	62748	Sodium Fluoroacetate	mg/L	2.19E-03		2.19E-03	9.07E-04		9.07E-04
N	961115	Stirofos (Tetrachlorovinphos)	mg/L	3.24E+00	2.17E-01	2.17E-01	1.35E+00	2.17E-01	2.17E-01
N	57249	Strychnine	mg/L	3.28E-02		3.28E-02	1.36E-02		1.36E-02
N	100425	Styrene	mg/L	5.35E+00		5.35E+00	1.69E+00		1.69E+00
N	88671890	Systhane	mg/L	2.74E+00		2.74E+00	1.13E+00		1.13E+00
Y	1746016	TCDD, 2,3,7,8-	mg/L		6.09E-09	6.09E-09		6.09E-09	6.09E-09
Y	51207319	TCDF, 2,3,7,8-	mg/L		1.60E-07	1.60E-07		1.60E-07	1.60E-07
N	21564170	TCMTB	mg/L	3.12E+00		3.12E+00	1.30E+00		1.30E+00
N	34014181	Tebuthiuron	mg/L	7.66E+00		7.66E+00	3.17E+00		3.17E+00
N	3383968	Temephos	mg/L	1.88E+00		1.88E+00	8.01E-01		8.01E-01
N	5902512	Terbacil	mg/L	1.41E+00		1.41E+00	5.86E-01		5.86E-01
N	13071799	Terbufos	mg/L	2.61E-03		2.61E-03	1.09E-03		1.09E-03
N	886500	Terbutryn	mg/L	9.91E-02		9.91E-02	4.19E-02		4.19E-02
N	1920907	Tetrabutyl Lead	mg/L						
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/L	2.37E-02		2.37E-02	1.04E-02		1.04E-02
N	630206	Tetrachloroethane, 1,1,1,2-	mg/L	9.94E-01	5.10E-02	5.10E-02	2.45E-01	5.10E-02	5.10E-02
N	79345	Tetrachloroethane, 1,1,2,2-	mg/L	2.01E+00	6.61E-03	6.61E-03	4.93E-01	6.61E-03	6.61E-03
Y	127184	Tetrachloroethylene	mg/L	6.07E-01	5.82E-02	5.82E-02	2.53E-01	5.82E-02	5.82E-02
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/L	2.70E+00		2.70E+00	1.16E+00		1.16E+00
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/L		2.06E-04	2.06E-04		2.06E-04	2.06E-04
N	3689245	Tetraethyl Dithiopyrophosphate	mg/L	5.42E-02		5.42E-02	2.25E-02		2.25E-02
N	78002	Tetraethyl Lead	mg/L	1.09E-05		1.09E-05	4.52E-06		4.52E-06
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/L	7.68E+02		7.68E+02	1.88E+02		1.88E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
N	109999	Tetrahydrofuran	mg/L	2.30E+01	6.93E-01	6.93E-01	9.53E+00	6.93E-01	6.93E-01
N	75741	Tetramethyl Lead	mg/L						
N	3440753	Tetrapropyl Lead	mg/L						
N	1314325	Thallic Oxide	mg/L	7.67E-03		7.67E-03	3.18E-03		3.18E-03
N	563688	Thallium Acetate	mg/L	9.86E-03		9.86E-03	4.08E-03		4.08E-03
N	6533739	Thallium Carbonate	mg/L	8.76E-03		8.76E-03	3.63E-03		3.63E-03
N	28249776	Thiobencarb	mg/L	1.05E+00		1.05E+00	4.37E-01		4.37E-01
N	39196184	Thiofanox	mg/L	3.28E-02		3.28E-02	1.36E-02		1.36E-02
N	23564058	Thiophanate, Methyl	mg/L	8.76E+00		8.76E+00	3.63E+00		3.63E+00
N	137268	Thiram	mg/L	5.46E-01		5.46E-01	2.26E-01		2.26E-01
N	108883	Toluene	mg/L	4.34E+00		4.34E+00	1.01E+00		1.01E+00
N	26471625	Toluene diisocyanate mixture (TDI)	mg/L	1.79E-03		1.79E-03	7.72E-04		7.72E-04
N	95807	Toluene-2,4-diamine	mg/L		1.64E-03	1.64E-03		1.64E-03	1.64E-03
N	95705	Toluene-2,5-diamine	mg/L	6.56E+01		6.56E+01	2.72E+01		2.72E+01
N	823405	Toluene-2,6-diamine	mg/L	2.16E+01		2.16E+01	8.98E+00		8.98E+00
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/L		2.17E-02	2.17E-02		2.17E-02	2.17E-02
N	106490	Toluidine, p-	mg/L		6.65E-03	6.65E-03		6.65E-03	6.65E-03
N	8001352	Toxaphene	mg/L		4.56E-03	4.56E-03		4.56E-03	4.56E-03
N	66841256	Tralomethrin	mg/L	8.21E-01		8.21E-01	3.40E-01		3.40E-01
N	2303175	Triallate	mg/L	1.34E+00		1.34E+00	5.61E-01		5.61E-01
N	82097505	Triasulfuron	mg/L	1.10E+00		1.10E+00	4.54E-01		4.54E-01
N	615543	Tribromobenzene, 1,2,4-	mg/L	4.95E-01		4.95E-01	2.09E-01		2.09E-01
N	594150	Tribromochloromethane	mg/L						
N	49690940	Tribromodiphenyl Ether	mg/L						
N	56359	Tributyltin Oxide	mg/L	3.29E-02		3.29E-02	1.36E-02		1.36E-02
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/L	3.69E+02		3.69E+02	8.11E+01		8.11E+01
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/L						
N	76039	Trichloroacetic Acid	mg/L						
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/L		1.82E-01	1.82E-01		1.82E-01	1.82E-01
N	634935	Trichloroaniline, 2,4,6-	mg/L		1.37E-01	1.37E-01		1.37E-01	1.37E-01
N	120821	Trichlorobenzene, 1,2,4-	mg/L	6.93E-01		6.93E-01	2.34E-01		2.34E-01
N	71556	Trichloroethane, 1,1,1-	mg/L	2.93E+00		2.93E+00	1.01E+00		1.01E+00
N	79005	Trichloroethane, 1,1,2-	mg/L	1.34E-01	2.38E-02	2.38E-02	3.29E-02	2.38E-02	2.38E-02
Y	79016	Trichloroethylene	mg/L	1.90E-01	1.73E-01	1.73E-01	4.79E-02	1.73E-01	4.79E-02
N	75694	Trichlorofluoromethane	mg/L	7.28E+00		7.28E+00	1.73E+00		1.73E+00
N	95954	Trichlorophenol, 2,4,5-	mg/L	9.02E+00		9.02E+00	3.88E+00		3.88E+00
N	88062	Trichlorophenol, 2,4,6-	mg/L		3.99E-01	3.99E-01		3.99E-01	3.99E-01
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/L	8.03E-01		8.03E-01	3.39E-01		3.39E-01
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/L	9.68E-01		9.68E-01	4.11E-01		4.11E-01
N	598776	Trichloropropane, 1,1,2-	mg/L	1.68E-01		1.68E-01	4.12E-02		4.12E-02
N	96184	Trichloropropane, 1,2,3-	mg/L	1.40E-01	1.55E-04	1.55E-04	3.78E-02	1.55E-04	1.55E-04
N	96195	Trichloropropene, 1,2,3-	mg/L	1.66E-01		1.66E-01	4.09E-02		4.09E-02
N	2077465	Trichlorotoluene, 2,3,6-	mg/L						
N	2014837	Trichlorotoluene, alpha 2,6-	mg/L						
N	58138082	Tridiphane	mg/L	3.29E-01		3.29E-01	1.36E-01		1.36E-01
N	5224237	Triethyl Lead	mg/L						
N	121448	Triethylamine	mg/L	6.72E-02		6.72E-02	1.65E-02		1.65E-02
N	1582098	Trifluralin	mg/L	6.04E-01	5.12E-01	5.12E-01	2.65E-01	5.12E-01	2.65E-01
N	7442139	Trimethyl Lead	mg/L						
N	512561	Trimethyl Phosphate	mg/L		1.42E-01	1.42E-01		1.42E-01	1.42E-01
N	95636	Trimethylbenzene, 1,2,4-	mg/L	8.15E-02		8.15E-02	1.70E-02		1.70E-02
N	108678	Trimethylbenzene, 1,3,5-	mg/L	8.15E-02		8.15E-02	1.70E-02		1.70E-02
N	1762261	Trimethylethyl Lead	mg/L						
N	99354	Trinitrobenzene, 1,3,5-	mg/L	3.28E+00		3.28E+00	1.36E+00		1.36E+00
N	479458	Trinitrophenylmethylnitramine	mg/L	1.09E+00		1.09E+00	4.52E-01		4.52E-01
N	118967	Trinitrotoluene, 2,4,6-	mg/L	5.42E-02	1.74E-01	5.42E-02	2.25E-02	1.74E-01	2.25E-02
N	6618037	Tripropyl Lead	mg/L						
N	1929777	Vernolate	mg/L	9.05E-02		9.05E-02	3.89E-02		3.89E-02
N	50471448	Vinclozolin	mg/L	2.68E+00		2.68E+00	1.12E+00		1.12E+00
N	108054	Vinyl Acetate	mg/L	2.71E+00		2.71E+00	5.68E-01		5.68E-01
N	593602	Vinyl Bromide	mg/L	2.88E-02	1.22E-02	1.22E-02	7.05E-03	1.22E-02	7.05E-03
Y	75014	Vinyl Chloride	mg/L	2.63E-01	3.50E-03	3.50E-03	9.18E-02	3.50E-03	3.50E-03
N	81812	Warfarin	mg/L	3.23E-02		3.23E-02	1.34E-02		1.34E-02
Y	1330207	Xylene, Mixture	mg/L	9.22E+00		9.22E+00	1.96E+00		1.96E+00
Y	108383	Xylene, m-	mg/L	5.41E+01		5.41E+01	1.32E+01		1.32E+01
Y	95476	Xylene, o-	mg/L	5.41E+01		5.41E+01	1.32E+01		1.32E+01
Y	106423	Xylene, p-	mg/L						
N	12122677	Zineb	mg/L	5.47E+00		5.47E+00	2.27E+00		2.27E+00
Y	14596102	Am-241	pCi/L		3.71E+01	3.71E+01		3.71E+01	3.71E+01
Y	10198400	Co-60	pCi/L		2.46E+02	2.46E+02		2.46E+02	2.46E+02
Y	10045973	Cs-137+D	pCi/L		1.27E+02	1.27E+02		1.27E+02	1.27E+02
Y	13994202	Np-237+D	pCi/L		5.73E+01	5.73E+01		5.73E+01	5.73E+01
Y	13981163	Pu-238	pCi/L		2.95E+01	2.95E+01		2.95E+01	2.95E+01
Y	15117483	Pu-239	pCi/L		2.86E+01	2.86E+01		2.86E+01	2.86E+01
Y	14119336	Pu-240	pCi/L		2.86E+01	2.86E+01		2.86E+01	2.86E+01
Y	13982633	Ra-226+D	pCi/L		1.00E+01	1.00E+01		1.00E+01	1.00E+01
Y	14859677	Rn-222+D	pCi/L		8.66E+01	8.66E+01		8.66E+01	8.66E+01
Y	10098972	Sr-90+D	pCi/L		5.22E+01	5.22E+01		5.22E+01	5.22E+01
Y	14133767	Tc-99	pCi/L		1.40E+03	1.40E+03		1.40E+03	1.40E+03

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.15. Groundwater Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	Action	Hazard	Cancer	Action
Y	14274829	Th-228+D	pCi/L		1.29E+01	1.29E+01		1.29E+01	1.29E+01
Y	14269637	Th-230	pCi/L		4.24E+01	4.24E+01		4.24E+01	4.24E+01
Y	N2608	Th-232	pCi/L		3.82E+01	3.82E+01		3.82E+01	3.82E+01
Y	13966295	U-234	pCi/L		5.46E+01	5.46E+01		5.46E+01	5.46E+01
Y	15117961	U-235+D	pCi/L		5.38E+01	5.38E+01		5.38E+01	5.38E+01
Y	24678828	U-238+D	pCi/L		4.43E+01	4.43E+01		4.43E+01	4.43E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-04.
Action value is less of hazard- and cancer-based value.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	7429905	Aluminum	mg/L	1.11E+04		1.11E+04	2.74E+03		2.74E+03	2.83E+03		2.83E+03	6.10E+03		6.10E+03
N	20859738	Aluminum Phosphide	mg/L	8.91E+00		8.91E+00	2.19E+00		2.19E+00	1.86E+00		1.86E+00	4.88E+00		4.88E+00
N	7664417	Ammonia	mg/L												
N	7773060	Ammonium Sulfamate	mg/L	4.46E+03		4.46E+03	1.10E+03		1.10E+03	9.31E+02		9.31E+02	2.44E+03		2.44E+03
Y	7440360	Antimony (metallic)	mg/L	8.91E-01		8.91E-01	2.19E-01		2.19E-01	2.74E-01		2.74E-01	4.88E-01		4.88E-01
N	1314609	Antimony Pentoxide	mg/L	1.11E+01		1.11E+01	2.74E+00		2.74E+00	2.33E+00		2.33E+00	6.10E+00		6.10E+00
N	304610	Antimony Potassium Tartrate	mg/L	2.01E+01		2.01E+01	4.94E+00		4.94E+00	4.19E+00		4.19E+00	1.10E+01		1.10E+01
N	1332816	Antimony Tetroxide	mg/L	8.91E+00		8.91E+00	2.19E+00		2.19E+00	1.86E+00		1.86E+00	4.88E+00		4.88E+00
N	1309644	Antimony Trioxide	mg/L	8.91E+00		8.91E+00	2.19E+00		2.19E+00	1.86E+00		1.86E+00	4.88E+00		4.88E+00
N		Arsenic Salts	mg/L												
Y	7440382	Arsenic, Inorganic	mg/L	1.37E+01	7.11E+01	1.37E+01	3.37E+00	7.00E-01	7.00E-01	2.08E+00	1.80E-01	1.80E-01	7.50E+00	4.09E-01	4.09E-01
N	7784421	Arsine	mg/L		3.47E+01	3.47E+01		3.41E-01	3.41E-01		1.29E-01	1.29E-01		1.99E-01	1.99E-01
N	1332214	Asbestos	mg/L												
N	7440393	Barium	mg/L	5.46E+02		5.46E+02	1.34E+02		1.34E+02	1.48E+02		1.48E+02	2.99E+02		2.99E+02
N	542621	Barium Cyanide	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	4.65E+02		4.65E+02	1.22E+03		1.22E+03
Y	7440417	Beryllium and compounds	mg/L	2.23E+00		2.23E+00	5.48E-01		5.48E-01	7.03E-01		7.03E-01	1.22E+00		1.22E+00
N	7440428	Boron And Borates Only	mg/L	9.02E+03		9.02E+03	2.22E+03		2.22E+03	8.40E+02		8.40E+02	4.94E+03		4.94E+03
N	7637072	Boron Trifluoride	mg/L												
Y	7440439	Cadmium (Water)	mg/L	5.57E-01		5.57E-01	1.37E-01		1.37E-01	1.76E-01		1.76E-01	3.05E-01		3.05E-01
N	592018	Calcium Cyanide	mg/L	8.91E+02		8.91E+02	2.19E+02		2.19E+02	1.86E+02		1.86E+02	4.88E+02		4.88E+02
N	16887006	Chloride	mg/L												
N	7782505	Chlorine	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	4.65E+02		4.65E+02	1.22E+03		1.22E+03
N	7758192	Chlorite (Sodium Salt)	mg/L	6.68E+02		6.68E+02	1.65E+02		1.65E+02	1.40E+02		1.40E+02	3.66E+02		3.66E+02
Y	16065831	Chromium (III) (Insoluble Salts)	mg/L	8.36E+02		8.36E+02	2.06E+02		2.06E+02	2.67E+02		2.67E+02	4.57E+02		4.57E+02
Y	7440473	Chromium (Total)	mg/L	8.36E+02		8.36E+02	2.06E+02		2.06E+02	2.67E+02		2.67E+02	4.57E+02		4.57E+02
N		Chromium Salts	mg/L												
Y	18540299	Chromium VI (chromic acid mists)	mg/L	6.68E+00		6.68E+00	1.65E+00		1.65E+00	2.05E+00		2.05E+00	3.66E+00		3.66E+00
N	7440484	Cobalt	mg/L	5.35E+03		5.35E+03	1.32E+03		1.32E+03	5.41E+02		5.41E+02	2.93E+03		2.93E+03
Y	7440508	Copper	mg/L	1.24E+03		1.24E+03	3.04E+02		3.04E+02	2.19E+02		2.19E+02	6.77E+02		6.77E+02
N	544923	Copper Cyanide	mg/L	1.11E+02		1.11E+02	2.74E+01		2.74E+01	2.33E+01		2.33E+01	6.10E+01		6.10E+01
N	57125	Cyanide (CN-)	mg/L	5.05E+01		5.05E+01	1.24E+01		1.24E+01	1.54E+01		1.54E+01	2.76E+01		2.76E+01
N	7782414	Fluorine (Soluble Fluoride)	mg/L	6.48E+03		6.48E+03	1.60E+03		1.60E+03	5.72E+02		5.72E+02	3.55E+03		3.55E+03
N	7647010	Hydrogen Chloride	mg/L												
N	74908	Hydrogen Cyanide	mg/L	1.58E+02		1.58E+02	3.89E+01		3.89E+01	4.28E+01		4.28E+01	8.64E+01		8.64E+01
N	7783064	Hydrogen Sulfide	mg/L	1.19E+01		1.19E+01	2.94E+00		2.94E+00	3.52E+00		3.52E+00	6.53E+00		6.53E+00
Y	7439896	Iron	mg/L	5.01E+03		5.01E+03	1.23E+03		1.23E+03	1.15E+03		1.15E+03	2.74E+03		2.74E+03
Y	7439921	Lead And Compounds	mg/L			3.00E-02			3.00E-02			3.00E-02			3.00E-02
N	7439932	Lithium	mg/L	1.78E+03		1.78E+03	4.39E+02		4.39E+02	1.80E+02		1.80E+02	9.75E+02		9.75E+02
N	7439954	Magnesium	mg/L												
Y	7439965	Manganese	mg/L	1.07E+02		1.07E+02	2.63E+01		2.63E+01	3.12E+01		3.12E+01	5.85E+01		5.85E+01
N	7487947	Mercuric Chloride	mg/L	2.34E+00		2.34E+00	5.76E-01		5.76E-01	6.35E-01		6.35E-01	1.28E+00		1.28E+00
N	1344485	Mercuric Sulfide	mg/L												
N	7439976	Mercury (elemental)	mg/L												
Y	7439976	Mercury, Inorganic Salts	mg/L	2.34E+00		2.34E+00	5.76E-01		5.76E-01	6.35E-01		6.35E-01	1.28E+00		1.28E+00
N	22967926	Methyl Mercury	mg/L	1.00E+01		1.00E+01	2.47E+00		2.47E+00	9.34E-01		9.34E-01	5.49E+00		5.49E+00
Y	7439987	*Molybdenum*	mg/L	2.12E+02		2.12E+02	5.21E+01		5.21E+01	3.35E+01		3.35E+01	1.16E+02		1.16E+02
N		Nickel Refinery Dust	mg/L												
Y	7440020	Nickel Soluble Salts	mg/L	6.02E+02		6.02E+02	1.48E+02		1.48E+02	1.12E+02		1.12E+02	3.29E+02		3.29E+02
N	12035722	Nickel Subsulfide	mg/L												
N	14797558	Nitrate	mg/L	8.91E+04		8.91E+04	2.19E+04		2.19E+04	1.21E+04		1.21E+04	4.88E+04		4.88E+04
N	10102439	Nitric Oxide	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	4.65E+02		4.65E+02	1.22E+03		1.22E+03
N	14797650	Nitrite	mg/L	5.57E+03		5.57E+03	1.37E+03		1.37E+03	7.59E+02		7.59E+02	3.05E+03		3.05E+03
N	10102440	Nitrogen Dioxide	mg/L	2.23E+04		2.23E+04	5.48E+03		5.48E+03	4.65E+03		4.65E+03	1.22E+04		1.22E+04
N	7803512	Phosphine	mg/L	6.68E+00		6.68E+00	1.65E+00		1.65E+00	1.40E+00		1.40E+00	3.66E+00		3.66E+00

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	7429905	Aluminum	mg/L	1.11E+03		1.11E+03	1.17E+03		1.17E+03	2.18E+03		2.18E+03	1.75E+03		1.75E+03
N	20859738	Aluminum Phosphide	mg/L	6.31E-01		6.31E-01	9.36E-01		9.36E-01	1.37E+00		1.37E+00	1.40E+00		1.40E+00
N	7664417	Ammonia	mg/L												
N	7773060	Ammonium Sulfamate	mg/L	3.16E+02		3.16E+02	4.68E+02		4.68E+02	6.85E+02		6.85E+02	6.99E+02		6.99E+02
Y	7440360	Antimony (metallic)	mg/L	1.32E-01		1.32E-01	9.36E-02		9.36E-02	2.22E-01		2.22E-01	1.40E-01		1.40E-01
N	1314609	Antimony Pentoxide	mg/L	7.89E-01		7.89E-01	1.17E+00		1.17E+00	1.71E+00		1.71E+00	1.75E+00		1.75E+00
N	304610	Antimony Potassium Tartrate	mg/L	1.42E+00		1.42E+00	2.10E+00		2.10E+00	3.08E+00		3.08E+00	3.15E+00		3.15E+00
N	1332816	Antimony Tetroxide	mg/L	6.31E-01		6.31E-01	9.36E-01		9.36E-01	1.37E+00		1.37E+00	1.40E+00		1.40E+00
N	1309644	Antimony Trioxide	mg/L	6.31E-01		6.31E-01	9.36E-01		9.36E-01	1.37E+00		1.37E+00	1.40E+00		1.40E+00
N		Arsenic Salts	mg/L												
Y	7440382	Arsenic, Inorganic	mg/L	6.03E-01	1.80E-01	1.80E-01	1.44E+00	4.09E-01	4.09E-01	1.46E+00	1.80E-01	1.80E-01	2.15E+00	4.09E-01	4.09E-01
N	7784421	Arsine	mg/L		1.29E-01	1.29E-01		1.99E-01	1.99E-01		1.29E-01	1.29E-01		1.99E-01	1.99E-01
N	1332214	Asbestos	mg/L												
N	7440393	Barium	mg/L	6.21E+01		6.21E+01	5.73E+01		5.73E+01	1.16E+02		1.16E+02	8.57E+01		8.57E+01
N	542621	Barium Cyanide	mg/L	1.58E+02		1.58E+02	2.34E+02		2.34E+02	3.42E+02		3.42E+02	3.50E+02		3.50E+02
Y	7440417	Beryllium and compounds	mg/L	3.52E-01		3.52E-01	2.34E-01		2.34E-01	5.75E-01		5.75E-01	3.50E-01		3.50E-01
N	7440428	Boron And Borates Only	mg/L	2.11E+02		2.11E+02	9.47E+02		9.47E+02	5.57E+02		5.57E+02	1.42E+03		1.42E+03
N	7637072	Boron Trifluoride	mg/L												
Y	7440439	Cadmium (Water)	mg/L	8.81E-02		8.81E-02	5.85E-02		5.85E-02	1.44E-01		1.44E-01	8.74E-02		8.74E-02
N	592018	Calcium Cyanide	mg/L	6.31E+01		6.31E+01	9.36E+01		9.36E+01	1.37E+02		1.37E+02	1.40E+02		1.40E+02
N	16887006	Chloride	mg/L												
N	7782505	Chlorine	mg/L	1.58E+02		1.58E+02	2.34E+02		2.34E+02	3.42E+02		3.42E+02	3.50E+02		3.50E+02
N	7758192	Chlorite (Sodium Salt)	mg/L	4.73E+01		4.73E+01	7.02E+01		7.02E+01	1.03E+02		1.03E+02	1.05E+02		1.05E+02
Y	16065831	Chromium (III) (Insoluble Salts)	mg/L	1.37E+02		1.37E+02	8.77E+01		8.77E+01	2.20E+02		2.20E+02	1.31E+02		1.31E+02
Y	7440473	Chromium (Total)	mg/L	1.37E+02		1.37E+02	8.77E+01		8.77E+01	2.20E+02		2.20E+02	1.31E+02		1.31E+02
N		Chromium Salts	mg/L												
Y	18540299	Chromium VI (chromic acid mists)	mg/L	9.93E-01		9.93E-01	7.02E-01		7.02E-01	1.67E+00		1.67E+00	1.05E+00		1.05E+00
N	7440484	Cobalt	mg/L	1.38E+02		1.38E+02	5.61E+02		5.61E+02	3.61E+02		3.61E+02	8.39E+02		8.39E+02
Y	7440508	Copper	mg/L	6.79E+01		6.79E+01	1.30E+02		1.30E+02	1.57E+02		1.57E+02	1.94E+02		1.94E+02
N	544923	Copper Cyanide	mg/L	7.89E+00		7.89E+00	1.17E+01		1.17E+01	1.71E+01		1.71E+01	1.75E+01		1.75E+01
N	57125	Cyanide (CN-)	mg/L	7.38E+00		7.38E+00	5.30E+00		5.30E+00	1.25E+01		1.25E+01	7.92E+00		7.92E+00
N	7782414	Fluorine (Soluble Fluoride)	mg/L	1.42E+02		1.42E+02	6.81E+02		6.81E+02	3.78E+02		3.78E+02	1.02E+03		1.02E+03
N	7647010	Hydrogen Chloride	mg/L												
N	74908	Hydrogen Cyanide	mg/L	1.79E+01		1.79E+01	1.66E+01		1.66E+01	3.35E+01		3.35E+01	2.48E+01		2.48E+01
N	7783064	Hydrogen Sulfide	mg/L	1.62E+00		1.62E+00	1.25E+00		1.25E+00	2.82E+00		2.82E+00	1.87E+00		1.87E+00
Y	7439896	Iron	mg/L	4.15E+02		4.15E+02	5.26E+02		5.26E+02	8.62E+02		8.62E+02	7.87E+02		7.87E+02
Y	7439921	Lead And Compounds	mg/L			3.00E-02			3.00E-02			3.00E-02			3.00E-02
N	7439932	Lithium	mg/L	4.60E+01		4.60E+01	1.87E+02		1.87E+02	1.20E+02		1.20E+02	2.80E+02		2.80E+02
N	7439954	Magnesium	mg/L												
Y	7439965	Manganese	mg/L	1.42E+01		1.42E+01	1.12E+01		1.12E+01	2.49E+01		2.49E+01	1.68E+01		1.68E+01
N	7487947	Mercuric Chloride	mg/L	2.66E-01		2.66E-01	2.46E-01		2.46E-01	4.97E-01		4.97E-01	3.67E-01		3.67E-01
N	1344485	Mercuric Sulfide	mg/L												
N	7439976	Mercury (elemental)	mg/L												
Y	7439976	Mercury, Inorganic Salts	mg/L	2.66E-01		2.66E-01	2.46E-01		2.46E-01	4.97E-01		4.97E-01	3.67E-01		3.67E-01
N	22967926	Methyl Mercury	mg/L	2.34E-01		2.34E-01	1.05E+00		1.05E+00	6.19E-01		6.19E-01	1.57E+00		1.57E+00
Y	7439987	Molybdenum	mg/L	9.84E+00		9.84E+00	2.22E+01		2.22E+01	2.35E+01		2.35E+01	3.32E+01		3.32E+01
N		Nickel Refinery Dust	mg/L												
Y	7440020	Nickel Soluble Salts	mg/L	3.54E+01		3.54E+01	6.31E+01		6.31E+01	8.05E+01		8.05E+01	9.44E+01		9.44E+01
N	12035722	Nickel Subsulfide	mg/L												
N	14797558	Nitrate	mg/L	3.37E+03		3.37E+03	9.36E+03		9.36E+03	8.36E+03		8.36E+03	1.40E+04		1.40E+04
N	10102439	Nitric Oxide	mg/L	1.58E+02		1.58E+02	2.34E+02		2.34E+02	3.42E+02		3.42E+02	3.50E+02		3.50E+02
N	14797650	Nitrite	mg/L	2.11E+02		2.11E+02	5.85E+02		5.85E+02	5.23E+02		5.23E+02	8.74E+02		8.74E+02
N	10102440	Nitrogen Dioxide	mg/L	1.58E+03		1.58E+03	2.34E+03		2.34E+03	3.42E+03		3.42E+03	3.50E+03		3.50E+03
N	7803512	Phosphine	mg/L	4.73E-01		4.73E-01	7.02E-01		7.02E-01	1.03E+00		1.03E+00	1.05E+00		1.05E+00

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action valu less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	7664382	Phosphoric Acid	mg/L												
N	151508	Potassium Cyanide	mg/L	2.18E+03		2.18E+03	5.38E+02		5.38E+02	3.40E+02		3.40E+02	1.20E+03		1.20E+03
N	506616	Potassium Silver Cyanide	mg/L	4.46E+03		4.46E+03	1.10E+03		1.10E+03	9.31E+02		9.31E+02	2.44E+03		2.44E+03
Y	7782492	Selenium	mg/L	2.45E+02		2.45E+02	6.03E+01		6.03E+01	3.59E+01		3.59E+01	1.34E+02		1.34E+02
N	7446346	Selenium Sulfide	mg/L												
Y	7440224	Silver	mg/L	1.00E+02		1.00E+02	2.47E+01		2.47E+01	2.17E+01		2.17E+01	5.49E+01		5.49E+01
N	506649	Silver Cyanide	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	4.65E+02		4.65E+02	1.22E+03		1.22E+03
N	7440235	Sodium	mg/L												
N	26628228	Sodium Azide	mg/L	8.91E+01		8.91E+01	2.19E+01		2.19E+01	1.86E+01		1.86E+01	4.88E+01		4.88E+01
N	143339	Sodium Cyanide	mg/L	3.57E+03		3.57E+03	8.78E+02		8.78E+02	3.61E+02		3.61E+02	1.95E+03		1.95E+03
N	13718268	Sodium Metavanadate	mg/L	2.23E+01		2.23E+01	5.48E+00		5.48E+00	4.65E+00		4.65E+00	1.22E+01		1.22E+01
N	7440246	Strontium, Stable	mg/L	1.34E+04		1.34E+04	3.29E+03		3.29E+03	2.79E+03		2.79E+03	7.32E+03		7.32E+03
N	14808798	Sulfate	mg/L												
N	10102451	Thallium (I) Nitrate	mg/L	2.01E+00		2.01E+00	4.94E-01		4.94E-01	4.19E-01		4.19E-01	1.10E+00		1.10E+00
N	7440280	Thallium (Soluble Salts)	mg/L												
Y	7791120	Thallium Chloride	mg/L	1.78E+00		1.78E+00	4.39E-01		4.39E-01	3.72E-01		3.72E-01	9.75E-01		9.75E-01
N	12039520	Thallium Selenite	mg/L	2.01E+00		2.01E+00	4.94E-01		4.94E-01	4.19E-01		4.19E-01	1.10E+00		1.10E+00
N	7446186	Thallium Sulfate	mg/L	1.78E+00		1.78E+00	4.39E-01		4.39E-01	3.72E-01		3.72E-01	9.75E-01		9.75E-01
N	7440291	Thorium	mg/L												
N	7440315	Tin	mg/L	6.68E+03		6.68E+03	1.65E+03		1.65E+03	1.70E+03		1.70E+03	3.66E+03		3.66E+03
N	7440326	Titanium	mg/L												
Y	7440611	Uranium (Soluble Salts)	mg/L	5.68E+01		5.68E+01	1.40E+01		1.40E+01	5.51E+00		5.51E+00	3.11E+01		3.11E+01
N	1314621	Vanadium Pentoxide	mg/L	2.01E+02		2.01E+02	4.94E+01		4.94E+01	4.19E+01		4.19E+01	1.10E+02		1.10E+02
N	36907423	Vanadium Sulfate	mg/L	4.46E+02		4.46E+02	1.10E+02		1.10E+02	9.31E+01		9.31E+01	2.44E+02		2.44E+02
Y	7440622	Vanadium, Metallic	mg/L	7.80E+00		7.80E+00	1.92E+00		1.92E+00	2.46E+00		2.46E+00	4.27E+00		4.27E+00
N	27774136	Vanadyl Sulfate	mg/L	4.46E+02		4.46E+02	1.10E+02		1.10E+02	9.31E+01		9.31E+01	2.44E+02		2.44E+02
N	7723140	White Phosphorus	mg/L	4.46E-01		4.46E-01	1.10E-01		1.10E-01	9.31E-02		9.31E-02	2.44E-01		2.44E-01
Y	7440666	Zinc (Metallic)	mg/L	6.68E+03		6.68E+03	1.65E+03		1.65E+03	1.40E+03		1.40E+03	3.66E+03		3.66E+03
N	557211	Zinc Cyanide	mg/L	1.11E+03		1.11E+03	2.74E+02		2.74E+02	2.33E+02		2.33E+02	6.10E+02		6.10E+02
N	1314847	Zinc Phosphide	mg/L	6.68E+00		6.68E+00	1.65E+00		1.65E+00	1.40E+00		1.40E+00	3.66E+00		3.66E+00
N	7440677	Zirconium	mg/L												
N	1596845	ALAR	mg/L	4.92E+05		4.92E+05	1.21E+05		1.21E+05	1.94E+03		1.94E+03	2.69E+05		2.69E+05
Y	83329	Acenaphthene	mg/L	8.29E+00		8.29E+00	2.04E+00		2.04E+00	2.68E+00		2.68E+00	4.54E+00		4.54E+00
Y	208968	Acenaphthylene	mg/L												
N	30560191	Acephate	mg/L	6.19E+03	4.15E+05	6.19E+03	1.52E+03	4.09E+03	1.52E+03	5.11E+01	4.90E+01	4.90E+01	3.39E+03	2.39E+03	2.39E+03
N	75070	Acetaldehyde	mg/L												
N	34256821	Acetochlor	mg/L	1.83E+02		1.83E+02	4.50E+01		4.50E+01	4.83E+01		4.83E+01	9.99E+01		9.99E+01
N	67641	Acetone	mg/L	1.62E+04		1.62E+04	3.99E+03		3.99E+03	1.05E+03		1.05E+03	8.88E+03		8.88E+03
N	75865	Acetone Cyanohydrin	mg/L	8.10E+01		8.10E+01	1.99E+01		1.99E+01	7.49E+00		7.49E+00	4.43E+01		4.43E+01
N	75058	Acetonitrile	mg/L	8.77E+02		8.77E+02	2.16E+02		2.16E+02	6.16E+01		6.16E+01	4.80E+02		4.80E+02
N	98862	Acetophenone	mg/L	1.56E+03		1.56E+03	3.85E+02		3.85E+02	3.65E+02		3.65E+02	8.56E+02		8.56E+02
N	107028	Acrolein	mg/L	2.41E+03		2.41E+03	5.93E+02		5.93E+02	1.96E+02		1.96E+02	1.32E+03		1.32E+03
N	79061	Acrylamide	mg/L	4.64E+01	1.20E+02	4.64E+01	1.14E+01	1.18E+00	1.18E+00	2.23E+00	8.61E-02	8.61E-02	2.54E+01	6.92E-01	6.92E-01
N	79107	Acrylic Acid	mg/L	3.09E+04		3.09E+04	7.62E+03		7.62E+03	3.96E+03		3.96E+03	1.69E+04		1.69E+04
Y	107131	Acrylonitrile	mg/L	6.37E+01	2.75E+02	6.37E+01	1.57E+01	2.71E+00	2.71E+00	8.01E+00	5.61E-01	5.61E-01	3.48E+01	1.58E+00	1.58E+00
N	15972608	Alachlor	mg/L	1.14E+02	3.32E+02	1.14E+02	2.80E+01	3.26E+00	3.26E+00	2.88E+01	1.58E+00	1.58E+00	6.22E+01	1.91E+00	1.91E+00
N	116063	Aldicarb	mg/L	6.63E+01		6.63E+01	1.63E+01		1.63E+01	8.14E+00		8.14E+00	3.63E+01		3.63E+01
N	1646884	Aldicarb Sulfone	mg/L	1.69E+03		1.69E+03	4.16E+02		4.16E+02	1.28E+01		1.28E+01	9.24E+02		9.24E+02
N	309002	Aldrin	mg/L	1.04E+00	4.78E+00	1.04E+00	2.57E-01	4.71E-02	4.71E-02	1.82E-01	1.42E-02	1.42E-02	5.72E-01	2.75E-02	2.75E-02
N	74223646	Ally	mg/L	1.00E+06		1.00E+06	3.73E+05		3.73E+05	3.25E+03		3.25E+03	8.28E+05		8.28E+05
N	107186	Allyl Alcohol	mg/L	4.72E+02		4.72E+02	1.16E+02		1.16E+02	4.59E+01		4.59E+01	2.58E+02		2.58E+02
N	107051	Allyl Chloride	mg/L	6.37E+02		6.37E+02	1.57E+02		1.57E+02	1.57E+02		1.57E+02	3.48E+02		3.48E+02
N	67485294	Amdro	mg/L							3.93E+00		3.93E+00			
N	834128	Ametryn	mg/L	6.87E+02		6.87E+02	1.69E+02		1.69E+02	7.71E+01		7.71E+01	3.76E+02		3.76E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	7664382	Phosphoric Acid	mg/L												
N	151508	Potassium Cyanide	mg/L	9.93E+01		9.93E+01	2.29E+02		2.29E+02	2.38E+02		2.38E+02	3.43E+02		3.43E+02
N	506616	Potassium Silver Cyanide	mg/L	3.16E+02		3.16E+02	4.68E+02		4.68E+02	6.85E+02		6.85E+02	6.99E+02		6.99E+02
Y	7782492	Selenium	mg/L	1.02E+01		1.02E+01	2.57E+01		2.57E+01	2.49E+01		2.49E+01	3.85E+01		3.85E+01
N	7446346	Selenium Sulfide	mg/L												
Y	7440224	Silver	mg/L	7.54E+00		7.54E+00	1.05E+01		1.05E+01	1.61E+01		1.61E+01	1.57E+01		1.57E+01
N	506649	Silver Cyanide	mg/L	1.58E+02		1.58E+02	2.34E+02		2.34E+02	3.42E+02		3.42E+02	3.50E+02		3.50E+02
N	7440235	Sodium	mg/L												
N	26628228	Sodium Azide	mg/L	6.31E+00		6.31E+00	9.36E+00		9.36E+00	1.37E+01		1.37E+01	1.40E+01		1.40E+01
N	143339	Sodium Cyanide	mg/L	9.20E+01		9.20E+01	3.74E+02		3.74E+02	2.41E+02		2.41E+02	5.59E+02		5.59E+02
N	13718268	Sodium Metavanadate	mg/L	1.58E+00		1.58E+00	2.34E+00		2.34E+00	3.42E+00		3.42E+00	3.50E+00		3.50E+00
N	7440246	Strontium, Stable	mg/L	9.47E+02		9.47E+02	1.40E+03		1.40E+03	2.05E+03		2.05E+03	2.10E+03		2.10E+03
N	14808798	Sulfate	mg/L												
N	10102451	Thallium (I) Nitrate	mg/L	1.42E-01		1.42E-01	2.10E-01		2.10E-01	3.08E-01		3.08E-01	3.15E-01		3.15E-01
N	7440280	Thallium (Soluble Salts)	mg/L												
Y	7791120	Thallium Chloride	mg/L	1.26E-01		1.26E-01	1.87E-01		1.87E-01	2.74E-01		2.74E-01	2.80E-01		2.80E-01
N	12039520	Thallium Selenite	mg/L	1.42E-01		1.42E-01	2.10E-01		2.10E-01	3.08E-01		3.08E-01	3.15E-01		3.15E-01
N	7446186	Thallium Sulfate	mg/L	1.26E-01		1.26E-01	1.87E-01		1.87E-01	2.74E-01		2.74E-01	2.80E-01		2.80E-01
N	7440291	Thorium	mg/L												
N	7440315	Tin	mg/L	6.67E+02		6.67E+02	7.02E+02		7.02E+02	1.31E+03		1.31E+03	1.05E+03		1.05E+03
N	7440326	Titanium	mg/L												
Y	7440611	Uranium (Soluble Salts)	mg/L	1.39E+00		1.39E+00	5.96E+00		5.96E+00	3.67E+00		3.67E+00	8.91E+00		8.91E+00
N	1314621	Vanadium Pentoxide	mg/L	1.42E+01		1.42E+01	2.10E+01		2.10E+01	3.08E+01		3.08E+01	3.15E+01		3.15E+01
N	36907423	Vanadium Sulfate	mg/L	3.16E+01		3.16E+01	4.68E+01		4.68E+01	6.85E+01		6.85E+01	6.99E+01		6.99E+01
Y	7440622	Vanadium, Metallic	mg/L	1.23E+00		1.23E+00	8.19E-01		8.19E-01	2.01E+00		2.01E+00	1.22E+00		1.22E+00
N	27774136	Vanadyl Sulfate	mg/L	3.16E+01		3.16E+01	4.68E+01		4.68E+01	6.85E+01		6.85E+01	6.99E+01		6.99E+01
N	7723140	White Phosphorus	mg/L	3.16E-02		3.16E-02	4.68E-02		4.68E-02	6.85E-02		6.85E-02	6.99E-02		6.99E-02
Y	7440666	Zinc (Metallic)	mg/L	4.73E+02		4.73E+02	7.02E+02		7.02E+02	1.03E+03		1.03E+03	1.05E+03		1.05E+03
N	557211	Zinc Cyanide	mg/L	7.89E+01		7.89E+01	1.17E+02		1.17E+02	1.71E+02		1.71E+02	1.75E+02		1.75E+02
N	1314847	Zinc Phosphide	mg/L	4.73E-01		4.73E-01	7.02E-01		7.02E-01	1.03E+00		1.03E+00	1.05E+00		1.05E+00
N	7440677	Zirconium	mg/L												
N	1596845	ALAR	mg/L	4.05E+02		4.05E+02	5.16E+04		5.16E+04	1.20E+03		1.20E+03	7.71E+04		7.71E+04
Y	83329	Acenaphthene	mg/L	1.39E+00		1.39E+00	8.70E-01		8.70E-01	2.21E+00		2.21E+00	1.30E+00		1.30E+00
Y	208968	Acenaphthylene	mg/L												
N	30560191	Acephate	mg/L	1.07E+01	4.90E+01	1.07E+01	6.50E+02	2.39E+03	6.50E+02	3.16E+01	4.90E+01	3.16E+01	9.71E+02	2.39E+03	9.71E+02
N	75070	Acetaldehyde	mg/L												
N	34256821	Acetochlor	mg/L	1.97E+01		1.97E+01	1.92E+01		1.92E+01	3.75E+01		3.75E+01	2.87E+01		2.87E+01
N	67641	Acetone	mg/L	2.47E+02		2.47E+02	1.70E+03		1.70E+03	6.79E+02		6.79E+02	2.55E+03		2.55E+03
N	75865	Acetone Cyanohydrin	mg/L	1.87E+00		1.87E+00	8.50E+00		8.50E+00	4.96E+00		4.96E+00	1.27E+01		1.27E+01
N	75058	Acetonitrile	mg/L	1.47E+01		1.47E+01	9.20E+01		9.20E+01	4.00E+01		4.00E+01	1.38E+02		1.38E+02
N	98862	Acetophenone	mg/L	1.34E+02		1.34E+02	1.64E+02		1.64E+02	2.75E+02		2.75E+02	2.45E+02		2.45E+02
N	107028	Acrolein	mg/L	4.79E+01		4.79E+01	2.53E+02		2.53E+02	1.29E+02		1.29E+02	3.78E+02		3.78E+02
N	79061	Acrylamide	mg/L	5.08E-01	8.61E-02	8.61E-02	4.87E+00	6.92E-01	6.92E-01	1.43E+00	8.61E-02	8.61E-02	7.28E+00	6.92E-01	6.92E-01
N	79107	Acrylic Acid	mg/L	1.08E+03		1.08E+03	3.25E+03		3.25E+03	2.71E+03		2.71E+03	4.86E+03		4.86E+03
Y	107131	Acrylonitrile	mg/L	2.17E+00	5.61E-01	5.61E-01	6.68E+00	1.58E+00	1.58E+00	5.47E+00	5.61E-01	5.61E-01	9.99E+00	1.58E+00	1.58E+00
N	15972608	Alachlor	mg/L	1.13E+01	1.58E+00	1.58E+00	1.19E+01	1.91E+00	1.91E+00	2.21E+01	1.58E+00	1.58E+00	1.78E+01	1.91E+00	1.91E+00
N	116063	Aldicarb	mg/L	2.19E+00		2.19E+00	6.96E+00		6.96E+00	5.54E+00		5.54E+00	1.04E+01		1.04E+01
N	1646884	Aldicarb Sulfone	mg/L	2.69E+00		2.69E+00	1.77E+02		1.77E+02	7.91E+00		7.91E+00	2.65E+02		2.65E+02
N	309002	Aldrin	mg/L	5.57E-02	1.42E-02	1.42E-02	1.10E-01	2.75E-02	2.75E-02	1.30E-01	1.42E-02	1.42E-02	1.64E-01	2.75E-02	2.75E-02
N	74223646	Ally	mg/L	6.77E+02		6.77E+02	1.59E+05		1.59E+05	2.00E+03		2.00E+03	2.38E+05		2.38E+05
N	107186	Allyl Alcohol	mg/L	1.16E+01		1.16E+01	4.96E+01		4.96E+01	3.05E+01		3.05E+01	7.41E+01		7.41E+01
N	107051	Allyl Chloride	mg/L	6.00E+01		6.00E+01	6.68E+01		6.68E+01	1.20E+02		1.20E+02	9.99E+01		9.99E+01
N	67485294	Amdro	mg/L	8.14E-01		8.14E-01				2.41E+00		2.41E+00			
N	834128	Ametryn	mg/L	2.02E+01		2.02E+01	7.21E+01		7.21E+01	5.20E+01		5.20E+01	1.08E+02		1.08E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value ' less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	591275	Aminophenol, m-	mg/L	6.72E+03		6.72E+03	1.65E+03		1.65E+03	6.45E+02		6.45E+02	3.68E+03		3.68E+03
N	504245	Aminopyridine, 4-	mg/L	1.39E+00		1.39E+00	3.43E-01		3.43E-01	1.66E-01		1.66E-01	7.62E-01		7.62E-01
N	33089611	Amitraz	mg/L	5.57E-01		5.57E-01	1.37E-01		1.37E-01	1.79E-01		1.79E-01	3.05E-01		3.05E-01
N	62533	Aniline	mg/L	9.51E+00	5.56E+02	9.51E+00	2.34E+00	5.48E+00	2.34E+00	2.98E+00	3.58E+00	2.98E+00	5.20E+00	3.20E+00	3.20E+00
Y	120127	Anthracene	mg/L	1.15E+02		1.15E+02	2.84E+01		2.84E+01	3.71E+01		3.71E+01	6.32E+01		6.32E+01
N	74115245	Apollo	mg/L	1.68E+02		1.68E+02	4.15E+01		4.15E+01	4.13E+01		4.13E+01	9.22E+01		9.22E+01
N	140578	Aramite	mg/L	6.05E+01	1.13E+02	6.05E+01	1.49E+01	1.11E+00	1.11E+00	1.90E+01	7.30E-01	7.30E-01	3.31E+01	6.50E-01	6.50E-01
Y	12674112	Aroclor 1016	mg/L	8.88E-03	7.40E-01	8.88E-03	2.19E-03	7.29E-03	2.19E-03	2.87E-03	4.97E-03	2.87E-03	4.86E-03	4.26E-03	4.26E-03
Y	11104282	Aroclor 1221	mg/L		6.36E+00	6.36E+00		6.26E-02	6.26E-02		4.13E-02	4.13E-02		3.66E-02	3.66E-02
Y	11141165	Aroclor 1232	mg/L		4.18E+01	4.18E+01		4.11E-01	4.11E-01		2.24E-01	2.24E-01		2.40E-01	2.40E-01
Y	53469219	Aroclor 1242	mg/L		1.58E+01	1.58E+01		1.56E-01	1.56E-01		9.71E-02	9.71E-02		9.09E-02	9.09E-02
Y	12672296	Aroclor 1248	mg/L		1.58E+00	1.58E+00		1.56E-02	1.56E-02		1.06E-02	1.06E-02		9.09E-03	9.09E-03
Y	11097691	Aroclor 1254	mg/L	5.73E-03	1.67E+00	5.73E-03	1.41E-03	1.65E-02	1.41E-03	1.84E-03	1.12E-02	1.84E-03	3.14E-03	9.61E-03	3.14E-03
Y	11096825	Aroclor 1260	mg/L		5.32E-01	5.32E-01		5.24E-03	5.24E-03		3.58E-03	3.58E-03		3.06E-03	3.06E-03
N	76578148	Assure	mg/L	4.56E+01		4.56E+01	1.12E+01		1.12E+01	1.31E+01		1.31E+01	2.49E+01		2.49E+01
N	3337711	Asulam	mg/L	5.80E+04		5.80E+04	1.43E+04		1.43E+04	6.33E+02		6.33E+02	3.18E+04		3.18E+04
N	1912249	Atrazine	mg/L	2.57E+02	7.70E+01	7.70E+01	6.31E+01	7.59E-01	7.59E-01	7.04E+01	4.11E-01	4.11E-01	1.40E+02	4.43E-01	4.43E-01
N	65195553	Avermectin B1	mg/L							5.24E+00		5.24E+00			
N	103333	Azobenzene	mg/L		1.60E+01	1.60E+01		1.57E-01	1.57E-01		1.05E-01	1.05E-01		9.18E-02	9.18E-02
N	114261	Baygon	mg/L	1.59E+02		1.59E+02	3.92E+01		3.92E+01	2.60E+01		2.60E+01	8.71E+01		8.71E+01
N	43121433	Bayleton	mg/L	1.29E+03		1.29E+03	3.16E+02		3.16E+02	2.02E+02		2.02E+02	7.03E+02		7.03E+02
N	68359375	Baythroid	mg/L	1.93E+01		1.93E+01	4.76E+00		4.76E+00	6.15E+00		6.15E+00	1.06E+01		1.06E+01
N	1861401	Benefin	mg/L	5.76E+02		5.76E+02	1.42E+02		1.42E+02	1.78E+02		1.78E+02	3.15E+02		3.15E+02
N	17804352	Benomyl	mg/L	1.99E+03		1.99E+03	4.90E+02		4.90E+02	3.25E+02		3.25E+02	1.09E+03		1.09E+03
N	25057890	Bentazon	mg/L	4.28E+03		4.28E+03	1.05E+03		1.05E+03	3.06E+02		3.06E+02	2.34E+03		2.34E+03
Y	56553	Benz[a]anthracene	mg/L		1.36E-01	1.36E-01		1.34E-03	1.34E-03		9.18E-04	9.18E-04		7.84E-04	7.84E-04
N	100527	Benzaldehyde	mg/L	4.95E+02		4.95E+02	1.22E+02		1.22E+02	1.43E+02		1.43E+02	2.71E+02		2.71E+02
Y	71432	Benzene	mg/L	1.54E+01	2.18E+02	1.54E+01	3.80E+00	2.15E+00	2.15E+00	4.44E+00	1.24E+00	1.24E+00	8.45E+00	1.26E+00	1.26E+00
N	29224553	Benzene, Ethyldimethyl	mg/L												
N	25550145	Benzene, Ethylmethyl	mg/L												
N	768003	Benzene, Methylpropenyl	mg/L												
N	28729546	Benzene, Methylpropyl	mg/L												
N	25551137	Benzene, Trimethyl	mg/L												
N	108985	Benzenethiol	mg/L	2.32E-02		2.32E-02	5.71E-03		5.71E-03	7.11E-03		7.11E-03	1.27E-02		1.27E-02
N	92875	Benzidine	mg/L	2.06E+02	6.96E-01	6.96E-01	5.06E+01	6.85E-03	6.85E-03	2.47E+01	1.35E-03	1.35E-03	1.13E+02	4.00E-03	4.00E-03
Y	50328	Benzo[a]pyrene	mg/L		9.20E-03	9.20E-03		9.06E-05	9.06E-05		6.20E-05	6.20E-05		5.29E-05	5.29E-05
Y	205992	Benzo[b]fluoranthene	mg/L		9.20E-02	9.20E-02		9.06E-04	9.06E-04		6.20E-04	6.20E-04		5.29E-04	5.29E-04
N	191242	Benzo[g,h,i]perylene	mg/L												
Y	207089	Benzo[k]fluoranthene	mg/L		1.84E+00	1.84E+00		1.81E-02	1.81E-02		1.24E-02	1.24E-02		1.06E-02	1.06E-02
N	65850	Benzoic Acid	mg/L	6.10E+04		6.10E+04	1.50E+04		1.50E+04	1.44E+04		1.44E+04	3.34E+04		3.34E+04
N	98077	Benzotrichloride	mg/L		6.67E-01	6.67E-01		6.56E-03	6.56E-03		3.96E-03	3.96E-03		3.83E-03	3.83E-03
N	100516	Benzyl Alcohol	mg/L	3.68E+03		3.68E+03	9.05E+02		9.05E+02	9.14E+02		9.14E+02	2.01E+03		2.01E+03
N	100447	Benzyl Chloride	mg/L		8.74E+01	8.74E+01		8.60E-01	8.60E-01		4.79E-01	4.79E-01		5.03E-01	5.03E-01
N	141662	Bidrin	mg/L	2.53E+02		2.53E+02	6.23E+01		6.23E+01	1.29E+00		1.29E+00	1.39E+02		1.39E+02
N	82657043	Biphenthrin	mg/L							1.97E+02		1.97E+02			
N	92524	Biphenyl, 1,1'-	mg/L	1.55E+01		1.55E+01	3.81E+00		3.81E+00	4.98E+00		4.98E+00	8.47E+00		8.47E+00
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/L		1.55E+02	1.55E+02		1.52E+00	1.52E+00		8.93E-01	8.93E-01		8.90E-01	8.90E-01
N	111911	Bis(2-chloroethoxy)methane	mg/L												
N	111444	Bis(2-chloroethyl)ether	mg/L		5.63E+01	5.63E+01		5.54E-01	5.54E-01		1.93E-01	1.93E-01		3.24E-01	3.24E-01
N	39638329	Bis(2-chloroisopropyl)ether	mg/L	4.20E+02	3.50E+02	3.50E+02	1.03E+02	3.45E+00	3.45E+00	1.08E+02	1.71E+00	1.71E+00	2.30E+02	2.02E+00	2.02E+00
N	117817	Bis(2-ethylhexyl)phthalate	mg/L	1.84E+01	1.53E+02	1.84E+01	4.53E+00	1.51E+00	1.51E+00	5.83E+00	1.00E+00	1.00E+00	1.01E+01	8.82E-01	8.82E-01
N	542881	Bis(chloromethyl)ether	mg/L		1.33E+00	1.33E+00		1.31E-02	1.31E-02		1.62E-03	1.62E-03		7.66E-03	7.66E-03
N	80057	Bisphenol A	mg/L	9.95E+01		9.95E+01	2.45E+01		2.45E+01	3.07E+01		3.07E+01	5.44E+01		5.44E+01
N	108861	Bromobenzene	mg/L							2.62E+02		2.62E+02			

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	591275	Aminophenol, m-	mg/L	1.63E+02		1.63E+02	7.06E+02		7.06E+02	4.29E+02		4.29E+02	1.05E+03		1.05E+03
N	504245	Aminopyridine, 4-	mg/L	4.41E-02		4.41E-02	1.46E-01		1.46E-01	1.12E-01		1.12E-01	2.19E-01		2.19E-01
N	33089611	Amitraz	mg/L	9.29E-02		9.29E-02	5.85E-02		5.85E-02	1.48E-01		1.48E-01	8.74E-02		8.74E-02
N	62533	Aniline	mg/L	1.48E+00	3.58E+00	1.48E+00	9.98E-01	3.20E+00	9.98E-01	2.43E+00	3.58E+00	2.43E+00	1.49E+00	3.20E+00	1.49E+00
Y	120127	Anthracene	mg/L	1.91E+01		1.91E+01	1.21E+01		1.21E+01	3.05E+01		3.05E+01	1.81E+01		1.81E+01
N	74115245	Apollo	mg/L	1.58E+01		1.58E+01	1.77E+01		1.77E+01	3.15E+01		3.15E+01	2.64E+01		2.64E+01
N	140578	Aramite	mg/L	9.52E+00	7.30E-01	7.30E-01	6.36E+00	6.50E-01	6.50E-01	1.56E+01	7.30E-01	7.30E-01	9.50E+00	6.50E-01	6.50E-01
Y	12674112	Aroclor 1016	mg/L	1.49E-03	4.97E-03	1.49E-03	9.33E-04	4.26E-03	9.33E-04	2.37E-03	4.97E-03	2.37E-03	1.39E-03	4.26E-03	1.39E-03
Y	11104282	Aroclor 1221	mg/L		4.13E-02	4.13E-02		3.66E-02	3.66E-02		4.13E-02	4.13E-02		3.66E-02	3.66E-02
Y	11141165	Aroclor 1232	mg/L		2.24E-01	2.24E-01		2.40E-01	2.40E-01		2.24E-01	2.24E-01		2.40E-01	2.40E-01
Y	53469219	Aroclor 1242	mg/L		9.71E-02	9.71E-02		9.09E-02	9.09E-02		9.71E-02	9.71E-02		9.09E-02	9.09E-02
Y	12672296	Aroclor 1248	mg/L		1.06E-02	1.06E-02		9.09E-03	9.09E-03		1.06E-02	1.06E-02		9.09E-03	9.09E-03
Y	11097691	Aroclor 1254	mg/L	9.52E-04	1.12E-02	9.52E-04	6.01E-04	9.61E-03	6.01E-04	1.52E-03	1.12E-02	1.52E-03	8.99E-04	9.61E-03	8.99E-04
Y	11096825	Aroclor 1260	mg/L		3.58E-03	3.58E-03		3.06E-03	3.06E-03		3.58E-03	3.58E-03		3.06E-03	3.06E-03
N	76578148	Assure	mg/L	5.86E+00		5.86E+00	4.78E+00		4.78E+00	1.04E+01		1.04E+01	7.15E+00		7.15E+00
N	3337711	Asulam	mg/L	1.34E+02		1.34E+02	6.09E+03		6.09E+03	3.92E+02		3.92E+02	9.10E+03		9.10E+03
N	1912249	Atrazine	mg/L	2.98E+01	4.11E-01	4.11E-01	2.69E+01	4.43E-01	4.43E-01	5.52E+01	4.11E-01	4.11E-01	4.03E+01	4.43E-01	4.43E-01
N	65195553	Avermectin B1	mg/L	1.09E+00		1.09E+00				3.22E+00		3.22E+00			
N	103333	Azobenzene	mg/L		1.05E-01	1.05E-01		9.18E-02	9.18E-02		1.05E-01	1.05E-01		9.18E-02	9.18E-02
N	114261	Baygon	mg/L	7.74E+00		7.74E+00	1.67E+01		1.67E+01	1.83E+01		1.83E+01	2.50E+01		2.50E+01
N	43121433	Bayleton	mg/L	5.92E+01		5.92E+01	1.35E+02		1.35E+02	1.42E+02		1.42E+02	2.02E+02		2.02E+02
N	68359375	Baythroid	mg/L	3.12E+00		3.12E+00	2.03E+00		2.03E+00	5.05E+00		5.05E+00	3.03E+00		3.03E+00
N	1861401	Benefin	mg/L	8.71E+01		8.71E+01	6.05E+01		6.05E+01	1.45E+02		1.45E+02	9.04E+01		9.04E+01
N	17804352	Benomyl	mg/L	9.67E+01		9.67E+01	2.09E+02		2.09E+02	2.29E+02		2.29E+02	3.12E+02		3.12E+02
N	25057890	Bentazon	mg/L	7.32E+01		7.32E+01	4.50E+02		4.50E+02	1.99E+02		1.99E+02	6.72E+02		6.72E+02
Y	56553	Benz[a]anthracene	mg/L		9.18E-04	9.18E-04		7.84E-04	7.84E-04		9.18E-04	9.18E-04		7.84E-04	7.84E-04
N	100527	Benzaldehyde	mg/L	6.40E+01		6.40E+01	5.20E+01		5.20E+01	1.14E+02		1.14E+02	7.77E+01		7.77E+01
Y	71432	Benzene	mg/L	1.98E+00	1.24E+00	1.24E+00	1.62E+00	1.26E+00	1.26E+00	3.53E+00	1.24E+00	1.24E+00	2.42E+00	1.26E+00	1.26E+00
N	29224553	Benzene, Ethyldimethyl	mg/L												
N	25550145	Benzene, Ethylmethyl	mg/L												
N	768003	Benzene, Methylpropenyl	mg/L												
N	28729546	Benzene, Methylpropyl	mg/L												
N	25551137	Benzene, Trimethyl	mg/L												
N	108985	Benzenethiol	mg/L	3.43E-03		3.43E-03	2.44E-03		2.44E-03	5.77E-03		5.77E-03	3.64E-03		3.64E-03
N	92875	Benzidine	mg/L	6.60E+00	1.35E-03	1.35E-03	2.16E+01	4.00E-03	4.00E-03	1.68E+01	1.35E-03	1.35E-03	3.23E+01	4.00E-03	4.00E-03
Y	50328	Benzo[a]pyrene	mg/L		6.20E-05	6.20E-05		5.29E-05	5.29E-05		6.20E-05	6.20E-05		5.29E-05	5.29E-05
Y	205992	Benzo[b]fluoranthene	mg/L		6.20E-04	6.20E-04		5.29E-04	5.29E-04		6.20E-04	6.20E-04		5.29E-04	5.29E-04
N	191242	Benzo[g,h,i]perylene	mg/L												
Y	207089	Benzo[k]fluoranthene	mg/L		1.24E-02	1.24E-02		1.06E-02	1.06E-02		1.24E-02	1.24E-02		1.06E-02	1.06E-02
N	65850	Benzoic Acid	mg/L	5.29E+03		5.29E+03	6.41E+03		6.41E+03	1.08E+04		1.08E+04	9.58E+03		9.58E+03
N	98077	Benzotrichloride	mg/L		3.96E-03	3.96E-03		3.83E-03	3.83E-03		3.96E-03	3.96E-03		3.83E-03	3.83E-03
N	100516	Benzyl Alcohol	mg/L	3.53E+02		3.53E+02	3.86E+02		3.86E+02	6.99E+02		6.99E+02	5.77E+02		5.77E+02
N	100447	Benzyl Chloride	mg/L		4.79E-01	4.79E-01		5.03E-01	5.03E-01		4.79E-01	4.79E-01		5.03E-01	5.03E-01
N	141662	Bidrin	mg/L	2.70E-01		2.70E-01	2.66E+01		2.66E+01	7.95E-01		7.95E-01	3.97E+01		3.97E+01
N	82657043	Biphenthrin	mg/L	4.07E+01		4.07E+01				1.21E+02		1.21E+02			
N	92524	Biphenyl, 1,1'-	mg/L	2.57E+00		2.57E+00	1.62E+00		1.62E+00	4.10E+00		4.10E+00	2.43E+00		2.43E+00
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/L		8.93E-01	8.93E-01		8.90E-01	8.90E-01		8.93E-01	8.93E-01		8.90E-01	8.90E-01
N	111911	Bis(2-chloroethoxy)methane	mg/L												
N	111444	Bis(2-chloroethyl)ether	mg/L		1.93E-01	1.93E-01		3.24E-01	3.24E-01		1.93E-01	1.93E-01		3.24E-01	3.24E-01
N	39638329	Bis(2-chloroisopropyl)ether	mg/L	4.30E+01	1.71E+00	1.71E+00	4.41E+01	2.02E+00	2.02E+00	8.34E+01	1.71E+00	1.71E+00	6.60E+01	2.02E+00	2.02E+00
N	117817	Bis(2-ethylhexyl)phthalate	mg/L	2.95E+00	1.00E+00	1.00E+00	1.93E+00	8.82E-01	8.82E-01	4.78E+00	1.00E+00	1.00E+00	2.89E+00	8.82E-01	8.82E-01
N	542881	Bis(chloromethyl)ether	mg/L		1.62E-03	1.62E-03		7.66E-03	7.66E-03		1.62E-03	1.62E-03		7.66E-03	7.66E-03
N	80057	Bisphenol A	mg/L	1.50E+01		1.50E+01	1.04E+01		1.04E+01	2.50E+01		2.50E+01	1.56E+01		1.56E+01
N	108861	Bromobenzene	mg/L	5.43E+01		5.43E+01				1.61E+02		1.61E+02			

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action val[illegible] less of hazard- and cancer-based values.

Table A.16. Surface Water ...ion Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	74975	Bromochloromethane	mg/L												
N	75274	Bromodichloromethane	mg/L	3.76E+02	7.08E+02	3.76E+02	9.27E+01	6.98E+00	6.98E+00	8.32E+01	2.84E+00	2.84E+00	2.06E+02	4.08E+00	4.08E+00
N	101553	Bromodiphenyl Ether, p-	mg/L												
N	75252	Bromoform	mg/L	5.14E+02	7.59E+03	5.14E+02	1.27E+02	7.48E+01	7.48E+01	1.02E+02	2.65E+01	2.65E+01	2.81E+02	4.37E+01	4.37E+01
N	74839	Bromomethane	mg/L	3.57E+01		3.57E+01	8.78E+00		8.78E+00	7.09E+00		7.09E+00	1.95E+01		1.95E+01
N	2104963	Bromophos	mg/L	4.97E+00		4.97E+00	1.22E+00		1.22E+00	1.57E+00		1.57E+00	2.72E+00		2.72E+00
N	75627	Bromotrichloromethane	mg/L												
N	1689845	Bromoxynil	mg/L	1.28E+04		1.28E+04	3.15E+03		3.15E+03	2.46E+02		2.46E+02	7.01E+03		7.01E+03
N	1689992	Bromoxynil Octanoate	mg/L	7.96E+00		7.96E+00	1.96E+00		1.96E+00	2.55E+00		2.55E+00	4.35E+00		4.35E+00
N	106990	Butadiene, 1,3-	mg/L		5.02E+00	5.02E+00		4.95E-02	4.95E-02		2.97E-02	2.97E-02		2.89E-02	2.89E-02
N	71363	Butanol, N-	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	4.65E+02		4.65E+02	1.22E+03		1.22E+03
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/L												
N	85687	Butyl Benzyl Phthlate	mg/L	1.91E+02		1.91E+02	4.71E+01		4.71E+01	6.06E+01		6.06E+01	1.05E+02		1.05E+02
N	2008415	Butylate	mg/L	3.53E+01		3.53E+01	8.68E+00		8.68E+00	1.12E+01		1.12E+01	1.93E+01		1.93E+01
N	104518	Butylbenzene, N-	mg/L							1.31E+02		1.31E+02			
N	135988	Butylbenzene, sec-	mg/L							1.31E+02		1.31E+02			
N	98066	Butylbenzene-tert	mg/L							1.31E+02		1.31E+02			
N	507200	Butylchloride, t-	mg/L												
N	85701	Butylphthalyl Butylglycolate	mg/L	3.71E+03		3.71E+03	9.14E+02		9.14E+02	1.10E+03		1.10E+03	2.03E+03		2.03E+03
N	75605	Cacodylic Acid	mg/L	6.19E+02		6.19E+02	1.52E+02		1.52E+02	3.29E+01		3.29E+01	3.39E+02		3.39E+02
N	105602	Caprolactam	mg/L	9.95E+04		9.95E+04	2.45E+04		2.45E+04	5.44E+03		5.44E+03	5.44E+04		5.44E+04
N	2425061	Captafol	mg/L	1.30E+02	1.76E+04	1.30E+02	3.19E+01	1.73E+02	3.19E+01	1.61E+01	3.54E+01	1.61E+01	7.09E+01	1.01E+02	7.09E+01
N	133062	Captan	mg/L	5.57E+03	2.86E+04	5.57E+03	1.37E+03	2.81E+02	2.81E+02	8.76E+02	7.54E+01	7.54E+01	3.05E+03	1.64E+02	1.64E+02
N	63252	Carbaryl	mg/L	1.16E+03		1.16E+03	2.86E+02		2.86E+02	2.92E+02		2.92E+02	6.35E+02		6.35E+02
N	86748	Carbazole	mg/L		1.00E+02	1.00E+02		9.84E-01	9.84E-01		6.54E-01	6.54E-01		5.75E-01	5.75E-01
N	1563662	Carbofuran	mg/L	2.32E+02		2.32E+02	5.71E+01		5.71E+01	3.50E+01		3.50E+01	1.27E+02		1.27E+02
N	75150	Carbon Disulfide	mg/L	2.92E+02		2.92E+02	7.20E+01		7.20E+01	8.84E+01		8.84E+01	1.60E+02		1.60E+02
Y	56235	Carbon Tetrachloride	mg/L	2.30E+00	5.91E+01	2.30E+00	5.67E-01	5.82E-01	5.67E-01	6.90E-01	3.56E-01	3.56E-01	1.26E+00	3.40E-01	3.40E-01
N	55285148	Carbosulfan	mg/L							1.31E+02		1.31E+02			
N	5234684	Carboxin	mg/L	2.53E+03		2.53E+03	6.23E+02		6.23E+02	5.04E+02		5.04E+02	1.39E+03		1.39E+03
N	75876	Chloral	mg/L	4.64E+03		4.64E+03	1.14E+03		1.14E+03	7.00E+02		7.00E+02	2.54E+03		2.54E+03
N	133904	Chloramben	mg/L	3.63E+02		3.63E+02	8.94E+01		8.94E+01	7.36E+01		7.36E+01	1.99E+02		1.99E+02
N	118752	Chloranil	mg/L		1.40E+02	1.40E+02		1.38E+00	1.38E+00		5.03E-01	5.03E-01		8.07E-01	8.07E-01
N	57749	Chlordane	mg/L	5.36E-01	7.14E+00	5.36E-01	1.32E-01	7.03E-02	7.03E-02	1.69E-01	4.64E-02	4.64E-02	2.93E-01	4.11E-02	4.11E-02
N	90982324	Chlorimuron, Ethyl-	mg/L	3.38E+03		3.38E+03	8.31E+02		8.31E+02	2.11E+02		2.11E+02	1.85E+03		1.85E+03
N	10049044	Chlorine Dioxide	mg/L							3.93E+02		3.93E+02			
N	75683	Chloro-1,1-difluoroethane, 1-	mg/L	1.99E+05		1.99E+05	4.90E+04		4.90E+04	4.79E+04		4.79E+04	1.09E+05		1.09E+05
N	126998	Chloro-1,3-butadiene, 2-	mg/L	1.78E+02		1.78E+02	4.39E+01		4.39E+01	4.73E+01		4.73E+01	9.75E+01		9.75E+01
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/L		4.42E+01	4.42E+01		4.35E-01	4.35E-01		2.26E-01	2.26E-01		2.54E-01	2.54E-01
N	95692	Chloro-2-methylaniline, 4-	mg/L		2.04E+01	2.04E+01		2.01E-01	2.01E-01		1.16E-01	1.16E-01		1.17E-01	1.17E-01
N	79118	Chloroacetic Acid	mg/L	3.09E+01		3.09E+01	7.62E+00		7.62E+00	7.25E+00		7.25E+00	1.69E+01		1.69E+01
N	532274	Chloroacetophenone, 2-	mg/L	7.23E-02		7.23E-02	1.78E-02		1.78E-02	1.94E-02		1.94E-02	3.96E-02		3.96E-02
N	106478	Chloroaniline, p-	mg/L	7.19E+00		7.19E+00	1.77E+00		1.77E+00	2.23E+00		2.23E+00	3.93E+00		3.93E+00
N	108907	Chlorobenzene	mg/L	1.68E+01		1.68E+01	4.15E+00		4.15E+00	5.35E+00		5.35E+00	9.22E+00		9.22E+00
N	510156	Chlorobenzilate	mg/L	3.59E+01	1.55E+01	1.55E+01	8.85E+00	1.53E-01	1.53E-01	1.11E+01	9.84E-02	9.84E-02	1.97E+01	8.93E-02	8.93E-02
N	74113	Chlorobenzoic Acid, p-	mg/L	6.55E+02		6.55E+02	1.61E+02		1.61E+02	1.96E+02		1.96E+02	3.59E+02		3.59E+02
N	98566	Chlorobenzotrifluoride, 4-	mg/L	1.64E+01		1.64E+01	4.03E+00		4.03E+00	5.20E+00		5.20E+00	8.96E+00		8.96E+00
N	109693	Chlorobutane, 1-	mg/L	9.90E+02		9.90E+02	2.44E+02		2.44E+02	3.02E+02		3.02E+02	5.42E+02		5.42E+02
N	78864	Chlorobutane, 2-	mg/L												
N	41851507	Chlorocyclopentadiene	mg/L												
N	73506942	Chlorodibromoethane	mg/L								5.16E+00	5.16E+00			
N	75456	Chlorodifluoromethane	mg/L	3.86E+05		3.86E+05	9.50E+04		9.50E+04	7.50E+04		7.50E+04	2.11E+05		2.11E+05
Y	67663	Chloroform	mg/L	2.50E+01	9.58E+02	2.50E+01	6.16E+00	9.43E+00	6.16E+00	7.64E+00	5.92E+00	5.92E+00	1.37E+01	5.51E+00	5.51E+00
N	74873	Chloromethane	mg/L		3.81E+03	3.81E+03		3.75E+01	3.75E+01		1.45E+01	1.45E+01		2.19E+01	2.19E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	74975	Bromochloromethane	mg/L												
N	75274	Bromodichloromethane	mg/L	2.93E+01	2.84E+00	2.84E+00	3.95E+01	4.08E+00	4.08E+00	6.20E+01	2.84E+00	2.84E+00	5.91E+01	4.08E+00	4.08E+00
N	101553	Bromodiphenyl Ether, p-	mg/L												
N	75252	Bromoform	mg/L	3.34E+01	2.65E+01	2.65E+01	5.40E+01	4.37E+01	4.37E+01	7.42E+01	2.65E+01	2.65E+01	8.07E+01	4.37E+01	4.37E+01
N	74839	Bromomethane	mg/L	2.33E+00		2.33E+00	3.74E+00		3.74E+00	5.17E+00		5.17E+00	5.59E+00		5.59E+00
N	2104963	Bromophos	mg/L	7.92E-01		7.92E-01	5.22E-01		5.22E-01	1.29E+00		1.29E+00	7.80E-01		7.80E-01
N	75627	Bromotrichloromethane	mg/L												
N	1689845	Bromoxynil	mg/L	5.30E+01		5.30E+01	1.34E+03		1.34E+03	1.54E+02		1.54E+02	2.01E+03		2.01E+03
N	1689992	Bromoxynil Octanoate	mg/L	1.31E+00		1.31E+00	8.35E-01		8.35E-01	2.10E+00		2.10E+00	1.25E+00		1.25E+00
N	106990	Butadiene, 1,3-	mg/L		2.97E-02	2.97E-02		2.89E-02	2.89E-02		2.97E-02	2.97E-02		2.89E-02	2.89E-02
N	71363	Butanol, N-	mg/L	1.58E+02		1.58E+02	2.34E+02		2.34E+02	3.42E+02		3.42E+02	3.50E+02		3.50E+02
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/L												
N	85687	Butyl Benzyl Phthlate	mg/L	3.06E+01		3.06E+01	2.01E+01		2.01E+01	4.96E+01		4.96E+01	3.00E+01		3.00E+01
N	2008415	Butylate	mg/L	5.71E+00		5.71E+00	3.70E+00		3.70E+00	9.22E+00		9.22E+00	5.53E+00		5.53E+00
N	104518	Butylbenzene, N-	mg/L	2.71E+01		2.71E+01				8.05E+01		8.05E+01			
N	135988	Butylbenzene, sec-	mg/L	2.71E+01		2.71E+01				8.05E+01		8.05E+01			
N	98066	Butylbenzene-tert	mg/L	2.71E+01		2.71E+01				8.05E+01		8.05E+01			
N	507200	Butylchloride, t-	mg/L												
N	85701	Butylphthalyl Butylglycolate	mg/L	5.10E+02		5.10E+02	3.90E+02		3.90E+02	8.84E+02		8.84E+02	5.83E+02		5.83E+02
N	75605	Cacodylic Acid	mg/L	7.55E+00		7.55E+00	6.50E+01		6.50E+01	2.11E+01		2.11E+01	9.71E+01		9.71E+01
N	105602	Caprolactam	mg/L	1.26E+03		1.26E+03	1.04E+04		1.04E+04	3.50E+03		3.50E+03	1.56E+04		1.56E+04
N	2425061	Captafol	mg/L	4.35E+00	3.54E+01	4.35E+00	1.36E+01	1.01E+02	1.36E+01	1.10E+01	3.54E+01	1.10E+01	2.03E+01	1.01E+02	2.03E+01
N	133062	Captan	mg/L	2.57E+02	7.54E+01	7.54E+01	5.85E+02	1.64E+02	1.64E+02	6.15E+02	7.54E+01	7.54E+01	8.74E+02	1.64E+02	1.64E+02
N	63252	Carbaryl	mg/L	1.14E+02		1.14E+02	1.22E+02		1.22E+02	2.24E+02		2.24E+02	1.82E+02		1.82E+02
N	86748	Carbazole	mg/L		6.54E-01	6.54E-01		5.75E-01	5.75E-01		6.54E-01	6.54E-01		5.75E-01	5.75E-01
N	1563662	Carbofuran	mg/L	1.01E+01		1.01E+01	2.44E+01		2.44E+01	2.44E+01		2.44E+01	3.64E+01		3.64E+01
N	75150	Carbon Disulfide	mg/L	4.18E+01		4.18E+01	3.07E+01		3.07E+01	7.13E+01		7.13E+01	4.59E+01		4.59E+01
Y	56235	Carbon Tetrachloride	mg/L	3.23E-01	3.56E-01	3.23E-01	2.42E-01	3.40E-01	2.42E-01	5.56E-01	3.56E-01	3.56E-01	3.62E-01	3.40E-01	3.40E-01
N	55285148	Carbosulfan	mg/L	2.71E+01		2.71E+01				8.05E+01		8.05E+01			
N	5234684	Carboxin	mg/L	1.66E+02		1.66E+02	2.66E+02		2.66E+02	3.68E+02		3.68E+02	3.97E+02		3.97E+02
N	75876	Chloral	mg/L	2.02E+02		2.02E+02	4.87E+02		4.87E+02	4.88E+02		4.88E+02	7.28E+02		7.28E+02
N	133904	Chloramben	mg/L	2.45E+01		2.45E+01	3.81E+01		3.81E+01	5.38E+01		5.38E+01	5.70E+01		5.70E+01
N	118752	Chloranil	mg/L		5.03E-01	5.03E-01		8.07E-01	8.07E-01		5.03E-01	5.03E-01		8.07E-01	8.07E-01
N	57749	Chlordane	mg/L	8.49E-02	4.64E-02	4.64E-02	5.62E-02	4.11E-02	4.11E-02	1.38E-01	4.64E-02	4.64E-02	8.40E-02	4.11E-02	4.11E-02
N	90982324	Chlorimuron, Ethyl-	mg/L	4.96E+01		4.96E+01	3.54E+02		3.54E+02	1.37E+02		1.37E+02	5.30E+02		5.30E+02
N	10049044	Chlorine Dioxide	mg/L	8.14E+01		8.14E+01				2.41E+02		2.41E+02			
N	75683	Chloro-1,1-difluoroethane, 1-	mg/L	1.80E+04		1.80E+04	2.09E+04		2.09E+04	3.64E+04		3.64E+04	3.12E+04		3.12E+04
N	126998	Chloro-1,3-butadiene, 2-	mg/L	1.94E+01		1.94E+01	1.87E+01		1.87E+01	3.68E+01		3.68E+01	2.80E+01		2.80E+01
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/L		2.26E-01	2.26E-01		2.54E-01	2.54E-01		2.26E-01	2.26E-01		2.54E-01	2.54E-01
N	95692	Chloro-2-methylaniline, 4-	mg/L		1.16E-01	1.16E-01		1.17E-01	1.17E-01		1.16E-01	1.16E-01		1.17E-01	1.17E-01
N	79118	Chloroacetic Acid	mg/L	2.67E+00		2.67E+00	3.25E+00		3.25E+00	5.47E+00		5.47E+00	4.86E+00		4.86E+00
N	532274	Chloroacetophenone, 2-	mg/L	8.02E-03		8.02E-03	7.59E-03		7.59E-03	1.51E-02		1.51E-02	1.14E-02		1.14E-02
N	106478	Chloroaniline, p-	mg/L	1.09E+00		1.09E+00	7.54E-01		7.54E-01	1.81E+00		1.81E+00	1.13E+00		1.13E+00
N	108907	Chlorobenzene	mg/L	2.71E+00		2.71E+00	1.77E+00		1.77E+00	4.39E+00		4.39E+00	2.64E+00		2.64E+00
N	510156	Chlorobenzilate	mg/L	5.47E+00	9.84E-02	9.84E-02	3.77E+00	8.93E-02	8.93E-02	9.07E+00	9.84E-02	9.84E-02	5.64E+00	8.93E-02	8.93E-02
N	74113	Chlorobenzoic Acid, p-	mg/L	9.21E+01		9.21E+01	6.88E+01		6.88E+01	1.58E+02		1.58E+02	1.03E+02		1.03E+02
N	98566	Chlorobenzotrifluoride, 4-	mg/L	2.64E+00		2.64E+00	1.72E+00		1.72E+00	4.27E+00		4.27E+00	2.57E+00		2.57E+00
N	109693	Chlorobutane, 1-	mg/L	1.45E+02		1.45E+02	1.04E+02		1.04E+02	2.45E+02		2.45E+02	1.55E+02		1.55E+02
N	78864	Chlorobutane, 2-	mg/L												
N	41851507	Chlorocyclopentadiene	mg/L												
N	73506942	Chlorodibromoethane	mg/L		5.16E+00	5.16E+00					5.16E+00	5.16E+00			
N	75456	Chlorodifluoromethane	mg/L	2.43E+04		2.43E+04	4.05E+04		4.05E+04	5.44E+04		5.44E+04	6.05E+04		6.05E+04
Y	67663	Chloroform	mg/L	3.66E+00	5.92E+00	3.66E+00	2.63E+00	5.51E+00	2.63E+00	6.18E+00	5.92E+00	5.92E+00	3.93E+00	5.51E+00	3.93E+00
N	74873	Chloromethane	mg/L		1.45E+01	1.45E+01		2.19E+01	2.19E+01		1.45E+01	1.45E+01		2.19E+01	2.19E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value[illegible] less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	107302	Chloromethyl Methyl Ether	mg/L												
N	91587	Chloronaphthalene, Beta-	mg/L	2.79E+01		2.79E+01	6.86E+00		6.86E+00	8.95E+00		8.95E+00	1.52E+01		1.52E+01
N	88733	Chloronitrobenzene, o-	mg/L		1.09E+03	1.09E+03		1.08E+01	1.08E+01		5.18E+00	5.18E+00		6.30E+00	6.30E+00
N	121733	Chloronitrobenzene, p-	mg/L		1.05E+03	1.05E+03		1.03E+01	1.03E+01		5.48E+00	5.48E+00		6.04E+00	6.04E+00
N	95578	Chlorophenol, 2-	mg/L	8.44E+00		8.44E+00	2.08E+00		2.08E+00	2.62E+00		2.62E+00	4.62E+00		4.62E+00
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/L												
N	934736	Chlorophenyl Methyl Sulfoxide	mg/L												
N	75296	Chloropropane, 2-	mg/L	1.82E+02		1.82E+02	4.48E+01		4.48E+01	5.09E+01		5.09E+01	9.95E+01		9.95E+01
N	1897456	Chlorothalonil	mg/L	3.34E+01	4.73E+02	3.34E+01	8.23E+00	4.65E+00	4.65E+00	1.03E+01	2.95E+00	2.95E+00	1.83E+01	2.72E+00	2.72E+00
N	95498	Chlorotoluene, o-	mg/L	2.12E+01		2.12E+01	5.22E+00		5.22E+00	6.70E+00		6.70E+00	1.16E+01		1.16E+01
N	101213	Chlorpropham	mg/L	1.01E+03		1.01E+03	2.49E+02		2.49E+02	2.92E+02		2.92E+02	5.54E+02		5.54E+02
N	2921882	Chlorpyrifos	mg/L	2.09E+00		2.09E+00	5.14E-01		5.14E-01	6.65E-01		6.65E-01	1.14E+00		1.14E+00
N	5598130	Chlorpyrifos Methyl	mg/L	4.28E+01		4.28E+01	1.05E+01		1.05E+01	1.26E+01		1.26E+01	2.34E+01		2.34E+01
N	64902723	Chlorsulfuron	mg/L	1.00E+06		1.00E+06	4.90E+05		4.90E+05	6.54E+02		6.54E+02	1.00E+06		1.00E+06
N	60238564	Chlorthiophos	mg/L							1.05E+01		1.05E+01			
Y	218019	Chrysene	mg/L		1.36E+01	1.36E+01		1.34E-01	1.34E-01		9.18E-02	9.18E-02		7.84E-02	7.84E-02
N	8007452	Coke Oven Emissions	mg/L												
N	8001589	Creosote	mg/L												
N	108394	Cresol, m-	mg/L	1.86E+02		1.86E+02	4.57E+01		4.57E+01	5.51E+01		5.51E+01	1.02E+02		1.02E+02
N	95487	Cresol, o-	mg/L	1.74E+02		1.74E+02	4.28E+01		4.28E+01	5.19E+01		5.19E+01	9.53E+01		9.53E+01
N	106445	Cresol, p-	mg/L	2.01E+01		2.01E+01	4.95E+00		4.95E+00	5.93E+00		5.93E+00	1.10E+01		1.10E+01
N	123739	Crotonaldehyde, trans-	mg/L		4.89E+00	4.89E+00		4.81E-02	4.81E-02		2.88E-02	2.88E-02		2.81E-02	2.81E-02
N	98828	Cumene	mg/L	8.10E+01		8.10E+01	1.99E+01		1.99E+01	2.57E+01		2.57E+01	4.43E+01		4.43E+01
N	21725462	Cyanazine	mg/L	4.64E+01	6.45E+01	4.64E+01	1.14E+01	6.35E-01	6.35E-01	9.56E+00	2.36E-01	2.36E-01	2.54E+01	3.71E-01	3.71E-01
N	460195	Cyanogen	mg/L	3.57E+03		3.57E+03	8.78E+02		8.78E+02	3.61E+02		3.61E+02	1.95E+03		1.95E+03
N	506683	Cyanogen Bromide	mg/L							1.18E+03		1.18E+03			
N	506774	Cyanogen Chloride	mg/L	4.05E+03		4.05E+03	9.97E+02		9.97E+02	4.37E+02		4.37E+02	2.22E+03		2.22E+03
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/L		1.77E+03	1.77E+03		1.74E+01	1.74E+01		7.30E+00	7.30E+00		1.02E+01	1.02E+01
N	108941	Cyclohexanone	mg/L	2.48E+05		2.48E+05	6.09E+04		6.09E+04	3.61E+04		3.61E+04	1.35E+05		1.35E+05
N	108918	Cyclohexylamine	mg/L	2.03E+03		2.03E+03	4.99E+02		4.99E+02	5.25E+02		5.25E+02	1.11E+03		1.11E+03
N	542927	Cyclopentadiene	mg/L												
N	68085858	Cyhalothrin/karate	mg/L	1.03E+00		1.03E+00	2.54E-01		2.54E-01	3.33E-01		3.33E-01	5.64E-01		5.64E-01
N	52315078	Cypermethrin	mg/L	5.57E+00		5.57E+00	1.37E+00		1.37E+00	1.78E+00		1.78E+00	3.05E+00		3.05E+00
N	66215278	Cyromazine	mg/L							9.83E+01		9.83E+01			
N	72548	DDD	mg/L		2.71E+00	2.71E+00		2.67E-02	2.67E-02		1.81E-02	1.81E-02		1.56E-02	1.56E-02
N	72559	DDE	mg/L		2.23E+00	2.23E+00		2.20E-02	2.20E-02		1.49E-02	1.49E-02		1.28E-02	1.28E-02
N	50293	DDT	mg/L	9.07E-02	1.24E+00	9.07E-02	2.23E-02	1.23E-02	1.23E-02	2.92E-02	8.34E-03	8.34E-03	4.96E-02	7.16E-03	7.16E-03
N	1861321	Dacthal	mg/L	2.32E+01		2.32E+01	5.71E+00		5.71E+00	7.11E+00		7.11E+00	1.27E+01		1.27E+01
N	75990	Dalapon	mg/L	1.84E+03		1.84E+03	4.52E+02		4.52E+02	2.37E+02		2.37E+02	1.00E+03		1.00E+03
N	1163195	Decabromodiphenyl Ether	mg/L	6.37E+04		6.37E+04	1.57E+04		1.57E+04	1.30E+02		1.30E+02	3.48E+04		3.48E+04
N	8065483	Demeton	mg/L							5.24E-01		5.24E-01			
N	103231	Di(2-ethylhexyl)adipate	mg/L	9.28E+00	3.01E+01	9.28E+00	2.29E+00	2.96E-01	2.96E-01	3.01E+00	2.03E-01	2.03E-01	5.08E+00	1.73E-01	1.73E-01
N	2303164	Diallate	mg/L		2.44E+04	2.44E+04		2.40E+02	2.40E+02		6.81E+00	6.81E+00		1.40E+02	1.40E+02
N	505293	Diathane, 1,4-	mg/L	1.64E+02		1.64E+02	4.03E+01		4.03E+01	3.78E+01		3.78E+01	8.96E+01		8.96E+01
N	333415	Diazinon	mg/L	3.86E+00		3.86E+00	9.49E-01		9.49E-01	1.13E+00		1.13E+00	2.11E+00		2.11E+00
Y	53703	Dibenz[a,h]anthracene	mg/L		4.09E-03	4.09E-03		4.03E-05	4.03E-05		2.76E-05	2.76E-05		2.35E-05	2.35E-05
N	132649	Dibenzofuran	mg/L							5.24E+01		5.24E+01			
N	96128	Dibromo-3-chloropropane, 1,2-	mg/L	1.06E+00	3.09E+01	1.06E+00	2.61E-01	3.05E-01	2.61E-01	2.35E-01	1.25E-01	1.25E-01	5.79E-01	1.78E-01	1.78E-01
N	106376	Dibromobenzene, 1,4-	mg/L	2.55E+01		2.55E+01	6.27E+00		6.27E+00	7.76E+00		7.76E+00	1.39E+01		1.39E+01
N	124481	Dibromochloromethane	mg/L	3.43E+02	4.76E+02	3.43E+02	8.44E+01	4.69E+00	4.69E+00	7.80E+01	1.98E+00	1.98E+00	1.88E+02	2.74E+00	2.74E+00
N	594183	Dibromodichloromethane	mg/L												
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/L												
N	106934	Dibromoethane, 1,2-	mg/L	1.54E+00	7.41E-01	7.41E-01	3.79E-01	7.30E-03	7.30E-03	2.99E-01	2.53E-03	2.53E-03	8.42E-01	4.26E-03	4.26E-03
N	74953	Dibromomethane (Methylene Bromide)	mg/L	7.43E+02		7.43E+02	1.83E+02		1.83E+02	8.48E+01		8.48E+01	4.06E+02		4.06E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	107302	Chloromethyl Methyl Ether	mg/L												
N	91587	Chloronaphthalene, Beta-	mg/L	4.61E+00		4.61E+00	2.92E+00		2.92E+00	7.37E+00		7.37E+00	4.37E+00		4.37E+00
N	88733	Chloronitrobenzene, o-	mg/L		5.18E+00	5.18E+00		6.30E+00	6.30E+00		5.18E+00	5.18E+00		6.30E+00	6.30E+00
N	121733	Chloronitrobenzene, p-	mg/L		5.48E+00	5.48E+00		6.04E+00	6.04E+00		5.48E+00	5.48E+00		6.04E+00	6.04E+00
N	95578	Chlorophenol, 2-	mg/L	1.29E+00		1.29E+00	8.86E-01		8.86E-01	2.14E+00		2.14E+00	1.32E+00		1.32E+00
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/L												
N	934736	Chlorophenyl Methyl Sulfoxide	mg/L												
N	75296	Chloropropane, 2-	mg/L	2.20E+01		2.20E+01	1.91E+01		1.91E+01	4.02E+01		4.02E+01	2.85E+01		2.85E+01
N	1897456	Chlorothalonil	mg/L	4.96E+00	2.95E+00	2.95E+00	3.51E+00	2.72E+00	2.72E+00	8.33E+00	2.95E+00	2.95E+00	5.24E+00	2.72E+00	2.72E+00
N	95498	Chlorotoluene, o-	mg/L	3.37E+00		3.37E+00	2.23E+00		2.23E+00	5.48E+00		5.48E+00	3.33E+00		3.33E+00
N	101213	Chlorpropham	mg/L	1.30E+02		1.30E+02	1.06E+02		1.06E+02	2.32E+02		2.32E+02	1.59E+02		1.59E+02
N	2921882	Chlorpyrifos	mg/L	3.39E-01		3.39E-01	2.19E-01		2.19E-01	5.46E-01		5.46E-01	3.28E-01		3.28E-01
N	5598130	Chlorpyrifos Methyl	mg/L	5.72E+00		5.72E+00	4.50E+00		4.50E+00	1.00E+01		1.00E+01	6.72E+00		6.72E+00
N	64902723	Chlorsulfuron	mg/L	1.36E+02		1.36E+02	2.09E+05		2.09E+05	4.02E+02		4.02E+02	3.12E+05		3.12E+05
N	60238564	Chlorthiophos	mg/L	2.17E+00		2.17E+00				6.44E+00		6.44E+00			
Y	218019	Chrysene	mg/L		9.18E-02	9.18E-02		7.84E-02	7.84E-02		9.18E-02	9.18E-02		7.84E-02	7.84E-02
N	8007452	Coke Oven Emissions	mg/L												
N	8001589	Creosote	mg/L												
N	108394	Cresol, m-	mg/L	2.55E+01		2.55E+01	1.95E+01		1.95E+01	4.42E+01		4.42E+01	2.91E+01		2.91E+01
N	95487	Cresol, o-	mg/L	2.42E+01		2.42E+01	1.83E+01		1.83E+01	4.17E+01		4.17E+01	2.73E+01		2.73E+01
N	106445	Cresol, p-	mg/L	2.72E+00		2.72E+00	2.11E+00		2.11E+00	4.75E+00		4.75E+00	3.16E+00		3.16E+00
N	123739	Crotonaldehyde, trans-	mg/L		2.88E-02	2.88E-02		2.81E-02	2.81E-02		2.88E-02	2.88E-02		2.81E-02	2.81E-02
N	98828	Cumene	mg/L	1.30E+01		1.30E+01	8.50E+00		8.50E+00	2.11E+01		2.11E+01	1.27E+01		1.27E+01
N	21725462	Cyanazine	mg/L	3.21E+00	2.36E-01	2.36E-01	4.87E+00	3.71E-01	3.71E-01	7.01E+00	2.36E-01	2.36E-01	7.28E+00	3.71E-01	3.71E-01
N	460195	Cyanogen	mg/L	9.20E+01		9.20E+01	3.74E+02		3.74E+02	2.41E+02		2.41E+02	5.59E+02		5.59E+02
N	506683	Cyanogen Bromide	mg/L	2.44E+02		2.44E+02				7.24E+02		7.24E+02			
N	506774	Cyanogen Chloride	mg/L	1.13E+02		1.13E+02	4.25E+02		4.25E+02	2.93E+02		2.93E+02	6.36E+02		6.36E+02
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/L		7.30E+00	7.30E+00		1.02E+01	1.02E+01		7.30E+00	7.30E+00		1.02E+01	1.02E+01
N	108941	Cyclohexanone	mg/L	1.02E+04		1.02E+04	2.60E+04		2.60E+04	2.50E+04		2.50E+04	3.88E+04		3.88E+04
N	108918	Cyclohexylamine	mg/L	2.10E+02		2.10E+02	2.13E+02		2.13E+02	4.05E+02		4.05E+02	3.18E+02		3.18E+02
N	542927	Cyclopentadiene	mg/L												
N	68085858	Cyhalothrin/karate	mg/L	1.72E-01		1.72E-01	1.08E-01		1.08E-01	2.74E-01		2.74E-01	1.62E-01		1.62E-01
N	52315078	Cypermethrin	mg/L	9.11E-01		9.11E-01	5.85E-01		5.85E-01	1.46E+00		1.46E+00	8.74E-01		8.74E-01
N	66215278	Cyromazine	mg/L	2.04E+01		2.04E+01				6.04E+01		6.04E+01			
N	72548	DDD	mg/L		1.81E-02	1.81E-02		1.56E-02	1.56E-02		1.81E-02	1.81E-02		1.56E-02	1.56E-02
N	72559	DDE	mg/L		1.49E-02	1.49E-02		1.28E-02	1.28E-02		1.49E-02	1.49E-02		1.28E-02	1.28E-02
N	50293	DDT	mg/L	1.52E-02	8.34E-03	8.34E-03	9.52E-03	7.16E-03	7.16E-03	2.41E-02	8.34E-03	8.34E-03	1.42E-02	7.16E-03	7.16E-03
N	1861321	Dacthal	mg/L	3.43E+00		3.43E+00	2.44E+00		2.44E+00	5.77E+00		5.77E+00	3.64E+00		3.64E+00
N	75990	Dalapon	mg/L	6.45E+01		6.45E+01	1.93E+02		1.93E+02	1.62E+02		1.62E+02	2.88E+02		2.88E+02
N	1163195	Decabromodiphenyl Ether	mg/L	2.71E+01		2.71E+01	6.68E+03		6.68E+03	8.01E+01		8.01E+01	9.99E+03		9.99E+03
N	8065483	Demeton	mg/L	1.09E-01		1.09E-01				3.22E-01		3.22E-01			
N	103231	Di(2-ethylhexyl)adipate	mg/L	1.57E+00	2.03E-01	2.03E-01	9.75E-01	1.73E-01	1.73E-01	2.48E+00	2.03E-01	2.03E-01	1.46E+00	1.73E-01	1.73E-01
N	2303164	Diallate	mg/L		6.81E+00	6.81E+00		1.40E+02	1.40E+02		6.81E+00	6.81E+00		1.40E+02	1.40E+02
N	505293	Diathane, 1,4-	mg/L	1.37E+01		1.37E+01	1.72E+01		1.72E+01	2.84E+01		2.84E+01	2.57E+01		2.57E+01
N	333415	Diazinon	mg/L	5.15E-01		5.15E-01	4.05E-01		4.05E-01	9.03E-01		9.03E-01	6.05E-01		6.05E-01
Y	53703	Dibenz[a,h]anthracene	mg/L		2.76E-05	2.76E-05		2.35E-05	2.35E-05		2.76E-05	2.76E-05		2.35E-05	2.35E-05
N	132649	Dibenzofuran	mg/L	1.09E+01		1.09E+01				3.22E+01		3.22E+01			
N	96128	Dibromo-3-chloropropane, 1,2-	mg/L	8.30E-02	1.25E-01	8.30E-02	1.11E-01	1.78E-01	1.11E-01	1.75E-01	1.25E-01	1.25E-01	1.66E-01	1.78E-01	1.66E-01
N	106376	Dibromobenzene, 1,4-	mg/L	3.72E+00		3.72E+00	2.67E+00		2.67E+00	6.28E+00		6.28E+00	4.00E+00		4.00E+00
N	124481	Dibromochloromethane	mg/L	2.80E+01	1.98E+00	1.98E+00	3.60E+01	2.74E+00	2.74E+00	5.84E+01	1.98E+00	1.98E+00	5.38E+01	2.74E+00	2.74E+00
N	594183	Dibromodichloromethane	mg/L												
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/L												
N	106934	Dibromoethane, 1,2-	mg/L	9.71E-02	2.53E-03	2.53E-03	1.62E-01	4.26E-03	4.26E-03	2.17E-01	2.53E-03	2.53E-03	2.42E-01	4.26E-03	4.26E-03
N	74953	Dibromomethane (Methylene Bromide)	mg/L	2.23E+01		2.23E+01	7.80E+01		7.80E+01	5.73E+01		5.73E+01	1.17E+02		1.17E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	84742	Dibutyl Phthalate	mg/L	9.28E+01		9.28E+01	2.29E+01		2.29E+01	2.94E+01		2.94E+01	5.08E+01		5.08E+01
N	1918009	Dicamba	mg/L	1.39E+02		1.39E+02	3.43E+01		3.43E+01	4.05E+01		4.05E+01	7.62E+01		7.62E+01
N	764410	Dichloro-2-butene, 1,4-	mg/L		1.60E+01	1.60E+01		1.57E-01	1.57E-01		3.25E-02	3.25E-02		9.19E-02	9.19E-02
N	79436	Dichloroacetic Acid	mg/L												
N	95501	Dichlorobenzene, 1,2-	mg/L	1.32E+02		1.32E+02	3.24E+01		3.24E+01	4.11E+01		4.11E+01	7.20E+01		7.20E+01
N	541731	Dichlorobenzene, 1,3-	mg/L	9.22E-01		9.22E-01	2.27E-01		2.27E-01	2.91E-01		2.91E-01	5.05E-01		5.05E-01
N	106467	Dichlorobenzene, 1,4-	mg/L	4.85E+01	1.57E+02	4.85E+01	1.19E+01	1.55E+00	1.55E+00	1.51E+01	1.00E+00	1.00E+00	2.65E+01	9.04E-01	9.04E-01
N	91941	*Dichlorobenzidine, 3,3'-*	mg/L		1.70E+01	1.70E+01		1.67E-01	1.67E-01		1.02E-01	1.02E-01		9.77E-02	9.77E-02
N	75718	Dichlorodifluoromethane	mg/L	4.27E+02		4.27E+02	1.05E+02		1.05E+02	1.31E+02		1.31E+02	2.34E+02		2.34E+02
N	75343	Dichloroethane, 1,1-	mg/L	1.25E+03		1.25E+03	3.08E+02		3.08E+02	3.10E+02		3.10E+02	6.85E+02		6.85E+02
N	107062	Dichloroethane, 1,2-	mg/L	6.31E+02	5.39E+02	5.39E+02	1.55E+02	5.31E+00	5.31E+00	1.34E+02	2.06E+00	2.06E+00	3.45E+02	3.10E+00	3.10E+00
Y	75354	Dichloroethylene, 1,1-	mg/L	1.13E+02	4.87E+01	4.87E+01	2.77E+01	4.79E-01	4.79E-01	2.79E+01	2.26E-01	2.26E-01	6.16E+01	2.80E-01	2.80E-01
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	7.29E+02		7.29E+02	1.80E+02		1.80E+02	7.87E+01		7.87E+01	3.99E+02		3.99E+02
Y	156592	Dichloroethylene, 1,2-cis-	mg/L	1.11E+02		1.11E+02	2.74E+01		2.74E+01	2.83E+01		2.83E+01	6.10E+01		6.10E+01
Y	156605	Dichloroethylene, 1,2-trans-	mg/L	2.03E+03		2.03E+03	4.99E+02		4.99E+02	1.87E+02		1.87E+02	1.11E+03		1.11E+03
N	120832	Dichlorophenol, 2,4-	mg/L	4.57E+00		4.57E+00	1.12E+00		1.12E+00	1.43E+00		1.43E+00	2.50E+00		2.50E+00
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/L	1.75E+02		1.75E+02	4.30E+01		4.30E+01	3.95E+01		3.95E+01	9.56E+01		9.56E+01
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/L	9.90E+01		9.90E+01	2.44E+01		2.44E+01	2.46E+01		2.46E+01	5.42E+01		5.42E+01
N	78875	Dichloropropane, 1,2-	mg/L	9.42E+00	2.83E+02	9.42E+00	2.32E+00	2.79E+00	2.32E+00	2.54E+00	1.47E+00	1.47E+00	5.16E+00	1.63E+00	1.63E+00
N	616239	Dichloropropanol, 2,3-	mg/L	8.36E+02		8.36E+02	2.06E+02		2.06E+02	3.43E+01		3.43E+01	4.57E+02		4.57E+02
N	542756	Dichloropropene, 1,3-	mg/L	3.34E+02	2.60E+02	2.60E+02	8.23E+01	2.56E+00	2.56E+00	8.49E+01	1.25E+00	1.25E+00	1.83E+02	1.50E+00	1.50E+00
N	62737	Dichlorvos	mg/L	2.93E+01	4.72E+02	2.93E+01	7.22E+00	4.65E+00	4.65E+00	3.88E+00	1.02E+00	1.02E+00	1.60E+01	2.71E+00	2.71E+00
N	115322	Dicofol	mg/L		1.28E+00	1.28E+00		1.26E-02	1.26E-02		8.59E-03	8.59E-03		7.39E-03	7.39E-03
N	77736	Dicyclopentadiene	mg/L	7.86E+01		7.86E+01	1.94E+01		1.94E+01	2.39E+01		2.39E+01	4.30E+01		4.30E+01
N	60571	Dieldrin	mg/L	1.74E-01	5.08E-01	1.74E-01	4.28E-02	5.00E-03	5.00E-03	5.19E-02	3.04E-03	3.04E-03	9.53E-02	2.92E-03	2.92E-03
N	84662	Diethyl Phthalate	mg/L	1.67E+04		1.67E+04	4.11E+03		4.11E+03	3.57E+03		3.57E+03	9.14E+03		9.14E+03
N	311455	Diethyl-p-nitrophenylphosphate	mg/L												
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/L												
N	112345	Diethylene Glycol Monobutyl Ether	mg/L	7.23E+03		7.23E+03	1.78E+03		1.78E+03	7.26E+01		7.26E+01	3.96E+03		3.96E+03
N	111900	Diethylene Glycol Monoethyl Ether	mg/L	4.46E+05		4.46E+05	1.10E+05		1.10E+05	2.22E+04		2.22E+04	2.44E+05		2.44E+05
N	617845	Diethylformamide	mg/L	1.23E+03		1.23E+03	3.02E+02		3.02E+02	1.06E+02		1.06E+02	6.71E+02		6.71E+02
N	56531	Diethylstilbesterol	mg/L		7.90E-05	7.90E-05		7.78E-07	7.78E-07		5.30E-07	5.30E-07		4.54E-07	4.54E-07
N	43222486	Difenzoquat	mg/L							1.05E+03		1.05E+03			
N	35367385	Diflubenzuron	mg/L	7.96E+01		7.96E+01	1.96E+01		1.96E+01	2.35E+01		2.35E+01	4.35E+01		4.35E+01
N	75376	Difluoroethane, 1,1-	mg/L	3.92E+05		3.92E+05	9.64E+04		9.64E+04	6.87E+04		6.87E+04	2.14E+05		2.14E+05
N	1445756	Diisopropyl Methylphosphonate	mg/L	5.43E+03		5.43E+03	1.34E+03		1.34E+03	6.57E+02		6.57E+02	2.97E+03		2.97E+03
N	55290647	Dimethipin	mg/L	1.49E+04		1.49E+04	3.66E+03		3.66E+03	2.49E+02		2.49E+02	8.13E+03		8.13E+03
N	60515	Dimethoate	mg/L	1.77E+00		1.77E+00	4.35E-01		4.35E-01	4.70E-01		4.70E-01	9.68E-01		9.68E-01
N	119904	Dimethoxybenzidine, 3,3'-	mg/L		9.28E+03	9.28E+03		9.14E+01	9.14E+01		2.07E+01	2.07E+01		5.34E+01	5.34E+01
N	77781	Dimethyl Sulfate	mg/L												
N	124403	Dimethylamine	mg/L							7.47E-02		7.47E-02			
N	21436964	Dimethylaniline HCl, 2,4-	mg/L								7.48E-01	7.48E-01			
N	95681	Dimethylaniline, 2,4-	mg/L		1.44E+01	1.44E+01		1.42E-01	1.42E-01		8.34E-02	8.34E-02		8.31E-02	8.31E-02
N	121697	Dimethylaniline, N,N-	mg/L	4.64E+00		4.64E+00	1.14E+00		1.14E+00	1.42E+00		1.42E+00	2.54E+00		2.54E+00
N	119937	Dimethylbenzidine, 3,3'-	mg/L		*3.21E+00*	*3.21E+00*		*3.16E-02*	*3.16E-02*		1.48E-02	1.48E-02		1.85E-02	1.85E-02
N	107584407	Dimethylethyl Lead	mg/L												
N	68122	Dimethylformamide	mg/L	4.28E+04		4.28E+04	1.05E+04		1.05E+04	1.20E+03		1.20E+03	2.34E+04		2.34E+04
N	57147	Dimethylhydrazine, 1,1-	mg/L		1.97E+01	1.97E+01		1.94E-01	1.94E-01		6.92E-02	6.92E-02		1.13E-01	1.13E-01
N	540738	Dimethylhydrazine, 1,2-	mg/L								1.17E-02	1.17E-02			
N	105679	Dimethylphenol, 2,4-	mg/L	1.01E+01		1.01E+01	2.49E+00		2.49E+00	3.24E+00		3.24E+00	5.54E+00		5.54E+00
N	576261	Dimethylphenol, 2,6-	mg/L	2.09E+00		2.09E+00	5.14E-01		5.14E-01	6.23E-01		6.23E-01	1.14E+00		1.14E+00
N	95658	Dimethylphenol, 3,4-	mg/L	1.39E+00		1.39E+00	3.43E-01		3.43E-01	4.36E-01		4.36E-01	7.62E-01		7.62E-01
N	131113	Dimethylphthalate	mg/L	6.27E+05		6.27E+05	1.54E+05		1.54E+05	7.96E+04		7.96E+04	3.43E+05		3.43E+05
N	120616	*Dimethylterephthalate*	mg/L	3.28E+02		3.28E+02	8.07E+01		8.07E+01	9.82E+01		9.82E+01	1.79E+02		1.79E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	84742	Dibutyl Phthalate	mg/L	1.48E+01		1.48E+01	9.75E+00		9.75E+00	2.41E+01		2.41E+01	1.46E+01		1.46E+01
N	1918009	Dicamba	mg/L	1.83E+01		1.83E+01	1.46E+01		1.46E+01	3.23E+01		3.23E+01	2.19E+01		2.19E+01
N	764410	Dichloro-2-butene, 1,4-	mg/L		3.25E-02	3.25E-02		9.19E-02	9.19E-02		3.25E-02	3.25E-02		9.19E-02	9.19E-02
N	79436	Dichloroacetic Acid	mg/L												
N	95501	Dichlorobenzene, 1,2-	mg/L	2.04E+01		2.04E+01	1.38E+01		1.38E+01	3.36E+01		3.36E+01	2.06E+01		2.06E+01
N	541731	Dichlorobenzene, 1,3-	mg/L	1.47E-01		1.47E-01	9.68E-02		9.68E-02	2.39E-01		2.39E-01	1.45E-01		1.45E-01
N	106467	Dichlorobenzene, 1,4-	mg/L	7.46E+00	1.00E+00	1.00E+00	5.09E+00	9.04E-01	9.04E-01	1.23E+01	1.00E+00	1.00E+00	7.61E+00	9.04E-01	9.04E-01
N	91941	Dichlorobenzidine, 3,3'-	mg/L		1.02E-01	1.02E-01		9.77E-02	9.77E-02		1.02E-01	1.02E-01		9.77E-02	9.77E-02
N	75718	Dichlorodifluoromethane	mg/L	6.38E+01		6.38E+01	4.48E+01		4.48E+01	1.07E+02		1.07E+02	6.70E+01		6.70E+01
N	75343	Dichloroethane, 1,1-	mg/L	1.19E+02		1.19E+02	1.31E+02		1.31E+02	2.37E+02		2.37E+02	1.96E+02		1.96E+02
N	107062	Dichloroethane, 1,2-	mg/L	4.62E+01	2.06E+00	2.06E+00	6.62E+01	3.10E+00	3.10E+00	9.93E+01	2.06E+00	2.06E+00	9.89E+01	3.10E+00	3.10E+00
Y	75354	Dichloroethylene, 1,1-	mg/L	1.07E+01	2.26E-01	2.26E-01	1.18E+01	2.80E-01	2.80E-01	2.13E+01	2.26E-01	2.26E-01	1.77E+01	2.80E-01	2.80E-01
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	2.04E+01		2.04E+01	7.65E+01		7.65E+01	5.28E+01		5.28E+01	1.14E+02		1.14E+02
Y	156592	Dichloroethylene, 1,2-cis-	mg/L	1.11E+01		1.11E+01	1.17E+01		1.17E+01	2.18E+01		2.18E+01	1.75E+01		1.75E+01
Y	156605	Dichloroethylene, 1,2-trans-	mg/L	4.69E+01		4.69E+01	2.13E+02		2.13E+02	1.24E+02		1.24E+02	3.18E+02		3.18E+02
N	120832	Dichlorophenol, 2,4-	mg/L	7.06E-01		7.06E-01	4.79E-01		4.79E-01	1.16E+00		1.16E+00	7.17E-01		7.17E-01
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/L	1.42E+01		1.42E+01	1.83E+01		1.83E+01	2.96E+01		2.96E+01	2.74E+01		2.74E+01
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/L	9.46E+00		9.46E+00	1.04E+01		1.04E+01	1.88E+01		1.88E+01	1.55E+01		1.55E+01
N	78875	Dichloropropane, 1,2-	mg/L	1.05E+00	1.47E+00	1.05E+00	9.89E-01	1.63E+00	9.89E-01	1.98E+00	1.47E+00	1.47E+00	1.48E+00	1.63E+00	1.48E+00
N	616239	Dichloropropanol, 2,3-	mg/L	7.70E+00		7.70E+00	8.77E+01		8.77E+01	2.18E+01		2.18E+01	1.31E+02		1.31E+02
N	542756	Dichloropropene, 1,3-	mg/L	3.34E+01	1.25E+00	1.25E+00	3.51E+01	1.50E+00	1.50E+00	6.53E+01	1.25E+00	1.25E+00	5.24E+01	1.50E+00	1.50E+00
N	62737	Dichlorvos	mg/L	1.07E+00	1.02E+00	1.02E+00	3.08E+00	2.71E+00	2.71E+00	2.66E+00	1.02E+00	1.02E+00	4.60E+00	2.71E+00	2.71E+00
N	115322	Dicofol	mg/L		8.59E-03	8.59E-03		7.39E-03	7.39E-03		8.59E-03	8.59E-03		7.39E-03	7.39E-03
N	77736	Dicyclopentadiene	mg/L	1.14E+01		1.14E+01	8.25E+00		8.25E+00	1.94E+01		1.94E+01	1.23E+01		1.23E+01
N	60571	Dieldrin	mg/L	2.42E-02	3.04E-03	3.04E-03	1.83E-02	2.92E-03	2.92E-03	4.17E-02	3.04E-03	3.04E-03	2.73E-02	2.92E-03	2.92E-03
N	84662	Diethyl Phthalate	mg/L	1.23E+03		1.23E+03	1.75E+03		1.75E+03	2.64E+03		2.64E+03	2.62E+03		2.62E+03
N	311455	Diethyl-p-nitrophenylphosphate	mg/L												
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/L												
N	*112345*	*Diethylene Glycol Monobutyl Ether*	mg/L	1.53E+01		1.53E+01	7.59E+02		7.59E+02	4.49E+01		4.49E+01	1.14E+03		1.14E+03
N	111900	Diethylene Glycol Monoethyl Ether	mg/L	5.06E+03		5.06E+03	4.68E+04		4.68E+04	1.42E+04		1.42E+04	6.99E+04		6.99E+04
N	617845	Diethylformamide	mg/L	2.61E+01		2.61E+01	1.29E+02		1.29E+02	6.97E+01		6.97E+01	1.92E+02		1.92E+02
N	56531	Diethylstilbesterol	mg/L		5.30E-07	5.30E-07		4.54E-07	4.54E-07		5.30E-07	5.30E-07		4.54E-07	4.54E-07
N	43222486	Difenzoquat	mg/L	2.17E+02		2.17E+02				6.44E+02		6.44E+02			
N	35367385	Diflubenzuron	mg/L	1.08E+01		1.08E+01	8.35E+00		8.35E+00	1.88E+01		1.88E+01	1.25E+01		1.25E+01
N	75376	Difluoroethane, 1,1-	mg/L	2.11E+04		2.11E+04	4.11E+04		4.11E+04	4.90E+04		4.90E+04	6.15E+04		6.15E+04
N	1445756	Diisopropyl Methylphosphonate	mg/L	1.76E+02		1.76E+02	5.70E+02		5.70E+02	4.46E+02		4.46E+02	8.53E+02		8.53E+02
N	55290647	Dimethipin	mg/L	5.31E+01		5.31E+01	1.56E+03		1.56E+03	1.55E+02		1.55E+02	2.33E+03		2.33E+03
N	60515	Dimethoate	mg/L	1.93E-01		1.93E-01	1.86E-01		1.86E-01	3.66E-01		3.66E-01	2.77E-01		2.77E-01
N	119904	Dimethoxybenzidine, 3,3'-	mg/L		2.07E+01	2.07E+01		5.34E+01	5.34E+01		2.07E+01	2.07E+01		5.34E+01	5.34E+01
N	77781	Dimethyl Sulfate	mg/L												
N	124403	Dimethylamine	mg/L	1.55E-02		1.55E-02				4.59E-02		4.59E-02			
N	21436964	Dimethylaniline HCl, 2,4-	mg/L		7.48E-01	7.48E-01					7.48E-01	7.48E-01			
N	95681	Dimethylaniline, 2,4-	mg/L		8.34E-02	8.34E-02		8.31E-02	8.31E-02		8.34E-02	8.34E-02		8.31E-02	8.31E-02
N	121697	Dimethylaniline, N,N-	mg/L	6.86E-01		6.86E-01	4.87E-01		4.87E-01	1.15E+00		1.15E+00	7.28E-01		7.28E-01
N	119937	Dimethylbenzidine, 3,3'-	mg/L		1.48E-02	1.48E-02		1.85E-02	1.85E-02		1.48E-02	1.48E-02		1.85E-02	1.85E-02
N	107584407	Dimethylethyl Lead	mg/L												
N	68122	Dimethylformamide	mg/L	2.62E+02		2.62E+02	4.50E+03		4.50E+03	7.52E+02		7.52E+02	6.72E+03		6.72E+03
N	57147	Dimethylhydrazine, 1,1-	mg/L		6.92E-02	6.92E-02		1.13E-01	1.13E-01		6.92E-02	6.92E-02		1.13E-01	1.13E-01
N	540738	Dimethylhydrazine, 1,2-	mg/L		1.17E-02	1.17E-02					1.17E-02	1.17E-02			
N	105679	Dimethylphenol, 2,4-	mg/L	1.66E+00		1.66E+00	1.06E+00		1.06E+00	2.67E+00		2.67E+00	1.59E+00		1.59E+00
N	576261	Dimethylphenol, 2,6-	mg/L	2.90E-01		2.90E-01	2.19E-01		2.19E-01	5.01E-01		5.01E-01	3.28E-01		3.28E-01
N	95658	Dimethylphenol, 3,4-	mg/L	2.17E-01		2.17E-01	1.46E-01		1.46E-01	3.56E-01		3.56E-01	2.19E-01		2.19E-01
N	131113	Dimethylphthalate	mg/L	2.16E+04		2.16E+04	6.58E+04		6.58E+04	5.44E+04		5.44E+04	9.83E+04		9.83E+04
N	120616	Dimethylterephthalate	mg/L	4.60E+01		4.60E+01	3.44E+01		3.44E+01	7.91E+01		7.91E+01	5.14E+01		5.14E+01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value less of hazard- and cancer-based values.

Table A.16. Surface Water [illegible]ion Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	534521	Dinitro-o-cresol, 4,6-	mg/L												
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/L	2.03E+05		2.03E+05	4.99E+04		4.99E+04	2.62E+01		2.62E+01	1.11E+05		1.11E+05
N	528290	Dinitrobenzene, 1,2-	mg/L	1.66E+01		1.66E+01	4.08E+00		4.08E+00	2.65E+00		2.65E+00	9.07E+00		9.07E+00
N	99650	Dinitrobenzene, 1,3-	mg/L	3.02E+00		3.02E+00	7.43E-01		7.43E-01	5.60E-01		5.60E-01	1.65E+00		1.65E+00
N	100254	Dinitrobenzene, 1,4-	mg/L	1.06E+01		1.06E+01	2.61E+00		2.61E+00	2.08E+00		2.08E+00	5.81E+00		5.81E+00
N	51285	Dinitrophenol, 2,4-	mg/L	6.96E+01		6.96E+01	1.71E+01		1.71E+01	1.21E+01		1.21E+01	3.81E+01		3.81E+01
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/L		8.55E+01	8.55E+01		8.42E-01	8.42E-01		3.03E-01	3.03E-01		4.92E-01	4.92E-01
N	121142	Dinitrotoluene, 2,4-	mg/L	4.98E+01	8.55E+01	4.98E+01	1.23E+01	8.42E-01	8.42E-01	9.99E+00	3.03E-01	3.03E-01	2.73E+01	4.92E-01	4.92E-01
N	606202	Dinitrotoluene, 2,6-	mg/L	3.79E+01	1.30E+02	3.79E+01	9.32E+00	1.28E+00	1.28E+00	6.34E+00	3.69E-01	3.69E-01	2.07E+01	7.48E-01	7.48E-01
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/L												
N	88857	Dinoseb	mg/L	1.99E+00		1.99E+00	4.90E-01		4.90E-01	6.14E-01		6.14E-01	1.09E+00		1.09E+00
N	123911	Dioxane, 1,4-	mg/L		4.73E+04	4.73E+04		4.65E+02	4.65E+02		3.51E+01	3.51E+01		2.72E+02	2.72E+02
Y	1746016	Dioxins/Furans (Total)	mg/L		6.19E-07	6.19E-07		6.09E-09	6.09E-09		4.17E-09	4.17E-09		3.56E-09	3.56E-09
N	957517	Diphenamid	mg/L	7.27E+02		7.27E+02	1.79E+02		1.79E+02	1.47E+02		1.47E+02	3.98E+02		3.98E+02
N	127639	Diphenyl sulfone	mg/L							1.18E+02		1.18E+02			
N	122394	Diphenylamine	mg/L	2.58E+01		2.58E+01	6.35E+00		6.35E+00	8.15E+00		8.15E+00	1.41E+01		1.41E+01
N	122667	Diphenylhydrazine, 1,2-	mg/L		9.03E+00	9.03E+00		8.89E-02	8.89E-02		5.47E-02	5.47E-02		5.19E-02	5.19E-02
N	85007	Diquat	mg/L	1.00E+06		1.00E+06	3.02E+05		3.02E+05	2.88E+01		2.88E+01	6.71E+05		6.71E+05
N	1937377	Direct Black 38	mg/L		1.61E+04	1.61E+04		1.58E+02	1.58E+02		5.04E-02	5.04E-02		9.25E+01	9.25E+01
N	2602462	Direct Blue 6	mg/L								5.35E-02	5.35E-02			
N	16071866	Direct Brown 95	mg/L								4.66E-02	4.66E-02			
N	2610051	Direct Sky Blue	mg/L												
N	298044	Disulfoton	mg/L	7.96E-02		7.96E-02	1.96E-02		1.96E-02	2.46E-02		2.46E-02	4.35E-02		4.35E-02
N	330541	Diuron	mg/L	1.86E+01		1.86E+01	4.57E+00		4.57E+00	4.89E+00		4.89E+00	1.02E+01		1.02E+01
N	2439103	Dodine	mg/L	8.91E+01		8.91E+01	2.19E+01		2.19E+01	1.86E+01		1.86E+01	4.88E+01		4.88E+01
N	759944	EPTC	mg/L	5.57E+01		5.57E+01	1.37E+01		1.37E+01	1.71E+01		1.71E+01	3.05E+01		3.05E+01
N	115297	Endosulfan	mg/L	1.59E+02		1.59E+02	3.92E+01		3.92E+01	3.11E+01		3.11E+01	8.71E+01		8.71E+01
N	145733	Endothall	mg/L	3.48E+02		3.48E+02	8.57E+01		8.57E+01	7.89E+01		7.89E+01	1.91E+02		1.91E+02
N	72208	Endrin	mg/L	4.18E-02		4.18E-02	1.03E-02		1.03E-02	1.35E-02		1.35E-02	2.29E-02		2.29E-02
N	106898	Epichlorohydrin	mg/L	4.82E+02	5.68E+04	4.82E+02	1.19E+02	5.59E+02	1.19E+02	2.24E+01	3.93E+01	2.24E+01	2.64E+02	3.27E+02	2.64E+02
N	106887	Epoxybutane, 1,2-	mg/L	4.36E+01		4.36E+01	1.07E+01		1.07E+01	1.19E+01		1.19E+01	2.39E+01		2.39E+01
N	16672870	Ethephon	mg/L	1.03E+03		1.03E+03	2.54E+02		2.54E+02	5.48E+01		5.48E+01	5.64E+02		5.64E+02
N	563122	Ethion	mg/L	8.19E-01		8.19E-01	2.02E-01		2.02E-01	2.55E-01		2.55E-01	4.48E-01		4.48E-01
N	111159	Ethoxyethanol Acetate, 2-	mg/L	1.94E+04		1.94E+04	4.78E+03		4.78E+03	2.42E+03		2.42E+03	1.06E+04		1.06E+04
N	110805	Ethoxyethanol, 2-	mg/L	7.43E+04		7.43E+04	1.83E+04		1.83E+04	4.30E+03		4.30E+03	4.06E+04		4.06E+04
N	141786	Ethyl Acetate	mg/L	3.82E+04		3.82E+04	9.40E+03		9.40E+03	6.04E+03		6.04E+03	2.09E+04		2.09E+04
N	140885	Ethyl Acrylate	mg/L		6.77E+02	6.77E+02		6.67E+00	6.67E+00		3.03E+00	3.03E+00		3.89E+00	3.89E+00
N	75003	Ethyl Chloride	mg/L	4.46E+03	8.96E+03	4.46E+03	1.10E+03	8.83E+01	8.83E+01	1.13E+03	4.31E+01	4.31E+01	2.44E+03	5.16E+01	5.16E+01
N	60297	Ethyl Ether	mg/L	1.05E+03		1.05E+03	2.58E+02		2.58E+02	3.01E+02		3.01E+02	5.74E+02		5.74E+02
N	97632	Ethyl Methacrylate	mg/L	9.33E+02		9.33E+02	2.30E+02		2.30E+02	2.41E+02		2.41E+02	5.10E+02		5.10E+02
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/L	5.57E-02		5.57E-02	1.37E-02		1.37E-02	1.59E-02		1.59E-02	3.05E-02		3.05E-02
Y	100414	Ethylbenzene	mg/L	1.46E+02		1.46E+02	3.59E+01		3.59E+01	4.57E+01		4.57E+01	7.99E+01		7.99E+01
N	109784	Ethylene Cyanohydrin	mg/L	2.79E+05		2.79E+05	6.86E+04		6.86E+04	3.77E+03		3.77E+03	1.52E+05		1.52E+05
N	107153	Ethylene Diamine	mg/L	1.25E+03		1.25E+03	3.08E+02		3.08E+02	1.59E+02		1.59E+02	6.85E+02		6.85E+02
N	107211	Ethylene Glycol	mg/L	1.00E+06		1.00E+06	7.62E+05		7.62E+05	2.55E+04		2.55E+04	1.00E+06		1.00E+06
N	111762	Ethylene Glycol Monobutyl Ether	mg/L	2.32E+03		2.32E+03	5.71E+02		5.71E+02	6.75E+02		6.75E+02	1.27E+03		1.27E+03
N	75218	Ethylene Oxide	mg/L		3.24E+02	3.24E+02		3.19E+00	3.19E+00		3.56E-01	3.56E-01		1.86E+00	1.86E+00
N	96457	Ethylene Thiourea	mg/L	2.62E+01	6.95E+03	2.62E+01	6.45E+00	6.84E+01	6.45E+00	9.33E-01	3.64E+00	9.33E-01	1.43E+01	4.00E+01	1.43E+01
N	84720	Ethylphthalyl Ethyl Glycolate	mg/L	1.29E+05		1.29E+05	3.16E+04		3.16E+04	2.02E+04		2.02E+04	7.03E+04		7.03E+04
N	101200480	Express	mg/L							1.05E+02		1.05E+02			
N	22224926	Fenamiphos	mg/L	2.18E+00		2.18E+00	5.36E-01		5.36E-01	5.80E-01		5.80E-01	1.19E+00		1.19E+00
N	39515418	Fenpropathrin	mg/L	8.70E+00		8.70E+00	2.14E+00		2.14E+00	2.80E+00		2.80E+00	4.76E+00		4.76E+00
N	2164172	Fluometuron	mg/L	1.96E+02		1.96E+02	4.82E+01		4.82E+01	4.62E+01		4.62E+01	1.07E+02		1.07E+02
Y	206440	Fluoranthene	mg/L	3.84E+00		3.84E+00	9.45E-01		9.45E-01	1.24E+00		1.24E+00	2.10E+00		2.10E+00

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	534521	Dinitro-o-cresol, 4,6-	mg/L												
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/L	5.43E+00		5.43E+00	2.13E+04		2.13E+04	1.61E+01		1.61E+01	3.18E+04		3.18E+04
N	528290	Dinitrobenzene, 1,2-	mg/L	7.83E-01		7.83E-01	1.74E+00		1.74E+00	1.87E+00		1.87E+00	2.60E+00		2.60E+00
N	99650	Dinitrobenzene, 1,3-	mg/L	1.77E-01		1.77E-01	3.17E-01		3.17E-01	4.03E-01		4.03E-01	4.73E-01		4.73E-01
N	100254	Dinitrobenzene, 1,4-	mg/L	6.76E-01		6.76E-01	1.11E+00		1.11E+00	1.51E+00		1.51E+00	1.66E+00		1.66E+00
N	51285	Dinitrophenol, 2,4-	mg/L	3.72E+00		3.72E+00	7.31E+00		7.31E+00	8.64E+00		8.64E+00	1.09E+01		1.09E+01
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/L		3.03E-01	3.03E-01		4.92E-01	4.92E-01		3.03E-01	3.03E-01		4.92E-01	4.92E-01
N	121142	Dinitrotoluene, 2,4-	mg/L	3.30E+00	3.03E-01	3.03E-01	5.23E+00	4.92E-01	4.92E-01	7.29E+00	3.03E-01	3.03E-01	7.82E+00	4.92E-01	4.92E-01
N	606202	Dinitrotoluene, 2,6-	mg/L	1.91E+00	3.69E-01	3.69E-01	3.98E+00	7.48E-01	7.48E-01	4.49E+00	3.69E-01	3.69E-01	5.94E+00	7.48E-01	7.48E-01
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/L												
N	88857	Dinoseb	mg/L	2.99E-01		2.99E-01	2.09E-01		2.09E-01	4.99E-01		4.99E-01	3.12E-01		3.12E-01
N	123911	Dioxane, 1,4-	mg/L		3.51E+01	3.51E+01		2.72E+02	2.72E+02		3.51E+01	3.51E+01		2.72E+02	2.72E+02
Y	1746016	Dioxins/Furans (Total)	mg/L		4.17E-09	4.17E-09		3.56E-09	3.56E-09		4.17E-09	4.17E-09		3.56E-09	3.56E-09
N	957517	Diphenamid	mg/L	4.90E+01		4.90E+01	7.63E+01		7.63E+01	1.08E+02		1.08E+02	1.14E+02		1.14E+02
N	127639	Diphenyl sulfone	mg/L	2.44E+01		2.44E+01				7.24E+01		7.24E+01			
N	122394	Diphenylamine	mg/L	4.10E+00		4.10E+00	2.71E+00		2.71E+00	6.67E+00		6.67E+00	4.05E+00		4.05E+00
N	122667	Diphenylhydrazine, 1,2-	mg/L		5.47E-02	5.47E-02		5.19E-02	5.19E-02		5.47E-02	5.47E-02		5.19E-02	5.19E-02
N	85007	Diquat	mg/L	5.97E+00		5.97E+00	1.29E+05		1.29E+05	1.77E+01		1.77E+01	1.92E+05		1.92E+05
N	1937377	Direct Black 38	mg/L		5.04E-02	5.04E-02		9.25E+01	9.25E+01		5.04E-02	5.04E-02		9.25E+01	9.25E+01
N	2602462	Direct Blue 6	mg/L		5.35E-02	5.35E-02					5.35E-02	5.35E-02			
N	16071866	Direct Brown 95	mg/L		4.66E-02	4.66E-02					4.66E-02	4.66E-02			
N	2610051	Direct Sky Blue	mg/L												
N	298044	Disulfoton	mg/L	1.20E-02		1.20E-02	8.35E-03		8.35E-03	2.00E-02		2.00E-02	1.25E-02		1.25E-02
N	330541	Diuron	mg/L	1.99E+00		1.99E+00	1.95E+00		1.95E+00	3.80E+00		3.80E+00	2.91E+00		2.91E+00
N	2439103	Dodine	mg/L	6.31E+00		6.31E+00	9.36E+00		9.36E+00	1.37E+01		1.37E+01	1.40E+01		1.40E+01
N	759944	EPTC	mg/L	8.27E+00		8.27E+00	5.85E+00		5.85E+00	1.39E+01		1.39E+01	8.74E+00		8.74E+00
N	115297	Endosulfan	mg/L	1.01E+01		1.01E+01	1.67E+01		1.67E+01	2.26E+01		2.26E+01	2.50E+01		2.50E+01
N	145733	Endothall	mg/L	2.82E+01		2.82E+01	3.65E+01		3.65E+01	5.90E+01		5.90E+01	5.46E+01		5.46E+01
N	72208	Endrin	mg/L	7.01E-03		7.01E-03	4.39E-03		4.39E-03	1.11E-02		1.11E-02	6.56E-03		6.56E-03
N	106898	Epichlorohydrin	mg/L	5.09E+00	3.93E+01	5.09E+00	5.06E+01	3.27E+02	5.06E+01	1.43E+01	3.93E+01	1.43E+01	7.56E+01	3.27E+02	7.56E+01
N	106887	Epoxybutane, 1,2-	mg/L	5.00E+00		5.00E+00	4.58E+00		4.58E+00	9.31E+00		9.31E+00	6.84E+00		6.84E+00
N	16672870	Ethephon	mg/L	1.26E+01		1.26E+01	1.08E+02		1.08E+02	3.51E+01		3.51E+01	1.62E+02		1.62E+02
N	563122	Ethion	mg/L	1.26E-01		1.26E-01	8.60E-02		8.60E-02	2.08E-01		2.08E-01	1.29E-01		1.29E-01
N	111159	Ethoxyethanol Acetate, 2-	mg/L	6.53E+02		6.53E+02	2.04E+03		2.04E+03	1.65E+03		1.65E+03	3.05E+03		3.05E+03
N	110805	Ethoxyethanol, 2-	mg/L	9.99E+02		9.99E+02	7.80E+03		7.80E+03	2.77E+03		2.77E+03	1.17E+04		1.17E+04
N	141786	Ethyl Acetate	mg/L	1.77E+03		1.77E+03	4.01E+03		4.01E+03	4.24E+03		4.24E+03	5.99E+03		5.99E+03
N	140885	Ethyl Acrylate	mg/L		3.03E+00	3.03E+00		3.89E+00	3.89E+00		3.03E+00	3.03E+00		3.89E+00	3.89E+00
N	75003	Ethyl Chloride	mg/L	4.45E+02	4.31E+01	4.31E+01	4.68E+02	5.16E+01	5.16E+01	8.70E+02	4.31E+01	4.31E+01	6.99E+02	5.16E+01	5.16E+01
N	60297	Ethyl Ether	mg/L	1.34E+02		1.34E+02	1.10E+02		1.10E+02	2.39E+02		2.39E+02	1.65E+02		1.65E+02
N	97632	Ethyl Methacrylate	mg/L	9.59E+01		9.59E+01	9.79E+01		9.79E+01	1.86E+02		1.86E+02	1.46E+02		1.46E+02
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/L	7.00E-03		7.00E-03	5.85E-03		5.85E-03	1.26E-02		1.26E-02	8.74E-03		8.74E-03
Y	100414	Ethylbenzene	mg/L	2.26E+01		2.26E+01	1.53E+01		1.53E+01	3.73E+01		3.73E+01	2.29E+01		2.29E+01
N	109784	Ethylene Cyanohydrin	mg/L	8.00E+02		8.00E+02	2.92E+04		2.92E+04	2.34E+03		2.34E+03	4.37E+04		4.37E+04
N	107153	Ethylene Diamine	mg/L	4.32E+01		4.32E+01	1.31E+02		1.31E+02	1.09E+02		1.09E+02	1.96E+02		1.96E+02
N	107211	Ethylene Glycol	mg/L	5.37E+03		5.37E+03	3.25E+05		3.25E+05	1.58E+04		1.58E+04	4.86E+05		4.86E+05
N	111762	Ethylene Glycol Monobutyl Ether	mg/L	3.05E+02		3.05E+02	2.44E+02		2.44E+02	5.38E+02		5.38E+02	3.64E+02		3.64E+02
N	75218	Ethylene Oxide	mg/L		3.56E-01	3.56E-01		1.86E+00	1.86E+00		3.56E-01	3.56E-01		1.86E+00	1.86E+00
N	96457	Ethylene Thiourea	mg/L	2.07E-01	3.64E+00	2.07E-01	2.75E+00	4.00E+01	2.75E+00	5.90E-01	3.64E+00	5.90E-01	4.11E+00	4.00E+01	4.11E+00
N	84720	Ethylphthalyl Ethyl Glycolate	mg/L	5.92E+03		5.92E+03	1.35E+04		1.35E+04	1.42E+04		1.42E+04	2.02E+04		2.02E+04
N	101200480	Express	mg/L	2.17E+01		2.17E+01				6.44E+01		6.44E+01			
N	22224926	Fenamiphos	mg/L	2.39E-01		2.39E-01	2.28E-01		2.28E-01	4.52E-01		4.52E-01	3.41E-01		3.41E-01
N	39515418	Fenpropathrin	mg/L	1.44E+00		1.44E+00	9.14E-01		9.14E-01	2.30E+00		2.30E+00	1.37E+00		1.37E+00
N	2164172	Fluometuron	mg/L	1.71E+01		1.71E+01	2.05E+01		2.05E+01	3.49E+01		3.49E+01	3.07E+01		3.07E+01
Y	206440	Fluoranthene	mg/L	6.45E-01		6.45E-01	4.03E-01		4.03E-01	1.02E+00		1.02E+00	6.02E-01		6.02E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action valu[illegible]less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
Y	86737	Fluorene	mg/L	8.91E+00		8.91E+00	2.19E+00		2.19E+00	2.87E+00		2.87E+00	4.88E+00		4.88E+00
N	59756604	Fluridone	mg/L	1.35E+03		1.35E+03	3.32E+02		3.32E+02	3.09E+02		3.09E+02	7.39E+02		7.39E+02
N	56425913	Flurprimidol	mg/L	1.99E+02		1.99E+02	4.90E+01		4.90E+01	5.17E+01		5.17E+01	1.09E+02		1.09E+02
N	66332965	Flutolanil	mg/L							7.86E+02		7.86E+02			
N	69409945	Fluvalinate	mg/L	5.06E+00		5.06E+00	1.25E+00		1.25E+00	1.62E+00		1.62E+00	2.77E+00		2.77E+00
N	133073	Folpet	mg/L	1.19E+03	7.90E+03	1.19E+03	2.92E+02	7.78E+01	7.78E+01	2.97E+02	3.73E+01	3.73E+01	6.49E+02	4.54E+01	4.54E+01
N	72178020	Fomesafen	mg/L		1.49E+03	1.49E+03		1.46E+01	1.46E+01		1.86E+00	1.86E+00		8.55E+00	8.55E+00
N	944229	Fonofos	mg/L	2.93E+00		2.93E+00	7.22E-01		7.22E-01	9.17E-01		9.17E-01	1.60E+00		1.60E+00
N	50000	Formaldehyde	mg/L	6.08E+03		6.08E+03	1.50E+03		1.50E+03	9.84E+02		9.84E+02	3.33E+03		3.33E+03
N	64186	Formic Acid	mg/L	2.72E+05		2.72E+05	6.69E+04		6.69E+04	2.02E+04		2.02E+04	1.49E+05		1.49E+05
N	39148248	Fosetyl-AL	mg/L							3.93E+04		3.93E+04			
N	110009	Furan	mg/L	1.46E+01		1.46E+01	3.60E+00		3.60E+00	3.48E+00		3.48E+00	7.99E+00		7.99E+00
N	67458	Furazolidone	mg/L		1.37E+02	1.37E+02		1.35E+00	1.35E+00		1.02E-01	1.02E-01		7.87E-01	7.87E-01
N	98011	Furfural	mg/L	1.52E+00		1.52E+00	3.74E-01		3.74E-01	4.86E-01		4.86E-01	8.31E-01		8.31E-01
N	531828	Furium	mg/L								8.67E-03	8.67E-03			
N	60568050	Furmecyclox	mg/L								1.45E+01	1.45E+01			
N	77182822	Glufosinate, Ammonium	mg/L							5.24E+00		5.24E+00			
N	765344	Glycidyl	mg/L	1.06E+02		1.06E+02	2.61E+01		2.61E+01	4.55E+00		4.55E+00	5.81E+01		5.81E+01
N	1071836	Glyphosate	mg/L	1.00E+06		1.00E+06	1.00E+06		1.00E+06	1.31E+03		1.31E+03	1.00E+06		1.00E+06
N	42874033	Goal	mg/L	6.19E+00		6.19E+00	1.52E+00		1.52E+00	1.91E+00		1.91E+00	3.39E+00		3.39E+00
N	69806402	Haloxyfop, Methyl	mg/L	8.98E-01		8.98E-01	2.21E-01		2.21E-01	2.02E-01		2.02E-01	4.92E-01		4.92E-01
N	79277273	Harmony	mg/L	6.58E+03		6.58E+03	1.62E+03		1.62E+03	1.58E+02		1.58E+02	3.60E+03		3.60E+03
N	76448	Heptachlor	mg/L	3.65E+00	3.78E+00	3.65E+00	8.98E-01	3.72E-02	3.72E-02	1.00E+00	2.02E-02	2.02E-02	2.00E+00	2.17E-02	2.17E-02
N	1024573	Heptachlor Epoxide	mg/L	1.90E-02	3.74E-01	1.90E-02	4.67E-03	3.68E-03	3.68E-03	5.93E-03	2.40E-03	2.40E-03	1.04E-02	2.15E-03	2.15E-03
N	142825	Heptane, N-	mg/L												
N	87821	Hexabromobenzene	mg/L	1.05E+01		1.05E+01	2.58E+00		2.58E+00	3.01E+00		3.01E+00	5.74E+00		5.74E+00
N	118741	Hexachlorobenzene	mg/L	2.12E-01	3.87E-01	2.12E-01	5.22E-02	3.81E-03	3.81E-03	6.83E-02	2.59E-03	2.59E-03	1.16E-01	2.23E-03	2.23E-03
N	87683	Hexachlorobutadiene	mg/L	9.28E-02	1.39E+01	9.28E-02	2.29E-02	1.37E-01	2.29E-02	2.97E-02	9.21E-02	2.97E-02	5.08E-02	7.99E-02	5.08E-02
N	319846	Hexachlorocyclohexane, Alpha-	mg/L		2.11E+00	2.11E+00		2.07E-02	2.07E-02		1.18E-02	1.18E-02		1.21E-02	1.21E-02
N	319857	Hexachlorocyclohexane, Beta-	mg/L		5.97E+00	5.97E+00		5.88E-02	5.88E-02		3.45E-02	3.45E-02		3.44E-02	3.44E-02
N	319868	Hexachlorocyclohexane, Delta-	mg/L												
N	6108107	Hexachlorocyclohexane, Epsilon	mg/L												
N	58899	Hexachlorocyclohexane, Gamma-	mg/L	2.32E+00	1.39E+01	2.32E+00	5.70E-01	1.36E-01	1.36E-01	6.30E-01	7.30E-02	7.30E-02	1.27E+00	7.97E-02	7.97E-02
N	608731	Hexachlorocyclohexane, Technical	mg/L		4.12E+00	4.12E+00		4.06E-02	4.06E-02		2.49E-02	2.49E-02		2.37E-02	2.37E-02
N	77474	Hexachlorocyclopentadiene	mg/L	1.15E+01		1.15E+01	2.84E+00		2.84E+00	3.56E+00		3.56E+00	6.31E+00		6.31E+00
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/L		4.66E-05	4.66E-05		4.59E-07	4.59E-07		3.13E-07	3.13E-07		2.68E-07	2.68E-07
N	67721	Hexachloroethane	mg/L	1.33E+00	2.21E+02	1.33E+00	3.26E-01	2.18E+00	3.26E-01	4.16E-01	1.42E+00	4.16E-01	7.26E-01	1.27E+00	7.26E-01
N	70304	Hexachlorophene	mg/L	1.29E-02		1.29E-02	3.16E-03		3.16E-03	4.16E-03		4.16E-03	7.03E-03		7.03E-03
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/L	1.76E+01	1.24E+02	1.76E+01	4.33E+00	1.22E+00	1.22E+00	4.98E+00	6.92E-01	6.92E-01	9.63E+00	7.15E-01	7.15E-01
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/L	1.14E-01		1.14E-01	2.80E-02		2.80E-02	1.86E-02		1.86E-02	6.22E-02		6.22E-02
N	110543	Hexane, N-	mg/L	1.62E+01		1.62E+01	3.99E+00		3.99E+00	5.22E+00		5.22E+00	8.87E+00		8.87E+00
N	591786	Hexanone, 2-	mg/L												
N	51235042	Hexazinone	mg/L	1.00E+06		1.00E+06	1.00E+06		1.00E+06	4.32E+02		4.32E+02	1.00E+06		1.00E+06
Y	37871004	HpCDD, 2,3,7,8-	mg/L		5.42E-05	5.42E-05		5.33E-07	5.33E-07		3.65E-07	3.65E-07		3.12E-07	3.12E-07
Y	38998753	HpCDF, 2,3,7,8-	mg/L								2.89E-04	2.89E-04			
Y	34465468	HxCDD, 2,3,7,8-	mg/L								2.89E-05	2.89E-05			
Y	55684941	HxCDF, 2,3,7,8-	mg/L								2.89E-05	2.89E-05			
N	302012	Hydrazine	mg/L		1.06E+03	1.06E+03		1.04E+01	1.04E+01		1.42E-01	1.42E-01		6.08E+00	6.08E+00
N	10034932	Hydrazine Sulfate	mg/L		1.06E+03	1.06E+03		1.04E+01	1.04E+01		1.42E-01	1.42E-01		6.08E+00	6.08E+00
N	123319	Hydroquinone	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	3.04E+02		3.04E+02	1.22E+03		1.22E+03
N	35554440	Imazalil	mg/L	4.83E+01		4.83E+01	1.19E+01		1.19E+01	1.43E+01		1.43E+01	2.64E+01		2.64E+01
N	81335377	Imazaquin	mg/L	2.79E+04		2.79E+04	6.86E+03		6.86E+03	2.40E+03		2.40E+03	1.52E+04		1.52E+04
Y	193395	Indeno[1,2,3-cd]pyrene	mg/L		5.81E-02	5.81E-02		5.72E-04	5.72E-04		3.92E-04	3.92E-04		3.34E-04	3.34E-04
N	36734197	Iprodione	mg/L	8.91E+02		8.91E+02	2.19E+02		2.19E+02	1.86E+02		1.86E+02	4.88E+02		4.88E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
Y	86737	Fluorene	mg/L	1.49E+00		1.49E+00	9.36E-01		9.36E-01	2.37E+00		2.37E+00	1.40E+00		1.40E+00
N	59756604	Fluridone	mg/L	1.11E+02		1.11E+02	1.42E+02		1.42E+02	2.31E+02		2.31E+02	2.12E+02		2.12E+02
N	56425913	Flurprimidol	mg/L	2.08E+01		2.08E+01	2.09E+01		2.09E+01	4.00E+01		4.00E+01	3.12E+01		3.12E+01
N	66332965	Flutolanil	mg/L	1.63E+02		1.63E+02				4.83E+02		4.83E+02			
N	69409945	Fluvalinate	mg/L	8.31E-01		8.31E-01	5.32E-01		5.32E-01	1.33E+00		1.33E+00	7.95E-01		7.95E-01
N	133073	Folpet	mg/L	1.15E+02	3.73E+01	3.73E+01	1.24E+02	4.54E+01	4.54E+01	2.27E+02	3.73E+01	3.73E+01	1.86E+02	4.54E+01	4.54E+01
N	72178020	Fomesafen	mg/L		1.86E+00	1.86E+00		8.55E+00	8.55E+00		1.86E+00	1.86E+00		8.55E+00	8.55E+00
N	944229	Fonofos	mg/L	4.54E-01		4.54E-01	3.08E-01		3.08E-01	7.48E-01		7.48E-01	4.60E-01		4.60E-01
N	50000	Formaldehyde	mg/L	2.92E+02		2.92E+02	6.38E+02		6.38E+02	6.93E+02		6.93E+02	9.53E+02		9.53E+02
N	64186	Formic Acid	mg/L	4.85E+03		4.85E+03	2.85E+04		2.85E+04	1.32E+04		1.32E+04	4.26E+04		4.26E+04
N	39148248	Fosetyl-AL	mg/L	8.14E+03		8.14E+03				2.41E+04		2.41E+04			
N	110009	Furan	mg/L	1.29E+00		1.29E+00	1.53E+00		1.53E+00	2.63E+00		2.63E+00	2.29E+00		2.29E+00
N	67458	Furazolidone	mg/L		1.02E-01	1.02E-01		7.87E-01	7.87E-01		1.02E-01	1.02E-01		7.87E-01	7.87E-01
N	98011	Furfural	mg/L	2.49E-01		2.49E-01	1.59E-01		1.59E-01	4.00E-01		4.00E-01	2.38E-01		2.38E-01
N	531828	Furium	mg/L		8.67E-03	8.67E-03					8.67E-03	8.67E-03			
N	60568050	Furmecyclox	mg/L		1.45E+01	1.45E+01					1.45E+01	1.45E+01			
N	77182822	Glufosinate, Ammonium	mg/L	1.09E+00		1.09E+00				3.22E+00		3.22E+00			
N	765344	Glycidyl	mg/L	1.02E+00		1.02E+00	1.11E+01		1.11E+01	2.89E+00		2.89E+00	1.66E+01		1.66E+01
N	1071836	Glyphosate	mg/L	2.71E+02		2.71E+02	4.50E+05		4.50E+05	8.04E+02		8.04E+02	6.72E+05		6.72E+05
N	42874033	Goal	mg/L	9.28E-01		9.28E-01	6.50E-01		6.50E-01	1.55E+00		1.55E+00	9.71E-01		9.71E-01
N	69806402	Haloxyfop, Methyl	mg/L	7.17E-02		7.17E-02	9.43E-02		9.43E-02	1.50E-01		1.50E-01	1.41E-01		1.41E-01
N	79277273	Harmony	mg/L	3.42E+01		3.42E+01	6.91E+02		6.91E+02	9.88E+01		9.88E+01	1.03E+03		1.03E+03
N	76448	Heptachlor	mg/L	4.24E-01	2.02E-02	2.02E-02	3.83E-01	2.17E-02	2.17E-02	7.85E-01	2.02E-02	2.02E-02	5.72E-01	2.17E-02	2.17E-02
N	1024573	Heptachlor Epoxide	mg/L	2.94E-03	2.40E-03	2.40E-03	1.99E-03	2.15E-03	1.99E-03	4.84E-03	2.40E-03	2.40E-03	2.97E-03	2.15E-03	2.15E-03
N	142825	Heptane, N-	mg/L												
N	87821	Hexabromobenzene	mg/L	1.34E+00		1.34E+00	1.10E+00		1.10E+00	2.39E+00		2.39E+00	1.65E+00		1.65E+00
N	118741	Hexachlorobenzene	mg/L	3.53E-02	2.59E-03	2.59E-03	2.23E-02	2.23E-03	2.23E-03	5.63E-02	2.59E-03	2.59E-03	3.33E-02	2.23E-03	2.23E-03
N	87683	Hexachlorobutadiene	mg/L	1.53E-02	9.21E-02	1.53E-02	9.75E-03	7.99E-02	9.75E-03	2.45E-02	9.21E-02	2.45E-02	1.46E-02	7.99E-02	1.46E-02
N	319846	Hexachlorocyclohexane, Alpha-	mg/L		1.18E-02	1.18E-02		1.21E-02	1.21E-02		1.18E-02	1.18E-02		1.21E-02	1.21E-02
N	319857	Hexachlorocyclohexane, Beta-	mg/L		3.45E-02	3.45E-02		3.44E-02	3.44E-02		3.45E-02	3.45E-02		3.44E-02	3.44E-02
N	319868	Hexachlorocyclohexane, Delta-	mg/L												
N	6108107	Hexachlorocyclohexane, Epsilon	mg/L												
N	58899	Hexachlorocyclohexane, Gamma-	mg/L	2.65E-01	7.30E-02	7.30E-02	2.43E-01	7.97E-02	7.97E-02	4.93E-01	7.30E-02	7.30E-02	3.63E-01	7.97E-02	7.97E-02
N	608731	Hexachlorocyclohexane, Technical	mg/L		2.49E-02	2.49E-02		2.37E-02	2.37E-02		2.49E-02	2.49E-02		2.37E-02	2.37E-02
N	77474	Hexachlorocyclopentadiene	mg/L	1.74E+00		1.74E+00	1.21E+00		1.21E+00	2.90E+00		2.90E+00	1.81E+00		1.81E+00
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/L		3.13E-07	3.13E-07		2.68E-07	2.68E-07		3.13E-07	3.13E-07		2.68E-07	2.68E-07
N	67721	Hexachloroethane	mg/L	2.07E-01	1.42E+00	2.07E-01	1.39E-01	1.27E+00	1.39E-01	3.40E-01	1.42E+00	3.40E-01	2.08E-01	1.27E+00	2.08E-01
N	70304	Hexachlorophene	mg/L	2.17E-03		2.17E-03	1.35E-03		1.35E-03	3.43E-03		3.43E-03	2.02E-03		2.02E-03
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/L	2.18E+00	6.92E-01	6.92E-01	1.85E+00	7.15E-01	7.15E-01	3.94E+00	6.92E-01	6.92E-01	2.76E+00	7.15E-01	7.15E-01
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/L	5.53E-03		5.53E-03	1.19E-02		1.19E-02	1.31E-02		1.31E-02	1.78E-02		1.78E-02
N	110543	Hexane, N-	mg/L	2.70E+00		2.70E+00	1.70E+00		1.70E+00	4.30E+00		4.30E+00	2.54E+00		2.54E+00
N	591786	Hexanone, 2-	mg/L												
N	51235042	Hexazinone	mg/L	8.96E+01		8.96E+01	1.00E+06		1.00E+06	2.66E+02		2.66E+02	1.00E+06		1.00E+06
Y	37871004	HpCDD, 2,3,7,8-	mg/L		3.65E-07	3.65E-07		3.12E-07	3.12E-07		3.65E-07	3.65E-07		3.12E-07	3.12E-07
Y	38998753	HpCDF, 2,3,7,8-	mg/L		2.89E-04	2.89E-04					2.89E-04	2.89E-04			
Y	34465468	HxCDD, 2,3,7,8-	mg/L		2.89E-05	2.89E-05					2.89E-05	2.89E-05			
Y	55684941	HxCDF, 2,3,7,8-	mg/L		2.89E-05	2.89E-05					2.89E-05	2.89E-05			
N	302012	Hydrazine	mg/L		1.42E-01	1.42E-01		6.08E+00	6.08E+00		1.42E-01	1.42E-01		6.08E+00	6.08E+00
N	10034932	Hydrazine Sulfate	mg/L		1.42E-01	1.42E-01		6.08E+00	6.08E+00		1.42E-01	1.42E-01		6.08E+00	6.08E+00
N	123319	Hydroquinone	mg/L	8.43E+01		8.43E+01	2.34E+02		2.34E+02	2.09E+02		2.09E+02	3.50E+02		3.50E+02
N	35554440	Imazalil	mg/L	6.63E+00		6.63E+00	5.07E+00		5.07E+00	1.15E+01		1.15E+01	7.57E+00		7.57E+00
N	81335377	Imazaquin	mg/L	5.93E+02		5.93E+02	2.92E+03		2.92E+03	1.58E+03		1.58E+03	4.37E+03		4.37E+03
Y	193395	Indeno[1,2,3-cd]pyrene	mg/L		3.92E-04	3.92E-04		3.34E-04	3.34E-04		3.92E-04	3.92E-04		3.34E-04	3.34E-04
N	36734197	Iprodione	mg/L	6.31E+01		6.31E+01	9.36E+01		9.36E+01	1.37E+02		1.37E+02	1.40E+02		1.40E+02

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action valu less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	78831	Isobutyl Alcohol	mg/L	1.03E+04		1.03E+04	2.53E+03		2.53E+03	1.80E+03		1.80E+03	5.63E+03		5.63E+03
N	78591	Isophorone	mg/L	2.53E+03	3.11E+04	2.53E+03	6.23E+02	3.06E+02	3.06E+02	6.25E+02	1.44E+02	1.44E+02	1.39E+03	1.79E+02	1.79E+02
N	33820530	*Isopropalin*	mg/L	2.61E+00		2.61E+00	6.43E-01		6.43E-01	8.42E-01		8.42E-01	1.43E+00		1.43E+00
N	67630	Isopropanol	mg/L												
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/L	1.30E+04		1.30E+04	3.19E+03		3.19E+03	9.99E+02		9.99E+02	7.09E+03		7.09E+03
N	82558507	Isoxaben	mg/L							6.55E+02		6.55E+02			
N	143500	Kepone	mg/L							2.36E+05		2.36E+05			
N	23950585	Kerb	mg/L	2.98E+02		2.98E+02	7.35E+01		7.35E+01	8.80E+01		8.80E+01	1.63E+02		1.63E+02
N	77501634	Lactofen	mg/L	1.47E+01		1.47E+01	3.61E+00		3.61E+00	4.02E+00		4.02E+00	8.02E+00		8.02E+00
N		Lead Alkyls	mg/L												
N	330552	Linuron	mg/L	1.01E+01		1.01E+01	2.49E+00		2.49E+00	2.92E+00		2.92E+00	5.54E+00		5.54E+00
N	83055996	Londax	mg/L	1.01E+05		1.01E+05	2.49E+04		2.49E+04	2.43E+03		2.43E+03	5.54E+04		5.54E+04
N	94746	MCPA	mg/L	5.68E+00		5.68E+00	1.40E+00		1.40E+00	1.44E+00		1.44E+00	3.11E+00		3.11E+00
N	94815	MCPB	mg/L	2.42E+01		2.42E+01	5.96E+00		5.96E+00	7.40E+00		7.40E+00	1.33E+01		1.33E+01
N	93652	MCPP	mg/L	8.44E+00		8.44E+00	2.08E+00		2.08E+00	2.26E+00		2.26E+00	4.62E+00		4.62E+00
N	121755	Malathion	mg/L	5.31E+02		5.31E+02	1.31E+02		1.31E+02	1.04E+02		1.04E+02	2.90E+02		2.90E+02
N	108316	Maleic Anhydride	mg/L	1.16E+04		1.16E+04	2.86E+03		2.86E+03	9.72E+02		9.72E+02	6.35E+03		6.35E+03
N	123331	Maleic Hydrazide	mg/L	1.33E+05		1.33E+05	3.26E+04		3.26E+04	5.68E+03		5.68E+03	7.26E+04		7.26E+04
N	109773	Malononitrile	mg/L	2.23E+00		2.23E+00	5.48E-01		5.48E-01	1.92E-01		1.92E-01	1.22E+00		1.22E+00
N	8018017	Mancozeb	mg/L							3.93E+02		3.93E+02			
N	12427382	Maneb	mg/L	6.05E+03	4.71E+04	6.05E+03	1.49E+03	4.64E+02	4.64E+02	6.34E+01	7.07E+00	7.07E+00	3.31E+03	2.71E+02	2.71E+02
N	950107	Mephosfolan	mg/L	2.09E+01		2.09E+01	5.14E+00		5.14E+00	1.00E+00		1.00E+00	1.14E+01		1.14E+01
N	24307264	Mepiquat Chloride	mg/L							3.93E+02		3.93E+02			
N	149304	Mercaptobenzothiazole, 2-	mg/L							1.31E+03	1.50E+01	1.50E+01			
N	150505	Merphos	mg/L	2.09E-04		2.09E-04	5.14E-05		5.14E-05	6.77E-05		6.77E-05	1.14E-04		1.14E-04
N	78488	Merphos Oxide	mg/L	6.43E-03		6.43E-03	1.58E-03		1.58E-03	2.07E-03		2.07E-03	3.52E-03		3.52E-03
N	57837191	Metalaxyl	mg/L	5.97E+03		5.97E+03	1.47E+03		1.47E+03	5.59E+02		5.59E+02	3.27E+03		3.27E+03
N	126987	Methacrylonitrile	mg/L	4.95E+00		4.95E+00	1.22E+00		1.22E+00	7.21E-01		7.21E-01	2.71E+00		2.71E+00
N	10265926	Methamidophos	mg/L	3.13E+01		3.13E+01	7.70E+00		7.70E+00	6.15E-01		6.15E-01	1.71E+01		1.71E+01
N	67561	Methanol	mg/L	2.79E+04		2.79E+04	6.86E+03		6.86E+03	3.80E+03		3.80E+03	1.52E+04		1.52E+04
N	950378	Methidathion	mg/L	3.98E+01		3.98E+01	9.79E+00		9.79E+00	6.50E+00		6.50E+00	2.18E+01		2.18E+01
N	16752775	Methomyl	mg/L	2.68E+03		2.68E+03	6.59E+02		6.59E+02	2.38E+02		2.38E+02	1.47E+03		1.47E+03
N	99592	Methoxy-5-nitroaniline, 2-	mg/L		1.13E+03	1.13E+03		1.11E+01	1.11E+01		4.22E+00	4.22E+00		6.50E+00	6.50E+00
N	72435	Methoxychlor	mg/L	1.39E+01		1.39E+01	3.43E+00		3.43E+00	4.22E+00		4.22E+00	7.62E+00		7.62E+00
N	110496	Methoxyethanol Acetate, 2-	mg/L	2.86E+02		2.86E+02	7.03E+01		7.03E+01	2.04E+01		2.04E+01	1.56E+02		1.56E+02
N	109864	Methoxyethanol, 2-	mg/L	2.93E+02		2.93E+02	7.22E+01		7.22E+01	1.15E+01		1.15E+01	1.60E+02		1.60E+02
N	79209	Methyl Acetate	mg/L	6.19E+04		6.19E+04	1.52E+04		1.52E+04	7.92E+03		7.92E+03	3.39E+04		3.39E+04
N	96333	Methyl Acrylate	mg/L	9.83E+02		9.83E+02	2.42E+02		2.42E+02	1.76E+02		1.76E+02	5.38E+02		5.38E+02
N	78933	Methyl Ethyl Ketone	mg/L	4.86E+04		4.86E+04	1.20E+04		1.20E+04	5.24E+03		5.24E+03	2.66E+04		2.66E+04
N	60344	Methyl Hydrazine	mg/L		6.56E+02	6.56E+02		6.46E+00	6.46E+00		3.62E-01	3.62E-01		3.78E+00	3.78E+00
N	108101	Methyl Isobutyl Ketone	mg/L	2.16E+03		2.16E+03	5.32E+02		5.32E+02	4.20E+02		4.20E+02	1.18E+03		1.18E+03
N	74931	Methyl Mercaptan	mg/L							7.47E+00		7.47E+00			
N	80626	Methyl Methacrylate	mg/L	3.20E+04		3.20E+04	7.88E+03		7.88E+03	6.62E+03		6.62E+03	1.75E+04		1.75E+04
N	298000	Methyl Parathion	mg/L	1.27E+01		1.27E+01	3.12E+00		3.12E+00	1.82E+00		1.82E+00	6.93E+00		6.93E+00
N	993135	Methyl Phosphonic Acid	mg/L							2.62E+02		2.62E+02			
N	25013154	Methyl Styrene (Mixed Isomers)	mg/L	6.15E+00		6.15E+00	1.51E+00		1.51E+00	1.94E+00		1.94E+00	3.36E+00		3.36E+00
N	79221	Methyl chlorocarbonate	mg/L							1.31E+04		1.31E+04			
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/L												
N	99558	Methyl-5-Nitroaniline, 2-	mg/L		6.68E+02	6.68E+02		6.57E+00	6.57E+00		3.35E+00	3.35E+00		3.84E+00	3.84E+00
N	636215	Methylaniline Hydrochloride, 2-	mg/L		3.44E+02	3.44E+02		3.39E+00	3.39E+00		1.18E+00	1.18E+00		1.98E+00	1.98E+00
N	108872	Methylcyclohexane	mg/L	1.50E+03		1.50E+03	3.69E+02		3.69E+02	4.65E+02		4.65E+02	8.20E+02		8.20E+02
N	75092	Methylene Chloride	mg/L	1.41E+03	7.32E+03	1.41E+03	3.47E+02	7.20E+01	7.20E+01	2.89E+02	2.66E+01	2.66E+01	7.72E+02	4.21E+01	4.21E+01
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/L	1.39E+00	3.57E+01	1.39E+00	3.43E-01	3.52E-01	3.43E-01	4.30E-01	2.25E-01	2.25E-01	7.62E-01	2.05E-01	2.05E-01
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/L		2.17E+01	2.17E+01		2.14E-01	2.14E-01		1.44E-01	1.44E-01		1.25E-01	1.25E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	78831	Isobutyl Alcohol	mg/L	5.55E+02		5.55E+02	1.08E+03		1.08E+03	1.29E+03		1.29E+03	1.61E+03		1.61E+03
N	78591	Isophorone	mg/L	2.39E+02	1.44E+02	1.44E+02	2.66E+02	1.79E+02	1.79E+02	4.77E+02	1.44E+02	1.44E+02	3.97E+02	1.79E+02	1.79E+02
N	33820530	Isopropalin	mg/L	4.37E-01		4.37E-01	2.74E-01		2.74E-01	6.95E-01		6.95E-01	4.10E-01		4.10E-01
N	67630	Isopropanol	mg/L												
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/L	2.42E+02		2.42E+02	1.36E+03		1.36E+03	6.53E+02		6.53E+02	2.03E+03		2.03E+03
N	82558507	Isoxaben	mg/L	1.36E+02		1.36E+02				4.02E+02		4.02E+02			
N	143500	Kepone	mg/L	4.89E+04		4.89E+04				1.45E+05		1.45E+05			
N	23950585	Kerb	mg/L	4.05E+01		4.05E+01	3.13E+01		3.13E+01	7.05E+01		7.05E+01	4.68E+01		4.68E+01
N	77501634	Lactofen	mg/L	1.70E+00		1.70E+00	1.54E+00		1.54E+00	3.15E+00		3.15E+00	2.30E+00		2.30E+00
N		Lead Alkyls	mg/L												
N	330552	Linuron	mg/L	1.30E+00		1.30E+00	1.06E+00		1.06E+00	2.32E+00		2.32E+00	1.59E+00		1.59E+00
N	83055996	Londax	mg/L	5.26E+02		5.26E+02	1.06E+04		1.06E+04	1.52E+03		1.52E+03	1.59E+04		1.59E+04
N	94746	MCPA	mg/L	5.63E-01		5.63E-01	5.97E-01		5.97E-01	1.10E+00		1.10E+00	8.92E-01		8.92E-01
N	94815	MCPB	mg/L	3.56E+00		3.56E+00	2.54E+00		2.54E+00	6.00E+00		6.00E+00	3.80E+00		3.80E+00
N	93652	MCPP	mg/L	9.36E-01		9.36E-01	8.86E-01		8.86E-01	1.76E+00		1.76E+00	1.32E+00		1.32E+00
N	121755	Malathion	mg/L	3.38E+01		3.38E+01	5.57E+01		5.57E+01	7.54E+01		7.54E+01	8.32E+01		8.32E+01
N	108316	Maleic Anhydride	mg/L	2.38E+02		2.38E+02	1.22E+03		1.22E+03	6.39E+02		6.39E+02	1.82E+03		1.82E+03
N	123331	Maleic Hydrazide	mg/L	1.28E+03		1.28E+03	1.39E+04		1.39E+04	3.61E+03		3.61E+03	2.08E+04		2.08E+04
N	109773	Malononitrile	mg/L	4.74E-02		4.74E-02	2.34E-01		2.34E-01	1.27E-01		1.27E-01	3.50E-01		3.50E-01
N	8018017	Mancozeb	mg/L	8.14E+01		8.14E+01				2.41E+02		2.41E+02			
N	12427382	Maneb	mg/L	1.34E+01	7.07E+00	7.07E+00	6.36E+02	2.71E+02	2.71E+02	3.93E+01	7.07E+00	7.07E+00	9.50E+02	2.71E+02	2.71E+02
N	950107	Mephosfolan	mg/L	2.28E-01		2.28E-01	2.19E+00		2.19E+00	6.41E-01		6.41E-01	3.28E+00		3.28E+00
N	24307264	Mepiquat Chloride	mg/L	8.14E+01		8.14E+01				2.41E+02		2.41E+02			
N	149304	Mercaptobenzothiazole, 2-	mg/L	2.71E+02	1.50E+01	1.50E+01				8.05E+02	1.50E+01	1.50E+01			
N	150505	Merphos	mg/L	3.53E-05		3.53E-05	2.19E-05		2.19E-05	5.59E-05		5.59E-05	3.28E-05		3.28E-05
N	78488	Merphos Oxide	mg/L	1.07E-03		1.07E-03	6.75E-04		6.75E-04	1.71E-03		1.71E-03	1.01E-03		1.01E-03
N	57837191	Metalaxyl	mg/L	1.40E+02		1.40E+02	6.26E+02		6.26E+02	3.71E+02		3.71E+02	9.36E+02		9.36E+02
N	126987	Methacrylonitrile	mg/L	2.05E-01		2.05E-01	5.20E-01		5.20E-01	5.01E-01		5.01E-01	7.77E-01		7.77E-01
N	10265926	Methamidophos	mg/L	1.32E-01		1.32E-01	3.28E+00		3.28E+00	3.84E-01		3.84E-01	4.91E+00		4.91E+00
N	67561	Methanol	mg/L	1.05E+03		1.05E+03	2.92E+03		2.92E+03	2.61E+03		2.61E+03	4.37E+03		4.37E+03
N	950378	Methidathion	mg/L	1.93E+00		1.93E+00	4.18E+00		4.18E+00	4.58E+00		4.58E+00	6.24E+00		6.24E+00
N	16752775	Methomyl	mg/L	5.90E+01		5.90E+01	2.81E+02		2.81E+02	1.57E+02		1.57E+02	4.20E+02		4.20E+02
N	99592	Methoxy-5-nitroaniline, 2-	mg/L		4.22E+00	4.22E+00		6.50E+00	6.50E+00		4.22E+00	4.22E+00		6.50E+00	6.50E+00
N	72435	Methoxychlor	mg/L	2.01E+00		2.01E+00	1.46E+00		1.46E+00	3.41E+00		3.41E+00	2.19E+00		2.19E+00
N	110496	Methoxyethanol Acetate, 2-	mg/L	4.88E+00		4.88E+00	3.00E+01		3.00E+01	1.33E+01		1.33E+01	4.48E+01		4.48E+01
N	109864	Methoxyethanol, 2-	mg/L	2.57E+00		2.57E+00	3.08E+01		3.08E+01	7.30E+00		7.30E+00	4.60E+01		4.60E+01
N	79209	Methyl Acetate	mg/L	2.16E+03		2.16E+03	6.50E+03		6.50E+03	5.42E+03		5.42E+03	9.71E+03		9.71E+03
N	96333	Methyl Acrylate	mg/L	5.47E+01		5.47E+01	1.03E+02		1.03E+02	1.26E+02		1.26E+02	1.54E+02		1.54E+02
N	78933	Methyl Ethyl Ketone	mg/L	1.36E+03		1.36E+03	5.10E+03		5.10E+03	3.52E+03		3.52E+03	7.63E+03		7.63E+03
N	60344	Methyl Hydrazine	mg/L		3.62E-01	3.62E-01		3.78E+00	3.78E+00		3.62E-01	3.62E-01		3.78E+00	3.78E+00
N	108101	Methyl Isobutyl Ketone	mg/L	1.36E+02		1.36E+02	2.27E+02		2.27E+02	3.05E+02		3.05E+02	3.39E+02		3.39E+02
N	74931	Methyl Mercaptan	mg/L	1.55E+00		1.55E+00				4.59E+00		4.59E+00			
N	80626	Methyl Methacrylate	mg/L	2.23E+03		2.23E+03	3.36E+03		3.36E+03	4.86E+03		4.86E+03	5.02E+03		5.02E+03
N	298000	Methyl Parathion	mg/L	5.15E-01		5.15E-01	1.33E+00		1.33E+00	1.26E+00		1.26E+00	1.99E+00		1.99E+00
N	993135	Methyl Phosphonic Acid	mg/L	5.43E+01		5.43E+01				1.61E+02		1.61E+02			
N	25013154	Methyl Styrene (Mixed Isomers)	mg/L	9.77E-01		9.77E-01	6.45E-01		6.45E-01	1.59E+00		1.59E+00	9.64E-01		9.64E-01
N	79221	Methyl chlorocarbonate	mg/L	2.71E+03		2.71E+03				8.05E+03		8.05E+03			
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/L												
N	99558	Methyl-5-Nitroaniline, 2-	mg/L		3.35E+00	3.35E+00		3.84E+00	3.84E+00		3.35E+00	3.35E+00		3.84E+00	3.84E+00
N	636215	Methylaniline Hydrochloride, 2-	mg/L		1.18E+00	1.18E+00		1.98E+00	1.98E+00		1.18E+00	1.18E+00		1.98E+00	1.98E+00
N	108872	Methylcyclohexane	mg/L	2.29E+02		2.29E+02	1.57E+02		1.57E+02	3.79E+02		3.79E+02	2.35E+02		2.35E+02
N	75092	Methylene Chloride	mg/L	9.68E+01	2.66E+01	2.66E+01	1.48E+02	4.21E+01	4.21E+01	2.12E+02	2.66E+01	2.66E+01	2.21E+02	4.21E+01	4.21E+01
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/L	2.10E-01	2.25E-01	2.10E-01	1.46E-01	2.05E-01	1.46E-01	3.50E-01	2.25E-01	2.25E-01	2.19E-01	2.05E-01	2.05E-01
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/L		1.44E-01	1.44E-01		1.25E-01	1.25E-01		1.44E-01	1.44E-01		1.25E-01	1.25E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	101779	Methylenebisbenzenamine, 4,4'-	mg/L		3.25E+02	3.25E+02		3.20E+00	3.20E+00		9.68E-01	9.68E-01		1.87E+00	1.87E+00
N	101688	Methylenediphenyl Diisocyanate	mg/L	1.18E+00		1.18E+00	2.89E-01		2.89E-01	3.26E-01		3.26E-01	6.43E-01		6.43E-01
N	98839	Methylstyrene, Alpha-	mg/L	7.17E+01		7.17E+01	1.77E+01		1.77E+01	2.27E+01		2.27E+01	3.92E+01		3.92E+01
N	1762283	Methyltriethyl Lead	mg/L												
N	51218452	Metolachlor	mg/L	1.42E+03		1.42E+03	3.49E+02		3.49E+02	3.72E+02		3.72E+02	7.75E+02		7.75E+02
N	21087649	Metribuzin	mg/L	9.28E+02		9.28E+02	2.29E+02		2.29E+02	1.57E+02		1.57E+02	5.08E+02		5.08E+02
N	2385855	Mirex	mg/L	2.23E+00	1.44E+01	2.23E+00	5.48E-01	1.42E-01	1.42E-01	5.66E-01	6.94E-02	6.94E-02	1.22E+00	8.31E-02	8.31E-02
N	2212671	Molinate	mg/L	2.53E+00		2.53E+00	6.23E-01		6.23E-01	7.95E-01		7.95E-01	1.39E+00		1.39E+00
N	10599903	Monochloramine	mg/L							1.31E+03		1.31E+03			
N	25154421	Monochlorobutanes	mg/L							5.24E+03		5.24E+03			
N	300765	Naled	mg/L	1.27E+02		1.27E+02	3.12E+01		3.12E+01	1.60E+01		1.60E+01	6.93E+01		6.93E+01
Y	91203	Naphthalene	mg/L	2.58E+01		2.58E+01	6.36E+00		6.36E+00	8.11E+00		8.11E+00	1.41E+01		1.41E+01
N	90120	Naphthalene, 1-Methyl	mg/L												
N	91576	Naphthalene, 2-Methyl	mg/L												
N	15299997	Napropamide	mg/L	4.64E+04		4.64E+04	1.14E+04		1.14E+04	1.21E+03		1.21E+03	2.54E+04		2.54E+04
N	2429745	Niagara Blue 4B	mg/L												
N	13463393	Nickel Carbonyl	mg/L												
N	1929824	Nitrapyrin	mg/L	8.36E+00		8.36E+00	2.06E+00		2.06E+00	2.38E+00		2.38E+00	4.57E+00		4.57E+00
N	88744	Nitroaniline, 2-	mg/L	6.12E-01		6.12E-01	1.51E-01		1.51E-01	1.57E-01		1.57E-01	3.35E-01		3.35E-01
N	98953	Nitrobenzene	mg/L	7.83E+00		7.83E+00	1.93E+00		1.93E+00	1.83E+00		1.83E+00	4.28E+00		4.28E+00
N	67209	Nitrofurantoin	mg/L	1.26E+05		1.26E+05	3.10E+04		3.10E+04	8.97E+02		8.97E+02	6.88E+04		6.88E+04
N	59870	Nitrofurazone	mg/L		5.10E+02	5.10E+02		5.02E+00	5.02E+00		2.67E-01	2.67E-01		2.93E+00	2.93E+00
N	55630	Nitroglycerin	mg/L							1.83E+02		1.83E+02			
N	556887	Nitroguanidine	mg/L	5.57E+04		5.57E+04	1.37E+04		1.37E+04	1.22E+03		1.22E+03	3.05E+04		3.05E+04
N	100027	Nitrophenol, 4-	mg/L	1.49E+02		1.49E+02	3.66E+01		3.66E+01	3.30E+01		3.30E+01	8.13E+01		8.13E+01
N	79469	Nitropropane, 2-	mg/L	5.09E+02	2.21E+01	2.21E+01	1.25E+02	2.18E-01	2.18E-01	5.15E+01	3.52E-02	3.52E-02	2.79E+02	1.27E-01	1.27E-01
N	759739	Nitroso-N-ethylurea, N-	mg/L		1.72E+00	1.72E+00		1.69E-02	1.69E-02		2.44E-03	2.44E-03		9.89E-03	9.89E-03
N	684935	Nitroso-N-methylurea, N-	mg/L												
N	924163	Nitroso-di-N-butylamine, N-	mg/L		5.01E+00	5.01E+00		4.94E-02	4.94E-02		2.38E-02	2.38E-02		2.88E-02	2.88E-02
N	621647	Nitroso-di-N-propylamine, N-	mg/L		3.32E+00	3.32E+00		3.26E-02	3.26E-02		1.64E-02	1.64E-02		1.91E-02	1.91E-02
N	1116547	Nitrosodiethanolamine, N-	mg/L		9.28E+03	9.28E+03		9.14E+01	9.14E+01		1.54E-01	1.54E-01		5.34E+01	5.34E+01
N	55185	Nitrosodiethylamine, N-	mg/L		7.22E-01	7.22E-01		7.11E-03	7.11E-03		1.81E-03	1.81E-03		4.15E-03	4.15E-03
N	62759	Nitrosodimethylamine, N-	mg/L		9.44E+00	9.44E+00		9.29E-02	9.29E-02		7.50E-03	7.50E-03		5.43E-02	5.43E-02
N	86306	Nitrosodiphenylamine, N-	mg/L		6.63E+02	6.63E+02		6.53E+00	6.53E+00		4.26E+00	4.26E+00		3.81E+00	3.81E+00
N	10595956	Nitrosomethylethylamine, N-	mg/L		1.00E+01	1.00E+01		9.86E-02	9.86E-02		1.53E-02	1.53E-02		5.76E-02	5.76E-02
N	4549400	Nitrosomethylvinylamine, N-	mg/L												
N	930552	Nitrosopyrrolidine, N-	mg/L		8.04E+02	8.04E+02		7.91E+00	7.91E+00		1.99E-01	1.99E-01		4.62E+00	4.62E+00
N	119324	Nitrotoluene, 4-Amino-2-	mg/L												
N	99081	Nitrotoluene, m-	mg/L	6.37E+01		6.37E+01	1.57E+01		1.57E+01	1.78E+01		1.78E+01	3.48E+01		3.48E+01
N	88722	Nitrotoluene, o-	mg/L	7.43E+01		7.43E+01	1.83E+01		1.83E+01	2.03E+01		2.03E+01	4.06E+01		4.06E+01
N	99990	Nitrotoluene, p-	mg/L	6.37E+01		6.37E+01	1.57E+01		1.57E+01	1.78E+01		1.78E+01	3.48E+01		3.48E+01
N	27314132	Norflurazon	mg/L	2.03E+03		2.03E+03	4.99E+02		4.99E+02	2.91E+02		2.91E+02	1.11E+03		1.11E+03
N	85509199	Nustar	mg/L							9.17E+00		9.17E+00			
Y	3268879	OCDD	mg/L		1.70E-04	1.70E-04		1.67E-06	1.67E-06		1.15E-06	1.15E-06		9.77E-07	9.77E-07
Y	39001020	OCDF	mg/L		1.81E-04	1.81E-04		1.78E-06	1.78E-06		1.22E-06	1.22E-06		1.04E-06	1.04E-06
N	32536520	Octabromodiphenyl Ether	mg/L							3.93E+01		3.93E+01			
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/L	1.07E+04		1.07E+04	2.64E+03		2.64E+03	5.51E+02		5.51E+02	5.86E+03		5.86E+03
N	152169	Octamethylpyrophosphoramide	mg/L	7.43E+03		7.43E+03	1.83E+03		1.83E+03	2.59E+01		2.59E+01	4.06E+03		4.06E+03
N	117840	Octyl Phthalate, di-N-	mg/L	7.43E-02		7.43E-02	1.83E-02		1.83E-02	2.41E-02		2.41E-02	4.06E-02		4.06E-02
N	19044883	Oryzalin	mg/L	2.14E+03		2.14E+03	5.27E+02		5.27E+02	3.37E+02		3.37E+02	1.17E+03		1.17E+03
N	19666309	Oxadiazon	mg/L	7.33E+00		7.33E+00	1.80E+00		1.80E+00	2.29E+00		2.29E+00	4.01E+00		4.01E+00
N	23135220	Oxamyl	mg/L	3.48E+04		3.48E+04	8.57E+03		8.57E+03	3.18E+02		3.18E+02	1.91E+04		1.91E+04
N	76738620	Paclobutrazol	mg/L	1.25E+02		1.25E+02	3.07E+01		3.07E+01	3.27E+01		3.27E+01	6.83E+01		6.83E+01
N	1910425	Paraquat	mg/L	1.00E+06		1.00E+06	4.41E+05		4.41E+05	5.90E+01		5.90E+01	9.80E+05		9.80E+05

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	101779	Methylenebisbenzenamine, 4,4'-	mg/L		9.68E-01	9.68E-01		1.87E+00	1.87E+00		9.68E-01	9.68E-01		1.87E+00	1.87E+00
N	101688	Methylenediphenyl Diisocyanate	mg/L	1.39E-01		1.39E-01	1.23E-01		1.23E-01	2.56E-01		2.56E-01	1.84E-01		1.84E-01
N	98839	Methylstyrene, Alpha-	mg/L	1.14E+01		1.14E+01	7.53E+00		7.53E+00	1.86E+01		1.86E+01	1.13E+01		1.13E+01
N	1762283	Methyltriethyl Lead	mg/L												
N	51218452	Metolachlor	mg/L	1.51E+02		1.51E+02	1.49E+02		1.49E+02	2.88E+02		2.88E+02	2.22E+02		2.22E+02
N	21087649	Metribuzin	mg/L	4.74E+01		4.74E+01	9.75E+01		9.75E+01	1.11E+02		1.11E+02	1.46E+02		1.46E+02
N	2385855	Mirex	mg/L	2.22E-01	6.94E-02	6.94E-02	2.34E-01	8.31E-02	8.31E-02	4.35E-01	6.94E-02	6.94E-02	3.50E-01	8.31E-02	8.31E-02
N	2212671	Molinate	mg/L	3.97E-01		3.97E-01	2.66E-01		2.66E-01	6.50E-01		6.50E-01	3.97E-01		3.97E-01
N	10599903	Monochloramine	mg/L	2.71E+02		2.71E+02				8.05E+02		8.05E+02			
N	25154421	Monochlorobutanes	mg/L	1.09E+03		1.09E+03				3.22E+03		3.22E+03			
N	300765	Naled	mg/L	4.33E+00		4.33E+00	1.33E+01		1.33E+01	1.09E+01		1.09E+01	1.99E+01		1.99E+01
Y	91203	Naphthalene	mg/L	4.04E+00		4.04E+00	2.71E+00		2.71E+00	6.63E+00		6.63E+00	4.05E+00		4.05E+00
N	90120	Naphthalene, 1-Methyl	mg/L												
N	91576	Naphthalene, 2-Methyl	mg/L												
N	15299997	Napropamide	mg/L	2.62E+02		2.62E+02	4.87E+03		4.87E+03	7.56E+02		7.56E+02	7.28E+03		7.28E+03
N	2429745	Niagara Blue 4B	mg/L												
N	13463393	Nickel Carbonyl	mg/L												
N	1929824	Nitrapyrin	mg/L	1.05E+00		1.05E+00	8.77E-01		8.77E-01	1.89E+00		1.89E+00	1.31E+00		1.31E+00
N	88744	Nitroaniline, 2-	mg/L	6.21E-02		6.21E-02	6.43E-02		6.43E-02	1.21E-01		1.21E-01	9.60E-02		9.60E-02
N	98953	Nitrobenzene	mg/L	6.70E-01		6.70E-01	8.22E-01		8.22E-01	1.38E+00		1.38E+00	1.23E+00		1.23E+00
N	67209	Nitrofurantoin	mg/L	1.88E+02		1.88E+02	1.32E+04		1.32E+04	5.54E+02		5.54E+02	1.97E+04		1.97E+04
N	59870	Nitrofurazone	mg/L		2.67E-01	2.67E-01		2.93E+00	2.93E+00		2.67E-01	2.67E-01		2.93E+00	2.93E+00
N	55630	Nitroglycerin	mg/L	3.80E+01		3.80E+01				1.13E+02		1.13E+02			
N	556887	Nitroguanidine	mg/L	2.64E+02		2.64E+02	5.85E+03		5.85E+03	7.64E+02		7.64E+02	8.74E+03		8.74E+03
N	100027	Nitrophenol, 4-	mg/L	1.16E+01		1.16E+01	1.56E+01		1.56E+01	2.46E+01		2.46E+01	2.33E+01		2.33E+01
N	79469	Nitropropane, 2-	mg/L	1.31E+01	3.52E-02	3.52E-02	5.35E+01	1.27E-01	1.27E-01	3.44E+01	3.52E-02	3.52E-02	7.99E+01	1.27E-01	1.27E-01
N	759739	Nitroso-N-ethylurea, N-	mg/L		2.44E-03	2.44E-03		9.89E-03	9.89E-03		2.44E-03	2.44E-03		9.89E-03	9.89E-03
N	684935	Nitroso-N-methylurea, N-	mg/L												
N	924163	Nitroso-di-N-butylamine, N-	mg/L		2.38E-02	2.38E-02		2.88E-02	2.88E-02		2.38E-02	2.38E-02		2.88E-02	2.88E-02
N	621647	Nitroso-di-N-propylamine, N-	mg/L		1.64E-02	1.64E-02		1.91E-02	1.91E-02		1.64E-02	1.64E-02		1.91E-02	1.91E-02
N	1116547	Nitrosodiethanolamine, N-	mg/L		1.54E-01	1.54E-01		5.34E+01	5.34E+01		1.54E-01	1.54E-01		5.34E+01	5.34E+01
N	55185	Nitrosodiethylamine, N-	mg/L		1.81E-03	1.81E-03		4.15E-03	4.15E-03		1.81E-03	1.81E-03		4.15E-03	4.15E-03
N	62759	Nitrosodimethylamine, N-	mg/L		7.50E-03	7.50E-03		5.43E-02	5.43E-02		7.50E-03	7.50E-03		5.43E-02	5.43E-02
N	86306	Nitrosodiphenylamine, N-	mg/L		4.26E+00	4.26E+00		3.81E+00	3.81E+00		4.26E+00	4.26E+00		3.81E+00	3.81E+00
N	10595956	Nitrosomethylethylamine, N-	mg/L		1.53E-02	1.53E-02		5.76E-02	5.76E-02		1.53E-02	1.53E-02		5.76E-02	5.76E-02
N	4549400	Nitrosomethylvinylamine, N-	mg/L												
N	930552	Nitrosopyrrolidine, N-	mg/L		1.99E-01	1.99E-01		4.62E+00	4.62E+00		1.99E-01	1.99E-01		4.62E+00	4.62E+00
N	119324	Nitrotoluene, 4-Amino-2-	mg/L												
N	99081	Nitrotoluene, m-	mg/L	7.71E+00		7.71E+00	6.68E+00		6.68E+00	1.41E+01		1.41E+01	9.99E+00		9.99E+00
N	88722	Nitrotoluene, o-	mg/L	8.59E+00		8.59E+00	7.80E+00		7.80E+00	1.59E+01		1.59E+01	1.17E+01		1.17E+01
N	99990	Nitrotoluene, p-	mg/L	7.71E+00		7.71E+00	6.68E+00		6.68E+00	1.41E+01		1.41E+01	9.99E+00		9.99E+00
N	27314132	Norflurazon	mg/L	8.24E+01		8.24E+01	2.13E+02		2.13E+02	2.02E+02		2.02E+02	3.18E+02		3.18E+02
N	85509199	Nustar	mg/L	1.90E+00		1.90E+00				5.63E+00		5.63E+00			
Y	3268879	OCDD	mg/L		1.15E-06	1.15E-06		9.77E-07	9.77E-07		1.15E-06	1.15E-06		9.77E-07	9.77E-07
Y	39001020	OCDF	mg/L		1.22E-06	1.22E-06		1.04E-06	1.04E-06		1.22E-06	1.22E-06		1.04E-06	1.04E-06
N	32536520	Octabromodiphenyl Ether	mg/L	8.14E+00		8.14E+00				2.41E+01		2.41E+01			
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/L	1.26E+02		1.26E+02	1.12E+03		1.12E+03	3.53E+02		3.53E+02	1.68E+03		1.68E+03
N	152169	Octamethylpyrophosphoramide	mg/L	5.40E+00		5.40E+00	7.80E+02		7.80E+02	1.60E+01		1.60E+01	1.17E+03		1.17E+03
N	117840	Octyl Phthalate, di-N-	mg/L	1.26E-02		1.26E-02	7.80E-03		7.80E-03	1.99E-02		1.99E-02	1.17E-02		1.17E-02
N	19044883	Oryzalin	mg/L	9.87E+01		9.87E+01	2.25E+02		2.25E+02	2.36E+02		2.36E+02	3.36E+02		3.36E+02
N	19666309	Oxadiazon	mg/L	1.14E+00		1.14E+00	7.69E-01		7.69E-01	1.87E+00		1.87E+00	1.15E+00		1.15E+00
N	23135220	Oxamyl	mg/L	6.71E+01		6.71E+01	3.65E+03		3.65E+03	1.97E+02		1.97E+02	5.46E+03		5.46E+03
N	76738620	Paclobutrazol	mg/L	1.32E+01		1.32E+01	1.31E+01		1.31E+01	2.53E+01		2.53E+01	1.96E+01		1.96E+01
N	1910425	Paraquat	mg/L	1.22E+01		1.22E+01	1.88E+05		1.88E+05	3.62E+01		3.62E+01	2.81E+05		2.81E+05

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value ' less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	56382	Parathion	mg/L	1.97E+01		1.97E+01	4.84E+00		4.84E+00	5.89E+00		5.89E+00	1.08E+01		1.08E+01
Y	36088229	PeCDD, 2,3,7,8-	mg/L		3.27E-06	3.27E-06		3.22E-08	3.22E-08		2.20E-08	2.20E-08		1.88E-08	1.88E-08
Y	57117416	PeCDF, 1,2,3,7,8-	mg/L		1.58E-06	1.58E-06		1.55E-08	1.55E-08		1.06E-08	1.06E-08		9.06E-09	9.06E-09
Y	57117314	PeCDF, 2,3,4,7,8-	mg/L		1.33E-05	1.33E-05		1.31E-07	1.31E-07		8.98E-08	8.98E-08		7.67E-08	7.67E-08
N	1114712	Pebulate	mg/L	4.89E+01		4.89E+01	1.20E+01		1.20E+01	1.55E+01		1.55E+01	2.67E+01		2.67E+01
N	40487421	Pendimethalin	mg/L	1.31E+01		1.31E+01	3.23E+00		3.23E+00	4.21E+00		4.21E+00	7.17E+00		7.17E+00
N	32534819	Pentabromodiphenyl Ether	mg/L							2.62E+01		2.62E+01			
N	608935	Pentachlorobenzene	mg/L	2.55E-01		2.55E-01	6.27E-02		6.27E-02	8.19E-02		8.19E-02	1.39E-01		1.39E-01
N	25329355	Pentachlorocyclopentadiene	mg/L												
N	82688	Pentachloronitrobenzene	mg/L	4.53E+00	1.36E+01	4.53E+00	1.12E+00	1.33E-01	1.33E-01	1.42E+00	8.67E-02	8.67E-02	2.48E+00	7.80E-02	7.80E-02
N	87865	Pentachlorophenol	mg/L	5.14E+00	3.33E+00	3.33E+00	1.27E+00	3.28E-02	3.28E-02	1.66E+00	2.23E-02	2.23E-02	2.81E+00	1.92E-02	1.92E-02
N	71410	Pentyl Alcohol, N-	mg/L												
N	7601903	Perchlorate	mg/L							6.55E+00		6.55E+00			
N	52645531	Permethrin	mg/L	1.16E+03		1.16E+03	2.86E+02		2.86E+02	2.39E+02		2.39E+02	6.35E+02		6.35E+02
Y	85018	Phenanthrene	mg/L												
N	13684634	Phenmedipham	mg/L	1.00E+06		1.00E+06	1.00E+06		1.00E+06	3.27E+03		3.27E+03	1.00E+06		1.00E+06
N	108952	Phenol	mg/L	1.09E+04		1.09E+04	2.69E+03		2.69E+03	2.44E+03		2.44E+03	5.99E+03		5.99E+03
N	92842	Phenothiazine	mg/L							2.62E+01		2.62E+01			
N	108452	Phenylenediamine, m-	mg/L	2.79E+03		2.79E+03	6.86E+02		6.86E+02	7.23E+01		7.23E+01	1.52E+03		1.52E+03
N	95545	Phenylenediamine, o-	mg/L		3.22E+03	3.22E+03		3.17E+01	3.17E+01		6.47E+00	6.47E+00		1.85E+01	1.85E+01
N	106503	Phenylenediamine, p-	mg/L	1.79E+05		1.79E+05	4.42E+04		4.42E+04	2.39E+03		2.39E+03	9.82E+04		9.82E+04
N	62384	Phenylmercuric Acetate	mg/L	8.25E+01		8.25E+01	2.03E+01		2.03E+01	1.01E+00		1.01E+00	4.52E+01		4.52E+01
N	90437	Phenylphenol, 2-	mg/L		2.39E+03	2.39E+03		2.36E+01	2.36E+01		1.51E+01	1.51E+01		1.38E+01	1.38E+01
N	298022	Phorate	mg/L	1.41E+01		1.41E+01	3.47E+00		3.47E+00	1.67E+00		1.67E+00	7.72E+00		7.72E+00
N	732116	Phosmet	mg/L	5.31E+02		5.31E+02	1.31E+02		1.31E+02	1.04E+02		1.04E+02	2.90E+02		2.90E+02
N	100210	Phthalic Acid, P-	mg/L	1.86E+04		1.86E+04	4.57E+03		4.57E+03	4.12E+03		4.12E+03	1.02E+04		1.02E+04
N	85449	Phthalic Anhydride	mg/L	1.00E+06		1.00E+06	3.19E+05		3.19E+05	2.47E+04		2.47E+04	7.09E+05		7.09E+05
N	1918021	Picloram	mg/L	2.05E+03		2.05E+03	5.05E+02		5.05E+02	3.85E+02		3.85E+02	1.12E+03		1.12E+03
N	29232937	Pirimiphos, Methyl	mg/L	2.23E+01		2.23E+01	5.48E+00		5.48E+00	6.84E+00		6.84E+00	1.22E+01		1.22E+01
N	59536651	Polybrominated Biphenyls	mg/L							9.17E-02	4.87E-02	4.87E-02			
Y	1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		1.67E+00	1.67E+00		1.65E-02	1.65E-02		1.12E-02	1.12E-02		9.61E-03	9.61E-03
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		9.55E+00	9.55E+00		9.40E-02	9.40E-02		6.38E-02	6.38E-02		5.49E-02	5.49E-02
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/L							2.25E+00		2.25E+00			
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		9.20E-03	9.20E-03		9.06E-05	9.06E-05		6.20E-05	6.20E-05		5.29E-05	5.29E-05
N	67747095	Prochloraz	mg/L	6.43E+01	1.11E+02	6.43E+01	1.58E+01	1.09E+00	1.09E+00	1.77E+01	5.95E-01	5.95E-01	3.52E+01	6.39E-01	6.39E-01
N	26399360	Profluralin	mg/L	2.57E+00		2.57E+00	6.33E-01		6.33E-01	8.24E-01		8.24E-01	1.41E+00		1.41E+00
N	1610180	Prometon	mg/L	2.39E+02		2.39E+02	5.88E+01		5.88E+01	5.55E+01		5.55E+01	1.31E+02		1.31E+02
N	7287196	Prometryn	mg/L	5.86E+01		5.86E+01	1.44E+01		1.44E+01	1.39E+01		1.39E+01	3.21E+01		3.21E+01
N	1918167	Propachlor	mg/L	2.13E+02		2.13E+02	5.24E+01		5.24E+01	4.91E+01		4.91E+01	1.17E+02		1.17E+02
N	709988	Propanil	mg/L	1.86E+01		1.86E+01	4.57E+00		4.57E+00	5.51E+00		5.51E+00	1.02E+01		1.02E+01
N	2312358	Propargite	mg/L	2.27E+01		2.27E+01	5.60E+00		5.60E+00	7.16E+00		7.16E+00	1.24E+01		1.24E+01
N	107197	Propargyl Alcohol	mg/L	3.79E+02		3.79E+02	9.34E+01		9.34E+01	2.16E+01		2.16E+01	2.08E+02		2.08E+02
N	139402	Propazine	mg/L	2.93E+02		2.93E+02	7.22E+01		7.22E+01	6.97E+01		6.97E+01	1.60E+02		1.60E+02
N	122429	Propham	mg/L	3.84E+01		3.84E+01	9.46E+00		9.46E+00	1.19E+01		1.19E+01	2.10E+01		2.10E+01
N	60207901	Propiconazole	mg/L	1.51E+02		1.51E+02	3.71E+01		3.71E+01	3.80E+01		3.80E+01	8.26E+01		8.26E+01
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/L							1.31E+01		1.31E+01			
N	103651	Propylbenzene, n-	mg/L							1.31E+02		1.31E+02			
N	57556	Propylene Glycol	mg/L	1.00E+06		1.00E+06	1.00E+06		1.00E+06	2.54E+05		2.54E+05	1.00E+06		1.00E+06
N	1569024	Propylene Glycol Monoethyl Ether	mg/L							9.17E+03		9.17E+03			
N	107982	Propylene Glycol Monomethyl Ether	mg/L	9.75E+04		9.75E+04	2.40E+04		2.40E+04	7.11E+03		7.11E+03	5.33E+04		5.33E+04
N	75569	Propylene Oxide	mg/L	8.58E+02	9.74E+02	8.58E+02	2.11E+02	9.59E+00	9.59E+00	8.00E+01	1.42E+00	1.42E+00	4.70E+02	5.60E+00	5.60E+00
N	81335775	Pursuit	mg/L							3.28E+03		3.28E+03			
N	51630581	Pydrin	mg/L	1.93E+02		1.93E+02	4.76E+01		4.76E+01	5.26E+01		5.26E+01	1.06E+02		1.06E+02
Y	129000	Pyrene	mg/L	3.24E+00		3.24E+00	7.97E-01		7.97E-01	1.05E+00		1.05E+00	1.77E+00		1.77E+00

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	56382	Parathion	mg/L	2.76E+00		2.76E+00	2.06E+00		2.06E+00	4.74E+00		4.74E+00	3.08E+00		3.08E+00
Y	36088229	PeCDD, 2,3,7,8-	mg/L		2.20E-08	2.20E-08		1.88E-08	1.88E-08		2.20E-08	2.20E-08		1.88E-08	1.88E-08
Y	57117416	PeCDF, 1,2,3,7,8-	mg/L		1.06E-08	1.06E-08		9.06E-09	9.06E-09		1.06E-08	1.06E-08		9.06E-09	9.06E-09
Y	57117314	PeCDF, 2,3,4,7,8-	mg/L		8.98E-08	8.98E-08		7.67E-08	7.67E-08		8.98E-08	8.98E-08		7.67E-08	7.67E-08
N	1114712	Pebulate	mg/L	7.79E+00		7.79E+00	5.13E+00		5.13E+00	1.27E+01		1.27E+01	7.67E+00		7.67E+00
N	40487421	Pendimethalin	mg/L	2.17E+00		2.17E+00	1.38E+00		1.38E+00	3.47E+00		3.47E+00	2.06E+00		2.06E+00
N	32534819	Pentabromodiphenyl Ether	mg/L	5.43E+00		5.43E+00				1.61E+01		1.61E+01			
N	608935	Pentachlorobenzene	mg/L	4.22E-02		4.22E-02	2.67E-02		2.67E-02	6.74E-02		6.74E-02	4.00E-02		4.00E-02
N	25329355	Pentachlorocyclopentadiene	mg/L												
N	82688	Pentachloronitrobenzene	mg/L	7.01E-01	8.67E-02	8.67E-02	4.76E-01	7.80E-02	7.80E-02	1.15E+00	8.67E-02	8.67E-02	7.11E-01	7.80E-02	7.80E-02
N	87865	Pentachlorophenol	mg/L	8.61E-01	2.23E-02	2.23E-02	5.40E-01	1.92E-02	1.92E-02	1.37E+00	2.23E-02	2.23E-02	8.07E-01	1.92E-02	1.92E-02
N	71410	Pentyl Alcohol, N-	mg/L												
N	7601903	Perchlorate	mg/L	1.36E+00		1.36E+00				4.02E+00		4.02E+00			
N	52645531	Permethrin	mg/L	8.02E+01		8.02E+01	1.22E+02		1.22E+02	1.75E+02		1.75E+02	1.82E+02		1.82E+02
Y	85018	Phenanthrene	mg/L												
N	13684634	Phenmedipham	mg/L	6.78E+02		6.78E+02	4.30E+05		4.30E+05	2.01E+03		2.01E+03	6.43E+05		6.43E+05
N	108952	Phenol	mg/L	8.66E+02		8.66E+02	1.15E+03		1.15E+03	1.82E+03		1.82E+03	1.72E+03		1.72E+03
N	92842	Phenothiazine	mg/L	5.43E+00		5.43E+00				1.61E+01		1.61E+01			
N	108452	Phenylenediamine, m-	mg/L	1.57E+01		1.57E+01	2.92E+02		2.92E+02	4.54E+01		4.54E+01	4.37E+02		4.37E+02
N	95545	Phenylenediamine, o-	mg/L		6.47E+00	6.47E+00		1.85E+01	1.85E+01		6.47E+00	6.47E+00		1.85E+01	1.85E+01
N	106503	Phenylenediamine, p-	mg/L	5.07E+02		5.07E+02	1.88E+04		1.88E+04	1.48E+03		1.48E+03	2.81E+04		2.81E+04
N	62384	Phenylmercuric Acetate	mg/L	2.14E-01		2.14E-01	8.66E+00		8.66E+00	6.26E-01		6.26E-01	1.29E+01		1.29E+01
N	90437	Phenylphenol, 2-	mg/L		1.51E+01	1.51E+01		1.38E+01	1.38E+01		1.51E+01	1.51E+01		1.38E+01	1.38E+01
N	298022	Phorate	mg/L	4.42E-01		4.42E-01	1.48E+00		1.48E+00	1.13E+00		1.13E+00	2.21E+00		2.21E+00
N	732116	Phosmet	mg/L	3.38E+01		3.38E+01	5.57E+01		5.57E+01	7.54E+01		7.54E+01	8.32E+01		8.32E+01
N	100210	Phthalic Acid, P-	mg/L	1.46E+03		1.46E+03	1.95E+03		1.95E+03	3.07E+03		3.07E+03	2.91E+03		2.91E+03
N	85449	Phthalic Anhydride	mg/L	5.30E+03		5.30E+03	1.36E+05		1.36E+05	1.54E+04		1.54E+04	2.03E+05		2.03E+05
N	1918021	Picloram	mg/L	1.23E+02		1.23E+02	2.15E+02		2.15E+02	2.78E+02		2.78E+02	3.22E+02		3.22E+02
N	29232937	Pirimiphos, Methyl	mg/L	3.31E+00		3.31E+00	2.34E+00		2.34E+00	5.55E+00		5.55E+00	3.50E+00		3.50E+00
N	59536651	Polybrominated Biphenyls	mg/L	1.90E-02	4.87E-02	1.90E-02				5.63E-02	4.87E-02	4.87E-02			
Y	1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		1.12E-02	1.12E-02		9.61E-03	9.61E-03		1.12E-02	1.12E-02		9.61E-03	9.61E-03
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		6.38E-02	6.38E-02		5.49E-02	5.49E-02		6.38E-02	6.38E-02		5.49E-02	5.49E-02
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/L	4.65E-01		4.65E-01				1.38E+00		1.38E+00			
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		6.20E-05	6.20E-05		5.29E-05	5.29E-05		6.20E-05	6.20E-05		5.29E-05	5.29E-05
N	67747095	Prochloraz	mg/L	7.52E+00	5.95E-01	5.95E-01	6.75E+00	6.39E-01	6.39E-01	1.39E+01	5.95E-01	5.95E-01	1.01E+01	6.39E-01	6.39E-01
N	26399360	Profluralin	mg/L	4.24E-01		4.24E-01	2.70E-01		2.70E-01	6.78E-01		6.78E-01	4.03E-01		4.03E-01
N	1610180	Prometon	mg/L	2.03E+01		2.03E+01	2.51E+01		2.51E+01	4.18E+01		4.18E+01	3.75E+01		3.75E+01
N	7287196	Prometryn	mg/L	5.18E+00		5.18E+00	6.15E+00		6.15E+00	1.05E+01		1.05E+01	9.20E+00		9.20E+00
N	1918167	Propachlor	mg/L	1.78E+01		1.78E+01	2.24E+01		2.24E+01	3.69E+01		3.69E+01	3.34E+01		3.34E+01
N	709988	Propanil	mg/L	2.55E+00		2.55E+00	1.95E+00		1.95E+00	4.42E+00		4.42E+00	2.91E+00		2.91E+00
N	2312358	Propargite	mg/L	3.59E+00		3.59E+00	2.39E+00		2.39E+00	5.86E+00		5.86E+00	3.57E+00		3.57E+00
N	107197	Propargyl Alcohol	mg/L	5.00E+00		5.00E+00	3.98E+01		3.98E+01	1.39E+01		1.39E+01	5.95E+01		5.95E+01
N	139402	Propazine	mg/L	2.59E+01		2.59E+01	3.08E+01		3.08E+01	5.27E+01		5.27E+01	4.60E+01		4.60E+01
N	122429	Propham	mg/L	5.80E+00		5.80E+00	4.03E+00		4.03E+00	9.66E+00		9.66E+00	6.03E+00		6.03E+00
N	60207901	Propiconazole	mg/L	1.48E+01		1.48E+01	1.58E+01		1.58E+01	2.91E+01		2.91E+01	2.37E+01		2.37E+01
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/L	2.71E+00		2.71E+00				8.05E+00		8.05E+00			
N	103651	Propylbenzene, n-	mg/L	2.71E+01		2.71E+01				8.05E+01		8.05E+01			
N	57556	Propylene Glycol	mg/L	5.36E+04		5.36E+04	1.00E+06		1.00E+06	1.57E+05		1.57E+05	1.00E+06		1.00E+06
N	1569024	Propylene Glycol Monoethyl Ether	mg/L	1.90E+03		1.90E+03				5.63E+03		5.63E+03			
N	107982	Propylene Glycol Monomethyl Ether	mg/L	1.70E+03		1.70E+03	1.02E+04		1.02E+04	4.63E+03		4.63E+03	1.53E+04		1.53E+04
N	75569	Propylene Oxide	mg/L	2.01E+01	1.42E+00	1.42E+00	9.01E+01	5.60E+00	5.60E+00	5.31E+01	1.42E+00	1.42E+00	1.35E+02	5.60E+00	5.60E+00
N	81335775	Pursuit	mg/L	6.79E+02		6.79E+02				2.01E+03		2.01E+03			
N	51630581	Pydrin	mg/L	2.21E+01		2.21E+01	2.03E+01		2.03E+01	4.12E+01		4.12E+01	3.03E+01		3.03E+01
Y	129000	Pyrene	mg/L	5.44E-01		5.44E-01	3.40E-01		3.40E-01	8.63E-01		8.63E-01	5.08E-01		5.08E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action valu less of hazard- and cancer-based values.

Table A.16. Surface Water . .ion Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	110861	Pyridine	mg/L	1.05E+01		1.05E+01	2.59E+00		2.59E+00	2.70E+00		2.70E+00	5.75E+00		5.75E+00
N	13593038	Quinalphos	mg/L	6.63E+00		6.63E+00	1.63E+00		1.63E+00	1.62E+00		1.62E+00	3.63E+00		3.63E+00
N	91225	Quinoline	mg/L		1.13E+00	1.13E+00		1.11E-02	1.11E-02		6.29E-03	6.29E-03		6.49E-03	6.49E-03
N		Refractory Ceramic Fibers	mg/L												
N	10453868	Resmethrin	mg/L	9.28E-01		9.28E-01	2.29E-01		2.29E-01	3.01E-01		3.01E-01	5.08E-01		5.08E-01
N	299843	Ronnel	mg/L	3.20E+01		3.20E+01	7.88E+00		7.88E+00	1.02E+01		1.02E+01	1.75E+01		1.75E+01
N	83794	Rotenone	mg/L	3.65E+01		3.65E+01	8.99E+00		8.99E+00	9.65E+00		9.65E+00	2.00E+01		2.00E+01
N	78587050	Savey	mg/L							3.28E+02		3.28E+02			
N	7783008	Selenious Acid	mg/L							6.55E+01		6.55E+01			
N	14124675	Selenite	mg/L												
N	630104	Selenourea	mg/L							6.55E+01		6.55E+01			
N	74051802	Sethoxydim	mg/L	2.01E+02		2.01E+02	4.94E+01		4.94E+01	6.16E+01		6.16E+01	1.10E+02		1.10E+02
N	122349	Simazine	mg/L	6.79E+01	2.64E+02	6.79E+01	1.67E+01	2.60E+00	2.60E+00	1.65E+01	1.19E+00	1.19E+00	3.72E+01	1.52E+00	1.52E+00
N	62476599	Sodium Acifluorfen	mg/L							1.70E+02		1.70E+02			
N	148185	Sodium Diethyldithiocarbamate	mg/L	6.43E+03	1.85E+03	1.85E+03	1.58E+03	1.82E+01	1.82E+01	3.31E+02	1.42E+00	1.42E+00	3.52E+03	1.07E+01	1.07E+01
N	62748	Sodium Fluoroacetate	mg/L	1.15E+03		1.15E+03	2.83E+02		2.83E+02	2.62E-01		2.62E-01	6.28E+02		6.28E+02
N	961115	Stirofos (Tetrachlorovinphos)	mg/L	4.64E+02	1.50E+03	4.64E+02	1.14E+02	1.48E+01	1.48E+01	1.09E+02	6.50E+00	6.50E+00	2.54E+02	8.65E+00	8.65E+00
N	57249	Strychnine	mg/L	4.28E+01		4.28E+01	1.05E+01		1.05E+01	3.06E+00		3.06E+00	2.34E+01		2.34E+01
N	100425	Styrene	mg/L	2.66E+01		2.66E+01	6.55E+00		6.55E+00	8.59E+00		8.59E+00	1.46E+01		1.46E+01
N	88671890	Systhane	mg/L							3.28E+02		3.28E+02			
Y	1746016	TCDD, 2,3,7,8-	mg/L		6.19E-07	6.19E-07		6.09E-09	6.09E-09		4.17E-09	4.17E-09		3.56E-09	3.56E-09
Y	51207319	TCDF, 2,3,7,8-	mg/L		2.48E-05	2.48E-05		2.44E-07	2.44E-07		1.66E-07	1.66E-07		1.42E-07	1.42E-07
N	21564170	TCMTB	mg/L	1.11E+02		1.11E+02	2.74E+01		2.74E+01	3.31E+01		3.31E+01	6.10E+01		6.10E+01
N	34014181	Tebuthiuron	mg/L	3.94E+04		3.94E+04	9.70E+03		9.70E+03	8.56E+02		8.56E+02	2.16E+04		2.16E+04
N	3383968	Temephos	mg/L	2.42E+01		2.42E+01	5.96E+00		5.96E+00	7.62E+00		7.62E+00	1.33E+01		1.33E+01
N	5902512	Terbacil	mg/L	3.62E+02		3.62E+02	8.91E+01		8.91E+01	6.95E+01		6.95E+01	1.98E+02		1.98E+02
N	13071799	Terbufos	mg/L	9.95E-02		9.95E-02	2.45E-02		2.45E-02	2.93E-02		2.93E-02	5.44E-02		5.44E-02
N	886500	Terbutryn	mg/L	1.92E+00		1.92E+00	4.73E-01		4.73E-01	5.94E-01		5.94E-01	1.05E+00		1.05E+00
N	1920907	Tetrabutyl Lead	mg/L												
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/L	1.57E-01		1.57E-01	3.87E-02		3.87E-02	5.03E-02		5.03E-02	8.61E-02		8.61E-02
N	630206	Tetrachloroethane, 1,1,1,2-	mg/L	1.11E+02	3.33E+02	1.11E+02	2.74E+01	3.28E+00	3.28E+00	3.31E+01	1.98E+00	1.98E+00	6.10E+01	1.92E+00	1.92E+00
N	79345	Tetrachloroethane, 1,1,2,2-	mg/L	5.20E+02	1.01E+02	1.01E+02	1.28E+02	9.95E-01	9.95E-01	1.39E+02	5.19E-01	5.19E-01	2.84E+02	5.82E-01	5.82E-01
Y	127184	Tetrachloroethylene	mg/L	3.01E+00	1.35E+01	3.01E+00	7.41E-01	1.33E-01	1.33E-01	9.68E-01	9.02E-02	9.02E-02	1.65E+00	7.77E-02	7.77E-02
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/L	2.79E+01		2.79E+01	6.86E+00		6.86E+00	8.82E+00		8.82E+00	1.52E+01		1.52E+01
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/L		8.00E-02	8.00E-02		7.88E-04	7.88E-04		5.27E-04	5.27E-04		4.60E-04	4.60E-04
N	3689245	Tetraethyl Dithiopyrophosphate	mg/L	9.95E+00		9.95E+00	2.45E+00		2.45E+00	2.16E+00		2.16E+00	5.44E+00		5.44E+00
N	78002	Tetraethyl Lead	mg/L	5.57E-03		5.57E-03	1.37E-03		1.37E-03	7.59E-04		7.59E-04	3.05E-03		3.05E-03
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/L	5.66E+05		5.66E+05	1.39E+05		1.39E+05	1.14E+05		1.14E+05	3.10E+05		3.10E+05
N	109999	Tetrahydrofuran	mg/L							2.75E+03	5.71E+01	5.71E+01			
N	75741	Tetramethyl Lead	mg/L												
N	3440753	Tetrapropyl Lead	mg/L												
N	1314325	Thallic Oxide	mg/L							9.17E-01		9.17E-01			
N	563688	Thallium Acetate	mg/L							1.18E+00		1.18E+00			
N	6533739	Thallium Carbonate	mg/L							1.05E+00		1.05E+00			
N	28249776	Thiobencarb	mg/L	4.28E+01		4.28E+01	1.05E+01		1.05E+01	1.26E+01		1.26E+01	2.34E+01		2.34E+01
N	39196184	Thiofanox	mg/L	2.88E+03		2.88E+03	7.09E+02		7.09E+02	3.91E+00		3.91E+00	1.58E+03		1.58E+03
N	23564058	Thiophanate, Methyl	mg/L	2.97E+04		2.97E+04	7.31E+03		7.31E+03	9.45E+02		9.45E+02	1.63E+04		1.63E+04
N	137268	Thiram	mg/L	2.79E+02		2.79E+02	6.86E+01		6.86E+01	3.80E+01		3.80E+01	1.52E+02		1.52E+02
N	108883	Toluene	mg/L	3.96E+02		3.96E+02	9.75E+01		9.75E+01	1.22E+02		1.22E+02	2.17E+02		2.17E+02
N	26471625	Toluene diisocyanate mixture (TDI)	mg/L	1.83E-02		1.83E-02	4.50E-03		4.50E-03	5.79E-03		5.79E-03	9.99E-03		9.99E-03
N	95807	Toluene-2,4-diamine	mg/L		6.77E+01	6.77E+01		6.67E-01	6.67E-01		1.05E-01	1.05E-01		3.89E-01	3.89E-01
N	95705	Toluene-2,5-diamine	mg/L	7.43E+04		7.43E+04	1.83E+04		1.83E+04	5.93E+03		5.93E+03	4.06E+04		4.06E+04
N	823405	Toluene-2,6-diamine	mg/L	3.01E+03		3.01E+03	7.41E+02		7.41E+02	7.11E+02		7.11E+02	1.65E+03		1.65E+03
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/L		1.46E+02	1.46E+02		1.44E+00	1.44E+00		6.39E-01	6.39E-01		8.42E-01	8.42E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	110861	Pyridine	mg/L	1.07E+00		1.07E+00	1.10E+00		1.10E+00	2.08E+00		2.08E+00	1.65E+00		1.65E+00
N	13593038	Quinalphos	mg/L	6.14E-01		6.14E-01	6.96E-01		6.96E-01	1.23E+00		1.23E+00	1.04E+00		1.04E+00
N	91225	Quinoline	mg/L		6.29E-03	6.29E-03		6.49E-03	6.49E-03		6.29E-03	6.29E-03		6.49E-03	6.49E-03
N		Refractory Ceramic Fibers	mg/L												
N	10453868	Resmethrin	mg/L	1.57E-01		1.57E-01	9.75E-02		9.75E-02	2.48E-01		2.48E-01	1.46E-01		1.46E-01
N	299843	Ronnel	mg/L	5.21E+00		5.21E+00	3.36E+00		3.36E+00	8.39E+00		8.39E+00	5.02E+00		5.02E+00
N	83794	Rotenone	mg/L	3.94E+00		3.94E+00	3.83E+00		3.83E+00	7.50E+00		7.50E+00	5.73E+00		5.73E+00
N	78587050	Savey	mg/L	6.79E+01		6.79E+01				2.01E+02		2.01E+02			
N	7783008	Selenious Acid	mg/L	1.36E+01		1.36E+01				4.02E+01		4.02E+01			
N	14124675	Selenite	mg/L												
N	630104	Selenourea	mg/L	1.36E+01		1.36E+01				4.02E+01		4.02E+01			
N	74051802	Sethoxydim	mg/L	2.98E+01		2.98E+01	2.10E+01		2.10E+01	5.00E+01		5.00E+01	3.15E+01		3.15E+01
N	122349	Simazine	mg/L	6.22E+00	1.19E+00	1.19E+00	7.13E+00	1.52E+00	1.52E+00	1.25E+01	1.19E+00	1.19E+00	1.07E+01	1.52E+00	1.52E+00
N	62476599	Sodium Acifluorfen	mg/L	3.53E+01		3.53E+01				1.05E+02		1.05E+02			
N	148185	Sodium Diethyldithiocarbamate	mg/L	7.58E+01	1.42E+00	1.42E+00	6.75E+02	1.07E+01	1.07E+01	2.12E+02	1.42E+00	1.42E+00	1.01E+03	1.07E+01	1.07E+01
N	62748	Sodium Fluoroacetate	mg/L	5.43E-02		5.43E-02	1.21E+02		1.21E+02	1.61E-01		1.61E-01	1.80E+02		1.80E+02
N	961115	Stirofos (Tetrachlorovinphos)	mg/L	4.00E+01	6.50E+00	6.50E+00	4.87E+01	8.65E+00	8.65E+00	8.20E+01	6.50E+00	6.50E+00	7.28E+01	8.65E+00	8.65E+00
N	57249	Strychnine	mg/L	7.32E-01		7.32E-01	4.50E+00		4.50E+00	1.99E+00		1.99E+00	6.72E+00		6.72E+00
N	100425	Styrene	mg/L	4.46E+00		4.46E+00	2.79E+00		2.79E+00	7.09E+00		7.09E+00	4.17E+00		4.17E+00
N	88671890	Systhane	mg/L	6.79E+01		6.79E+01				2.01E+02		2.01E+02			
Y	1746016	TCDD, 2,3,7,8-	mg/L		4.17E-09	4.17E-09		3.56E-09	3.56E-09		4.17E-09	4.17E-09		3.56E-09	3.56E-09
Y	51207319	TCDF, 2,3,7,8-	mg/L		1.66E-07	1.66E-07		1.42E-07	1.42E-07		1.66E-07	1.66E-07		1.42E-07	1.42E-07
N	21564170	TCMTB	mg/L	1.53E+01		1.53E+01	1.17E+01		1.17E+01	2.65E+01		2.65E+01	1.75E+01		1.75E+01
N	34014181	Tebuthiuron	mg/L	1.85E+02		1.85E+02	4.13E+03		4.13E+03	5.35E+02		5.35E+02	6.18E+03		6.18E+03
N	3383968	Temephos	mg/L	3.81E+00		3.81E+00	2.54E+00		2.54E+00	6.23E+00		6.23E+00	3.80E+00		3.80E+00
N	5902512	Terbacil	mg/L	2.24E+01		2.24E+01	3.80E+01		3.80E+01	5.03E+01		5.03E+01	5.68E+01		5.68E+01
N	13071799	Terbufos	mg/L	1.35E-02		1.35E-02	1.04E-02		1.04E-02	2.35E-02		2.35E-02	1.56E-02		1.56E-02
N	886500	Terbutryn	mg/L	2.90E-01		2.90E-01	2.02E-01		2.02E-01	4.83E-01		4.83E-01	3.01E-01		3.01E-01
N	1920907	Tetrabutyl Lead	mg/L												
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/L	2.58E-02		2.58E-02	1.65E-02		1.65E-02	4.14E-02		4.14E-02	2.47E-02		2.47E-02
N	630206	Tetrachloroethane, 1,1,1,2-	mg/L	1.53E+01	1.98E+00	1.98E+00	1.17E+01	1.92E+00	1.92E+00	2.65E+01	1.98E+00	1.98E+00	1.75E+01	1.92E+00	1.92E+00
N	79345	Tetrachloroethane, 1,1,2,2-	mg/L	5.71E+01	5.19E-01	5.19E-01	5.46E+01	5.82E-01	5.82E-01	1.08E+02	5.19E-01	5.19E-01	8.16E+01	5.82E-01	5.82E-01
Y	127184	Tetrachloroethylene	mg/L	5.00E-01	9.02E-02	9.02E-02	3.16E-01	7.77E-02	7.77E-02	7.98E-01	9.02E-02	9.02E-02	4.72E-01	7.77E-02	7.77E-02
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/L	4.45E+00		4.45E+00	2.92E+00		2.92E+00	7.23E+00		7.23E+00	4.37E+00		4.37E+00
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/L		5.27E-04	5.27E-04		4.60E-04	4.60E-04		5.27E-04	5.27E-04		4.60E-04	4.60E-04
N	3689245	Tetraethyl Dithiopyrophosphate	mg/L	7.51E-01		7.51E-01	1.04E+00		1.04E+00	1.60E+00		1.60E+00	1.56E+00		1.56E+00
N	78002	Tetraethyl Lead	mg/L	2.11E-04		2.11E-04	5.85E-04		5.85E-04	5.23E-04		5.23E-04	8.74E-04		8.74E-04
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/L	3.76E+04		3.76E+04	5.94E+04		5.94E+04	8.31E+04		8.31E+04	8.88E+04		8.88E+04
N	109999	Tetrahydrofuran	mg/L	5.70E+02	5.71E+01	5.71E+01				1.69E+03	5.71E+01	5.71E+01			
N	75741	Tetramethyl Lead	mg/L												
N	3440753	Tetrapropyl Lead	mg/L												
N	1314325	Thallic Oxide	mg/L	1.90E-01		1.90E-01				5.63E-01		5.63E-01			
N	563688	Thallium Acetate	mg/L	2.44E-01		2.44E-01				7.24E-01		7.24E-01			
N	6533739	Thallium Carbonate	mg/L	2.17E-01		2.17E-01				6.44E-01		6.44E-01			
N	28249776	Thiobencarb	mg/L	5.72E+00		5.72E+00	4.50E+00		4.50E+00	1.00E+01		1.00E+01	6.72E+00		6.72E+00
N	39196184	Thiofanox	mg/L	8.13E-01		8.13E-01	3.02E+02		3.02E+02	2.41E+00		2.41E+00	4.52E+02		4.52E+02
N	23564058	Thiophanate, Methyl	mg/L	2.08E+02		2.08E+02	3.12E+03		3.12E+03	5.96E+02		5.96E+02	4.66E+03		4.66E+03
N	137268	Thiram	mg/L	1.05E+01		1.05E+01	2.92E+01		2.92E+01	2.61E+01		2.61E+01	4.37E+01		4.37E+01
N	108883	Toluene	mg/L	5.97E+01		5.97E+01	4.16E+01		4.16E+01	9.94E+01		9.94E+01	6.22E+01		6.22E+01
N	26471625	Toluene diisocyanate mixture (TDI)	mg/L	2.92E-03		2.92E-03	1.92E-03		1.92E-03	4.74E-03		4.74E-03	2.87E-03		2.87E-03
N	95807	Toluene-2,4-diamine	mg/L		1.05E-01	1.05E-01		3.89E-01	3.89E-01		1.05E-01	1.05E-01		3.89E-01	3.89E-01
N	95705	Toluene-2,5-diamine	mg/L	1.44E+03		1.44E+03	7.80E+03		7.80E+03	3.89E+03		3.89E+03	1.17E+04		1.17E+04
N	823405	Toluene-2,6-diamine	mg/L	2.63E+02		2.63E+02	3.16E+02		3.16E+02	5.37E+02		5.37E+02	4.72E+02		4.72E+02
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/L		6.39E-01	6.39E-01		8.42E-01	8.42E-01		6.39E-01	6.39E-01		8.42E-01	8.42E-01

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action val[illegible] less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	106490	Toluidine, p-	mg/L		5.91E+01	5.91E+01		5.82E-01	5.82E-01		3.37E-01	3.37E-01		3.40E-01	3.40E-01
N	8001352	Toxaphene	mg/L		7.88E+00	7.88E+00		7.76E-02	7.76E-02		4.68E-02	4.68E-02		4.53E-02	4.53E-02
N	66841256	Tralomethrin	mg/L							9.83E+01		9.83E+01			
N	2303175	Triallate	mg/L	4.02E+01		4.02E+01	9.90E+00		9.90E+00	1.21E+01		1.21E+01	2.20E+01		2.20E+01
N	82097505	Triasulfuron	mg/L							1.31E+02		1.31E+02			
N	615543	Tribromobenzene, 1,2,4-	mg/L	9.48E+00		9.48E+00	2.33E+00		2.33E+00	2.93E+00		2.93E+00	5.19E+00		5.19E+00
N	594150	Tribromochloromethane	mg/L												
N	49690940	Tribromodiphenyl Ether	mg/L												
N	56359	Tributyltin Oxide	mg/L							3.93E+00		3.93E+00			
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/L	2.79E+05		2.79E+05	6.86E+04		6.86E+04	7.34E+04		7.34E+04	1.52E+05		1.52E+05
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/L												
N	76039	Trichloroacetic Acid	mg/L												
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/L								1.50E+01	1.50E+01			
N	634935	Trichloroaniline, 2,4,6-	mg/L		1.01E+02	1.01E+02		9.91E-01	9.91E-01		6.44E-01	6.44E-01		5.79E-01	5.79E-01
N	120821	Trichlorobenzene, 1,2,4-	mg/L	1.08E+01		1.08E+01	2.66E+00		2.66E+00	3.41E+00		3.41E+00	5.91E+00		5.91E+00
N	71556	Trichloroethane, 1,1,1-	mg/L	2.06E+02		2.06E+02	5.08E+01		5.08E+01	5.84E+01		5.84E+01	1.13E+02		1.13E+02
N	79005	Trichloroethane, 1,1,2-	mg/L	4.30E+01	4.40E+02	4.30E+01	1.06E+01	4.33E+00	4.33E+00	1.10E+01	2.13E+00	2.13E+00	2.35E+01	2.53E+00	2.53E+00
Y	79016	Trichloroethylene	mg/L	6.27E+00	2.22E+02	6.27E+00	1.54E+00	2.18E+00	1.54E+00	1.98E+00	1.44E+00	1.44E+00	3.43E+00	1.27E+00	1.27E+00
N	75694	Trichlorofluoromethane	mg/L	4.52E+02		4.52E+02	1.11E+02		1.11E+02	1.41E+02		1.41E+02	2.47E+02		2.47E+02
N	95954	Trichlorophenol, 2,4,5-	mg/L	9.44E+01		9.44E+01	2.32E+01		2.32E+01	2.99E+01		2.99E+01	5.17E+01		5.17E+01
N	88062	Trichlorophenol, 2,4,6-	mg/L		2.00E+02	2.00E+02		1.97E+00	1.97E+00		1.31E+00	1.31E+00		1.15E+00	1.15E+00
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/L	1.78E+01		1.78E+01	4.39E+00		4.39E+00	5.47E+00		5.47E+00	9.75E+00		9.75E+00
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/L	1.55E+01		1.55E+01	3.81E+00		3.81E+00	4.83E+00		4.83E+00	8.47E+00		8.47E+00
N	598776	Trichloropropane, 1,1,2-	mg/L	1.24E+02		1.24E+02	3.05E+01		3.05E+01	2.49E+01		2.49E+01	6.77E+01		6.77E+01
N	96184	Trichloropropane, 1,2,3-	mg/L	1.22E+00	6.75E-02	6.75E-02	2.99E-01	6.65E-04	6.65E-04	3.92E-01	4.52E-04	4.52E-04	6.65E-01	3.88E-04	3.88E-04
N	96195	Trichloropropene, 1,2,3-	mg/L	1.94E+01		1.94E+01	4.77E+00		4.77E+00	5.73E+00		5.73E+00	1.06E+01		1.06E+01
N	2077465	Trichlorotoluene, 2,3,6-	mg/L												
N	2014837	Trichlorotoluene, alpha 2,6-	mg/L												
N	58138082	Tridiphane	mg/L							3.93E+01		3.93E+01			
N	5224237	Triethyl Lead	mg/L												
N	121448	Triethylamine	mg/L	3.96E+01		3.96E+01	9.75E+00		9.75E+00	8.61E+00		8.61E+00	2.17E+01		2.17E+01
N	1582098	Trifluralin	mg/L	4.22E+00	1.71E+02	4.22E+00	1.04E+00	1.68E+00	1.04E+00	1.35E+00	1.13E+00	1.13E+00	2.31E+00	9.81E-01	9.81E-01
N	7442139	Trimethyl Lead	mg/L												
N	512561	Trimethyl Phosphate	mg/L		3.82E+04	3.82E+04		3.76E+02	3.76E+02		1.12E+01	1.12E+01		2.20E+02	2.20E+02
N	95636	Trimethylbenzene, 1,2,4-	mg/L							6.55E+02		6.55E+02			
N	108678	Trimethylbenzene, 1,3,5-	mg/L							6.55E+02		6.55E+02			
N	1762261	Trimethylethyl Lead	mg/L												
N	99354	Trinitrobenzene, 1,3,5-	mg/L	3.19E+03		3.19E+03	7.86E+02		7.86E+02	2.85E+02		2.85E+02	1.75E+03		1.75E+03
N	479458	Trinitrophenylmethylnitramine	mg/L	6.26E+02		6.26E+02	1.54E+02		1.54E+02	7.96E+01		7.96E+01	3.42E+02		3.42E+02
N	118967	Trinitrotoluene, 2,4,6-	mg/L	9.83E+00	1.53E+03	9.83E+00	2.42E+00	1.51E+01	2.42E+00	2.14E+00	6.02E+00	2.14E+00	5.38E+00	8.80E+00	5.38E+00
N	6618037	Tripropyl Lead	mg/L												
N	1929777	Vernolate	mg/L	9.60E-01		9.60E-01	2.36E-01		2.36E-01	3.04E-01		3.04E-01	5.26E-01		5.26E-01
N	50471448	Vinclozolin	mg/L	2.58E+02		2.58E+02	6.35E+01		6.35E+01	6.66E+01		6.66E+01	1.41E+02		1.41E+02
N	108054	Vinyl Acetate	mg/L	6.03E+03		6.03E+03	1.49E+03		1.49E+03	1.70E+03		1.70E+03	3.30E+03		3.30E+03
N	593602	Vinyl Bromide	mg/L	1.39E+01	3.44E+02	1.39E+01	3.42E+00	3.38E+00	3.38E+00	3.21E+00	1.46E+00	1.46E+00	7.60E+00	1.98E+00	1.98E+00
Y	75014	Vinyl Chloride	mg/L	4.58E+01	2.54E+01	2.54E+01	1.13E+01	2.50E-01	2.50E-01	1.08E+01	1.10E-01	1.10E-01	2.51E+01	1.46E-01	1.46E-01
N	81812	Warfarin	mg/L	3.56E+00		3.56E+00	8.75E-01		8.75E-01	8.91E-01		8.91E-01	1.95E+00		1.95E+00
Y	1330207	Xylene, Mixture	mg/L	2.16E+03		2.16E+03	5.31E+02		5.31E+02	6.81E+02		6.81E+02	1.18E+03		1.18E+03
Y	108383	Xylene, m-	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	7.03E+02		7.03E+02	1.22E+03		1.22E+03
Y	95476	Xylene, o-	mg/L	2.23E+03		2.23E+03	5.48E+02		5.48E+02	7.03E+02		7.03E+02	1.22E+03		1.22E+03
Y	106423	Xylene, p-	mg/L												
N	12122677	Zineb	mg/L	8.44E+03		8.44E+03	2.08E+03		2.08E+03	5.29E+02		5.29E+02	4.62E+03		4.62E+03
Y	14596102	Am-241	pCi/L								4.11E+03	4.11E+03			
Y	10198400	Co-60	pCi/L								2.72E+04	2.72E+04			

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
N	106490	Toluidine, p-	mg/L		3.37E-01	3.37E-01		3.40E-01	3.40E-01		3.37E-01	3.37E-01		3.40E-01	3.40E-01
N	8001352	Toxaphene	mg/L		4.68E-02	4.68E-02		4.53E-02	4.53E-02		4.68E-02	4.68E-02		4.53E-02	4.53E-02
N	66841256	Tralomethrin	mg/L	2.04E+01		2.04E+01				6.04E+01		6.04E+01			
N	2303175	Triallate	mg/L	5.71E+00		5.71E+00	4.22E+00		4.22E+00	9.76E+00		9.76E+00	6.31E+00		6.31E+00
N	82097505	Triasulfuron	mg/L	2.71E+01		2.71E+01				8.05E+01		8.05E+01			
N	615543	Tribromobenzene, 1,2,4-	mg/L	1.43E+00		1.43E+00	9.95E-01		9.95E-01	2.39E+00		2.39E+00	1.49E+00		1.49E+00
N	594150	Tribromochloromethane	mg/L												
N	49690940	Tribromodiphenyl Ether	mg/L												
N	56359	Tributyltin Oxide	mg/L	8.14E-01		8.14E-01				2.41E+00		2.41E+00			
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/L	2.98E+04		2.98E+04	2.92E+04		2.92E+04	5.69E+04		5.69E+04	4.37E+04		4.37E+04
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/L												
N	76039	Trichloroacetic Acid	mg/L												
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/L		1.50E+01	1.50E+01					1.50E+01	1.50E+01			
N	634935	Trichloroaniline, 2,4,6-	mg/L		6.44E-01	6.44E-01		5.79E-01	5.79E-01		6.44E-01	6.44E-01		5.79E-01	5.79E-01
N	120821	Trichlorobenzene, 1,2,4-	mg/L	1.71E+00		1.71E+00	1.13E+00		1.13E+00	2.79E+00		2.79E+00	1.70E+00		1.70E+00
N	71556	Trichloroethane, 1,1,1-	mg/L	2.55E+01		2.55E+01	2.17E+01		2.17E+01	4.62E+01		4.62E+01	3.24E+01		3.24E+01
N	79005	Trichloroethane, 1,1,2-	mg/L	4.35E+00	2.13E+00	2.13E+00	4.51E+00	2.53E+00	2.53E+00	8.47E+00	2.13E+00	2.13E+00	6.74E+00	2.53E+00	2.53E+00
Y	79016	Trichloroethylene	mg/L	9.95E-01	1.44E+00	9.95E-01	6.58E-01	1.27E+00	6.58E-01	1.62E+00	1.44E+00	1.44E+00	9.83E-01	1.27E+00	9.83E-01
N	75694	Trichlorofluoromethane	mg/L	6.99E+01		6.99E+01	4.75E+01		4.75E+01	1.15E+02		1.15E+02	7.09E+01		7.09E+01
N	95954	Trichlorophenol, 2,4,5-	mg/L	1.51E+01		1.51E+01	9.91E+00		9.91E+00	2.45E+01		2.45E+01	1.48E+01		1.48E+01
N	88062	Trichlorophenol, 2,4,6-	mg/L		1.31E+00	1.31E+00		1.15E+00	1.15E+00		1.31E+00	1.31E+00		1.15E+00	1.15E+00
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/L	2.65E+00		2.65E+00	1.87E+00		1.87E+00	4.44E+00		4.44E+00	2.80E+00		2.80E+00
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/L	2.39E+00		2.39E+00	1.62E+00		1.62E+00	3.94E+00		3.94E+00	2.43E+00		2.43E+00
N	598776	Trichloropropane, 1,1,2-	mg/L	8.23E+00		8.23E+00	1.30E+01		1.30E+01	1.82E+01		1.82E+01	1.94E+01		1.94E+01
N	96184	Trichloropropane, 1,2,3-	mg/L	2.03E-01	4.52E-04	4.52E-04	1.28E-01	3.88E-04	3.88E-04	3.23E-01	4.52E-04	4.52E-04	1.91E-01	3.88E-04	3.88E-04
N	96195	Trichloropropene, 1,2,3-	mg/L	2.64E+00		2.64E+00	2.03E+00		2.03E+00	4.59E+00		4.59E+00	3.04E+00		3.04E+00
N	2077465	Trichlorotoluene, 2,3,6-	mg/L												
N	2014837	Trichlorotoluene, alpha 2,6-	mg/L												
N	58138082	Tridiphane	mg/L	8.14E+00		8.14E+00				2.41E+01		2.41E+01			
N	5224237	Triethyl Lead	mg/L												
N	121448	Triethylamine	mg/L	3.00E+00		3.00E+00	4.16E+00		4.16E+00	6.39E+00		6.39E+00	6.22E+00		6.22E+00
N	1582098	Trifluralin	mg/L	6.90E-01	1.13E+00	6.90E-01	4.43E-01	9.81E-01	4.43E-01	1.11E+00	1.13E+00	1.11E+00	6.62E-01	9.81E-01	6.62E-01
N	7442139	Trimethyl Lead	mg/L												
N	512561	Trimethyl Phosphate	mg/L		1.12E+01	1.12E+01		2.20E+02	2.20E+02		1.12E+01	1.12E+01		2.20E+02	2.20E+02
N	95636	Trimethylbenzene, 1,2,4-	mg/L	1.36E+02		1.36E+02				4.02E+02		4.02E+02			
N	108678	Trimethylbenzene, 1,3,5-	mg/L	1.36E+02		1.36E+02				4.02E+02		4.02E+02			
N	1762261	Trimethylethyl Lead	mg/L												
N	99354	Trinitrobenzene, 1,3,5-	mg/L	7.08E+01		7.08E+01	3.35E+02		3.35E+02	1.88E+02		1.88E+02	5.01E+02		5.01E+02
N	479458	Trinitrophenylmethylnitramine	mg/L	2.16E+01		2.16E+01	6.57E+01		6.57E+01	5.44E+01		5.44E+01	9.82E+01		9.82E+01
N	118967	Trinitrotoluene, 2,4,6-	mg/L	7.47E-01	6.02E+00	7.47E-01	1.03E+00	8.80E+00	1.03E+00	1.59E+00	6.02E+00	1.59E+00	1.54E+00	8.80E+00	1.54E+00
N	6618037	Tripropyl Lead	mg/L												
N	1929777	Vernolate	mg/L	1.53E-01		1.53E-01	1.01E-01		1.01E-01	2.49E-01		2.49E-01	1.51E-01		1.51E-01
N	50471448	Vinclozolin	mg/L	2.66E+01		2.66E+01	2.71E+01		2.71E+01	5.14E+01		5.14E+01	4.05E+01		4.05E+01
N	108054	Vinyl Acetate	mg/L	7.42E+02		7.42E+02	6.33E+02		6.33E+02	1.34E+03		1.34E+03	9.47E+02		9.47E+02
N	593602	Vinyl Bromide	mg/L	1.17E+00	1.46E+00	1.17E+00	1.46E+00	1.98E+00	1.46E+00	*2.42E+00*	*1.46E+00*	*1.46E+00*	*2.18E+00*	*1.98E+00*	*1.98E+00*
Y	75014	Vinyl Chloride	mg/L	3.97E+00	1.10E-01	1.10E-01	4.81E+00	1.46E-01	1.46E-01	8.13E+00	1.10E-01	1.10E-01	7.18E+00	1.46E-01	1.46E-01
N	81812	Warfarin	mg/L	3.46E-01		3.46E-01	3.73E-01		3.73E-01	6.82E-01		6.82E-01	5.58E-01		5.58E-01
Y	1330207	Xylene, Mixture	mg/L	3.42E+02		3.42E+02	2.26E+02		2.26E+02	5.57E+02		5.57E+02	3.39E+02		3.39E+02
Y	108383	Xylene, m-	mg/L	3.52E+02		3.52E+02	2.34E+02		2.34E+02	5.75E+02		5.75E+02	3.50E+02		3.50E+02
Y	95476	Xylene, o-	mg/L	3.52E+02		3.52E+02	2.34E+02		2.34E+02	5.75E+02		5.75E+02	3.50E+02		3.50E+02
Y	106423	Xylene, p-	mg/L												
N	12122677	Zineb	mg/L	1.24E+02		1.24E+02	8.86E+02		8.86E+02	3.42E+02		3.42E+02	1.32E+03		1.32E+03
Y	14596102	Am-241	pCi/L		4.11E+03	4.11E+03					4.11E+03	4.11E+03			
Y	10198400	Co-60	pCi/L		2.72E+04	2.72E+04					2.72E+04	2.72E+04			

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value = less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
Y	10045973	Cs-137+D	pCi/L								1.41E+04	1.41E+04			
Y	13994202	Np-237+D	pCi/L								6.34E+03	6.34E+03			
Y	13981163	Pu-238	pCi/L								3.26E+03	3.26E+03			
Y	15117483	Pu-239	pCi/L								3.17E+03	3.17E+03			
Y	14119336	Pu-240	pCi/L								3.17E+03	3.17E+03			
Y	13982633	Ra-226+D	pCi/L								1.11E+03	1.11E+03			
Y	14859677	Rn-222+D	pCi/L												
Y	10098972	Sr-90+D	pCi/L								5.78E+03	5.78E+03			
Y	14133767	Tc-99	pCi/L								1.55E+05	1.55E+05			
Y	14274829	Th-228+D	pCi/L								1.42E+03	1.42E+03			
Y	14269637	Th-230	pCi/L								4.70E+03	4.70E+03			
Y	N2608	Th-232	pCi/L								4.23E+03	4.23E+03			
Y	13966295	U-234	pCi/L								6.04E+03	6.04E+03			
Y	15117961	U-235+D	pCi/L								5.95E+03	5.95E+03			
Y	24678828	U-238+D	pCi/L								4.91E+03	4.91E+03			

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action value is the less of hazard- and cancer-based values.

Table A.16. Surface Water Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action	Hazard	Cancer	Action
Y	10045973	Cs-137+D	pCi/L		1.41E+04	1.41E+04					1.41E+04	1.41E+04			
Y	13994202	Np-237+D	pCi/L		6.34E+03	6.34E+03					6.34E+03	6.34E+03			
Y	13981163	Pu-238	pCi/L		3.26E+03	3.26E+03					3.26E+03	3.26E+03			
Y	15117483	Pu-239	pCi/L		3.17E+03	3.17E+03					3.17E+03	3.17E+03			
Y	14119336	Pu-240	pCi/L		3.17E+03	3.17E+03					3.17E+03	3.17E+03			
Y	13982633	Ra-226+D	pCi/L		1.11E+03	1.11E+03					1.11E+03	1.11E+03			
Y	14859677	Rn-222+D	pCi/L												
Y	10098972	Sr-90+D	pCi/L		5.78E+03	5.78E+03					5.78E+03	5.78E+03			
Y	14133767	Tc-99	pCi/L		1.55E+05	1.55E+05					1.55E+05	1.55E+05			
Y	14274829	Th-228+D	pCi/L		1.42E+03	1.42E+03					1.42E+03	1.42E+03			
Y	14269637	Th-230	pCi/L		4.70E+03	4.70E+03					4.70E+03	4.70E+03			
Y	N2608	Th-232	pCi/L		4.23E+03	4.23E+03					4.23E+03	4.23E+03			
Y	13966295	U-234	pCi/L		6.04E+03	6.04E+03					6.04E+03	6.04E+03			
Y	15117961	U-235+D	pCi/L		5.95E+03	5.95E+03					5.95E+03	5.95E+03			
Y	24678828	U-238+D	pCi/L		4.91E+03	4.91E+03					4.91E+03	4.91E+03			

Hazard-based values calculated using target HI of 3.
Cancer-based values calculated using target ELCR of 1E-4.
Action valu[illegible] less of hazard- and cancer-based values.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7429905	Aluminum	mg/kg	5.25E+03		5.25E+03	4.64E+03		4.64E+03	1.39E+04		1.39E+04	1.98E+03		1.98E+03
N	20859738	Aluminum Phosphide	mg/kg	3.55E+00		3.55E+00	3.63E+00		3.63E+00	1.10E+01		1.10E+01	1.55E+00		1.55E+00
N	7664417	Ammonia	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7773060	Ammonium Sulfamate	mg/kg	1.05E+03		1.05E+03	9.29E+02		9.29E+02	2.77E+03		2.77E+03	3.97E+02		3.97E+02
Y	7440360	Antimony (metallic)	mg/kg	4.92E-01		4.92E-01	3.79E-01		3.79E-01	1.12E+00		1.12E+00	1.61E-01		1.61E-01
N	1314609	Antimony Pentoxide	mg/kg	4.44E+00		4.44E+00	4.54E+00		4.54E+00	1.37E+01		1.37E+01	1.94E+00		1.94E+00
N	304610	Antimony Potassium Tartrate	mg/kg	7.99E+00		7.99E+00	8.18E+00		8.18E+00	2.47E+01		2.47E+01	3.49E+00		3.49E+00
N	1332816	Antimony Tetroxide	mg/kg	3.55E+00		3.55E+00	3.63E+00		3.63E+00	1.10E+01		1.10E+01	1.55E+00		1.55E+00
N	1309644	Antimony Trioxide	mg/kg	3.55E+00		3.55E+00	3.63E+00		3.63E+00	1.10E+01		1.10E+01	1.55E+00		1.55E+00
N		Arsenic Salts	mg/kg												
Y	7440382	Arsenic, Inorganic	mg/kg	5.21E+00	3.24E-01	3.24E-01	8.41E+00	5.23E-01	5.23E-01	2.66E+01	3.46E-01	3.46E-01	3.60E+00	3.46E-01	3.46E-01
N	7784421	Arsine	mg/kg	1.00E+05	2.29E-01	2.29E-01	1.00E+05	2.74E-01	2.74E-01	1.00E+05	1.76E-01	1.76E-01	1.00E+05	1.76E-01	1.76E-01
N	1332214	Asbestos	mg/kg												
N	7440393	Barium	mg/kg	2.72E+02		2.72E+02	2.29E+02		2.29E+02	6.82E+02		6.82E+02	9.78E+01		9.78E+01
N	542621	Barium Cyanide	mg/kg	5.25E+02		5.25E+02	4.65E+02		4.65E+02	1.39E+03		1.39E+03	1.98E+02		1.98E+02
Y	7440417	Beryllium and compounds	mg/kg	1.26E+00	7.39E+04	1.26E+00	9.48E-01	5.47E+04	9.48E-01	2.80E+00	6.02E+04	2.80E+00	4.04E-01	6.02E+04	4.04E-01
N	7440428	Boron And Borates Only	mg/kg	1.30E+03		1.30E+03	1.74E+03		1.74E+03	5.40E+03		5.40E+03	7.46E+02		7.46E+02
N	7637072	Boron Trifluoride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7440439	Cadmium (Diet)	mg/kg	1.52E+01	1.00E+05	1.52E+01	2.13E+01	7.53E+04	2.13E+01	6.62E+01	8.30E+04	6.62E+01	9.12E+00	8.30E+04	9.12E+00
N	592018	Calcium Cyanide	mg/kg	2.10E+02		2.10E+02	1.86E+02		1.86E+02	5.55E+02		5.55E+02	7.93E+01		7.93E+01
N	16887006	Chloride	mg/kg												
N	7782505	Chlorine	mg/kg	5.25E+02		5.25E+02	4.65E+02		4.65E+02	1.39E+03		1.39E+03	1.98E+02		1.98E+02
N	7758192	Chlorite (Sodium Salt)	mg/kg	2.66E+02		2.66E+02	2.73E+02		2.73E+02	8.23E+02		8.23E+02	1.16E+02		1.16E+02
Y	16065831	Chromium (III) (Insoluble Salts)	mg/kg	4.76E+02		4.76E+02	3.56E+02		3.56E+02	1.05E+03		1.05E+03	1.52E+02		1.52E+02
Y	7440473	Chromium (Total)	mg/kg	4.76E+02	1.48E+04	4.76E+02	3.56E+02	1.09E+04	3.56E+02	1.05E+03	1.20E+04	1.05E+03	1.52E+02	1.20E+04	1.52E+02
N		Chromium Salts	mg/kg												
Y	18540299	Chromium VI (particulates)	mg/kg	3.69E+00	2.11E+03	3.69E+00	2.84E+00	1.56E+03	2.84E+00	8.40E+00	1.72E+03	8.40E+00	1.21E+00	1.72E+03	1.21E+00
N	7440484	Cobalt	mg/kg	1.11E+03		1.11E+03	1.92E+03		1.92E+03	6.15E+03		6.15E+03	8.25E+02		8.25E+02
Y	7440508	Copper	mg/kg	4.27E+02		4.27E+02	4.93E+02		4.93E+02	1.50E+03		1.50E+03	2.11E+02		2.11E+02
N	544923	Copper Cyanide	mg/kg	2.63E+01		2.63E+01	2.32E+01		2.32E+01	6.94E+01		6.94E+01	9.91E+00		9.91E+00
N	57125	Cyanide (CN-)	mg/kg	9.18E+01		9.18E+01	7.92E+01		7.92E+01	2.36E+02		2.36E+02	3.38E+01		3.38E+01
N	7782414	Fluorine (Soluble Fluoride)	mg/kg	8.97E+02		8.97E+02	1.24E+03		1.24E+03	3.86E+03		3.86E+03	5.32E+02		5.32E+02
N	7647010	Hydrogen Chloride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	74908	Hydrogen Cyanide	mg/kg	4.06E+01		4.06E+01	3.21E+01		3.21E+01	9.51E+01		9.51E+01	1.37E+01		1.37E+01
N	7783064	Hydrogen Sulfide	mg/kg	7.08E+00		7.08E+00	5.65E+00		5.65E+00	1.68E+01		1.68E+01	2.41E+00		2.41E+00
Y	7439896	Iron	mg/kg	2.17E+03		2.17E+03	2.07E+03		2.07E+03	6.21E+03		6.21E+03	8.83E+02		8.83E+02
Y	7439921	Lead And Compounds	mg/kg			5.00E+01			5.00E+01			5.00E+01			5.00E+01
N	7439932	Lithium	mg/kg	3.69E+02		3.69E+02	6.41E+02		6.41E+02	2.05E+03		2.05E+03	2.75E+02		2.75E+02
N	7439954	Magnesium	mg/kg												
Y	7439965	Manganese	mg/kg	5.66E+01		5.66E+01	4.52E+01		4.52E+01	1.34E+02		1.34E+02	1.93E+01		1.93E+01
N	7487947	Mercuric Chloride	mg/kg	1.17E+00		1.17E+00	9.82E-01		9.82E-01	2.92E+00		2.92E+00	4.19E-01		4.19E-01
N	1344485	Mercuric Sulfide	mg/kg												
N	7439976	Mercury (elemental)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7439976	Mercury, Inorganic Salts	mg/kg	1.17E+00		1.17E+00	9.82E-01		9.82E-01	2.92E+00		2.92E+00	4.19E-01		4.19E-01
N	22967926	Methyl Mercury	mg/kg	1.44E+00		1.44E+00	1.94E+00		1.94E+00	6.00E+00		6.00E+00	8.29E-01		8.29E-01
Y	7439987	Molybdenum	mg/kg	6.60E+01		6.60E+01	8.30E+01		8.30E+01	2.55E+02		2.55E+02	3.55E+01		3.55E+01
N		Nickel Refinery Dust	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
Y	7440020	Nickel Soluble Salts	mg/kg	2.16E+02		2.16E+02	2.42E+02		2.42E+02	7.34E+02		7.34E+02	1.03E+02		1.03E+02
N	12035722	Nickel Subsulfide	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
N	14797558	Nitrate	mg/kg	2.43E+04		2.43E+04	3.41E+04		3.41E+04	1.00E+05		1.00E+05	1.46E+04		1.46E+04
N	10102439	Nitric Oxide	mg/kg	5.25E+02		5.25E+02	4.65E+02		4.65E+02	1.39E+03		1.39E+03	1.98E+02		1.98E+02
N	14797650	Nitrite	mg/kg	1.52E+03		1.52E+03	2.13E+03		2.13E+03	6.62E+03		6.62E+03	9.12E+02		9.12E+02
N	10102440	Nitrogen Dioxide	mg/kg	2.36E+03		2.36E+03	1.88E+03		1.88E+03	5.59E+03		5.59E+03	8.04E+02		8.04E+02
N	7803512	Phosphine	mg/kg	1.58E+00		1.58E+00	1.39E+00		1.39E+00	4.16E+00		4.16E+00	5.95E-01		5.95E-01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7429905	Aluminum	mg/kg	3.01E+03		3.01E+03	3.94E+03		3.94E+03	7.32E+02		7.32E+02
N	20859738	Aluminum Phosphide	mg/kg	2.40E+00		2.40E+00	2.99E+00		2.99E+00	5.34E-01		5.34E-01
N	7664417	Ammonia	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	7773060	Ammonium Sulfamate	mg/kg	6.03E+02		6.03E+02	7.89E+02		7.89E+02	1.46E+02		1.46E+02
Y	7440360	Antimony (metallic)	mg/kg	2.42E-01		2.42E-01	3.30E-01		3.30E-01	6.35E-02		6.35E-02
N	1314609	Antimony Pentoxide	mg/kg	3.00E+00		3.00E+00	3.74E+00		3.74E+00	6.68E-01		6.68E-01
N	304610	Antimony Potassium Tartrate	mg/kg	5.39E+00		5.39E+00	6.74E+00		6.74E+00	1.20E+00		1.20E+00
N	1332816	Antimony Tetroxide	mg/kg	2.40E+00		2.40E+00	2.99E+00		2.99E+00	5.34E-01		5.34E-01
N	1309644	Antimony Trioxide	mg/kg	2.40E+00		2.40E+00	2.99E+00		2.99E+00	5.34E-01		5.34E-01
N		Arsenic Salts	mg/kg									
Y	7440382	Arsenic, Inorganic	mg/kg	5.98E+00	3.46E-01	3.46E-01	6.15E+00	1.32E-01	1.32E-01	9.59E-01	1.32E-01	1.32E-01
N	7784421	Arsine	mg/kg	1.00E+05	1.76E-01	1.76E-01	1.00E+05	7.88E-02	7.88E-02	3.47E+04	7.88E-02	7.88E-02
N	1332214	Asbestos	mg/kg									
N	7440393	Barium	mg/kg	1.48E+02		1.48E+02	1.97E+02		1.97E+02	3.70E+01		3.70E+01
N	542621	Barium Cyanide	mg/kg	3.01E+02		3.01E+02	3.95E+02		3.95E+02	7.32E+01		7.32E+01
Y	7440417	Beryllium and compounds	mg/kg	6.06E-01	6.02E+04	6.06E-01	8.30E-01	1.55E+04	8.30E-01	1.60E-01	1.55E+04	1.60E-01
N	7440428	Boron And Borates Only	mg/kg	1.20E+03		1.20E+03	1.34E+03		1.34E+03	2.21E+02		2.21E+02
N	7637072	Boron Trifluoride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7440439	Cadmium (Diet)	mg/kg	1.47E+01	8.30E+04	1.47E+01	1.62E+01	2.14E+04	1.62E+01	2.64E+00	2.14E+04	2.64E+00
N	592018	Calcium Cyanide	mg/kg	1.21E+02		1.21E+02	1.58E+02		1.58E+02	2.93E+01		2.93E+01
N	16887006	Chloride	mg/kg									
N	7782505	Chlorine	mg/kg	3.01E+02		3.01E+02	3.95E+02		3.95E+02	7.32E+01		7.32E+01
N	7758192	Chlorite (Sodium Salt)	mg/kg	1.80E+02		1.80E+02	2.25E+02		2.25E+02	4.01E+01		4.01E+01
Y	16065831	Chromium (III) (Insoluble Salts)	mg/kg	2.27E+02		2.27E+02	3.12E+02		3.12E+02	6.05E+01		6.05E+01
Y	7440473	Chromium (Total)	mg/kg	2.27E+02	1.20E+04	2.27E+02	3.12E+02	3.10E+03	3.12E+02	6.05E+01	3.10E+03	6.05E+01
N		Chromium Salts	mg/kg									
Y	18540299	Chromium VI (particulates)	mg/kg	1.82E+00	1.72E+03	1.82E+00	2.47E+00	4.43E+02	2.47E+00	4.76E-01	4.43E+02	4.76E-01
N	7440484	Cobalt	mg/kg	1.39E+03		1.39E+03	1.37E+03		1.37E+03	2.09E+02		2.09E+02
Y	7440508	Copper	mg/kg	3.31E+02		3.31E+02	3.95E+02		3.95E+02	6.81E+01		6.81E+01
N	544923	Copper Cyanide	mg/kg	1.51E+01		1.51E+01	1.97E+01		1.97E+01	3.66E+00		3.66E+00
N	57125	Cyanide (CN-)	mg/kg	5.13E+01		5.13E+01	6.76E+01		6.76E+01	1.26E+01		1.26E+01
N	7782414	Fluorine (Soluble Fluoride)	mg/kg	8.58E+02		8.58E+02	9.50E+02		9.50E+02	1.55E+02		1.55E+02
N	7647010	Hydrogen Chloride	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	74908	Hydrogen Cyanide	mg/kg	2.06E+01		2.06E+01	2.78E+01		2.78E+01	5.32E+00		5.32E+00
N	7783064	Hydrogen Sulfide	mg/kg	3.63E+00		3.63E+00	4.89E+00		4.89E+00	9.33E-01		9.33E-01
Y	7439896	Iron	mg/kg	1.35E+03		1.35E+03	1.73E+03		1.73E+03	3.14E+02		3.14E+02
Y	7439921	Lead And Compounds	mg/kg			5.00E+01			5.00E+01			5.00E+01
N	7439932	Lithium	mg/kg	4.64E+02		4.64E+02	4.58E+02		4.58E+02	6.98E+01		6.98E+01
N	7439954	Magnesium	mg/kg									
Y	7439965	Manganese	mg/kg	2.90E+01		2.90E+01	3.91E+01		3.91E+01	7.46E+00		7.46E+00
N	7487947	Mercuric Chloride	mg/kg	6.34E-01		6.34E-01	8.42E-01		8.42E-01	1.58E-01		1.58E-01
N	1344485	Mercuric Sulfide	mg/kg									
N	7439976	Mercury (elemental)	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
Y	7439976	Mercury, Inorganic Salts	mg/kg	6.34E-01		6.34E-01	8.42E-01		8.42E-01	1.58E-01		1.58E-01
N	22967926	Methyl Mercury	mg/kg	1.33E+00		1.33E+00	1.49E+00		1.49E+00	2.46E-01		2.46E-01
Y	7439987	Molybdenum	mg/kg	5.64E+01		5.64E+01	6.51E+01		6.51E+01	1.09E+01		1.09E+01
N		Nickel Refinery Dust	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
Y	7440020	Nickel Soluble Salts	mg/kg	1.61E+02		1.61E+02	1.95E+02		1.95E+02	3.40E+01		3.40E+01
N	12035722	Nickel Subsulfide	mg/kg		1.00E+05	1.00E+05		7.76E+04	7.76E+04		7.76E+04	7.76E+04
N	14797558	Nitrate	mg/kg	2.36E+04		2.36E+04	2.60E+04		2.60E+04	4.22E+03		4.22E+03
N	10102439	Nitric Oxide	mg/kg	3.01E+02		3.01E+02	3.95E+02		3.95E+02	7.32E+01		7.32E+01
N	14797650	Nitrite	mg/kg	1.47E+03		1.47E+03	1.62E+03		1.62E+03	2.64E+02		2.64E+02
N	10102440	Nitrogen Dioxide	mg/kg	1.21E+03		1.21E+03	1.63E+03		1.63E+03	3.11E+02		3.11E+02
N	7803512	Phosphine	mg/kg	9.04E-01		9.04E-01	1.18E+00		1.18E+00	2.20E-01		2.20E-01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7664382	Phosphoric Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	151508	Potassium Cyanide	mg/kg	2.63E+02		2.63E+02	2.32E+02		2.32E+02	6.94E+02		6.94E+02	9.91E+01		9.91E+01
N	506616	Potassium Silver Cyanide	mg/kg	1.05E+03		1.05E+03	9.29E+02		9.29E+02	2.77E+03		2.77E+03	3.97E+02		3.97E+02
Y	7782492	Selenium	mg/kg	7.13E+01		7.13E+01	9.49E+01		9.49E+01	2.93E+02		2.93E+02	4.06E+01		4.06E+01
N	7446346	Selenium Sulfide	mg/kg												
Y	7440224	Silver	mg/kg	4.12E+01		4.12E+01	4.11E+01		4.11E+01	1.24E+02		1.24E+02	1.75E+01		1.75E+01
N	506649	Silver Cyanide	mg/kg	5.25E+02		5.25E+02	4.65E+02		4.65E+02	1.39E+03		1.39E+03	1.98E+02		1.98E+02
N	7440235	Sodium	mg/kg												
N	26628228	Sodium Azide	mg/kg	2.10E+01		2.10E+01	1.86E+01		1.86E+01	5.55E+01		5.55E+01	7.93E+00		7.93E+00
N	143339	Sodium Cyanide	mg/kg	2.10E+02		2.10E+02	1.86E+02		1.86E+02	5.55E+02		5.55E+02	7.93E+01		7.93E+01
N	13718268	Sodium Metavanadate	mg/kg	5.25E+00		5.25E+00	4.65E+00		4.65E+00	1.39E+01		1.39E+01	1.98E+00		1.98E+00
N	7440246	Strontium, Stable	mg/kg	5.33E+03		5.33E+03	5.45E+03		5.45E+03	1.65E+04		1.65E+04	2.33E+03		2.33E+03
N	14808798	Sulfate	mg/kg												
N	10102451	Thallium (I) Nitrate	mg/kg	7.99E-01		7.99E-01	8.18E-01		8.18E-01	2.47E+00		2.47E+00	3.49E-01		3.49E-01
N	7440280	Thallium (Soluble Salts)	mg/kg												
Y	7791120	Thallium Chloride	mg/kg	7.11E-01		7.11E-01	7.27E-01		7.27E-01	2.19E+00		2.19E+00	3.10E-01		3.10E-01
N	12039520	Thallium Selenite	mg/kg	7.99E-01		7.99E-01	8.18E-01		8.18E-01	2.47E+00		2.47E+00	3.49E-01		3.49E-01
N	7446186	Thallium Sulfate	mg/kg	7.11E-01		7.11E-01	7.27E-01		7.27E-01	2.19E+00		2.19E+00	3.10E-01		3.10E-01
N	7440291	Thorium	mg/kg												
N	7440315	Tin	mg/kg	3.15E+03		3.15E+03	2.79E+03		2.79E+03	8.32E+03		8.32E+03	1.19E+03		1.19E+03
N	7440326	Titanium	mg/kg												
Y	7440611	Uranium (Soluble Salts)	mg/kg	1.13E+01		1.13E+01	2.02E+01		2.02E+01	6.50E+01		6.50E+01	8.69E+00		8.69E+00
N	1314621	Vanadium Pentoxide	mg/kg	7.99E+01		7.99E+01	8.18E+01		8.18E+01	2.47E+02		2.47E+02	3.49E+01		3.49E+01
N	36907423	Vanadium Sulfate	mg/kg	1.78E+02		1.78E+02	1.82E+02		1.82E+02	5.48E+02		5.48E+02	7.76E+01		7.76E+01
Y	7440622	Vanadium, Metallic	mg/kg	4.40E+00		4.40E+00	3.32E+00		3.32E+00	9.82E+00		9.82E+00	1.42E+00		1.42E+00
N	27774136	Vanadyl Sulfate	mg/kg	1.78E+02		1.78E+02	1.82E+02		1.82E+02	5.48E+02		5.48E+02	7.76E+01		7.76E+01
N	7723140	White Phosphorus	mg/kg	1.78E-01		1.78E-01	1.82E-01		1.82E-01	5.48E-01		5.48E-01	7.76E-02		7.76E-02
Y	7440666	Zinc (Metallic)	mg/kg	2.66E+03		2.66E+03	2.73E+03		2.73E+03	8.23E+03		8.23E+03	1.16E+03		1.16E+03
N	557211	Zinc Cyanide	mg/kg	2.63E+02		2.63E+02	2.32E+02		2.32E+02	6.94E+02		6.94E+02	9.91E+01		9.91E+01
N	1314847	Zinc Phosphide	mg/kg	2.66E+00		2.66E+00	2.73E+00		2.73E+00	8.23E+00		8.23E+00	1.16E+00		1.16E+00
N	7440677	Zirconium	mg/kg												
N	1596845	ALAR	mg/kg	1.55E+03		1.55E+03	1.68E+03		1.68E+03	5.11E+03		5.11E+03	7.20E+02		7.20E+02
Y	83329	Acenaphthene	mg/kg	3.50E+02		3.50E+02	3.16E+02		3.16E+02	9.55E+02		9.55E+02	1.37E+02		1.37E+02
Y	208968	Acenaphthylene	mg/kg												
N	30560191	Acephate	mg/kg	4.12E+01	3.32E+01	3.32E+01	4.49E+01	3.61E+01	3.61E+01	1.36E+02	2.30E+01	2.30E+01	1.92E+01	2.30E+01	1.92E+01
N	75070	Acetaldehyde	mg/kg	2.18E+01	3.08E+01	2.18E+01	1.61E+01	2.28E+01	1.61E+01	6.21E+01	2.51E+01	2.51E+01	9.55E+00	2.51E+01	9.55E+00
N	34256821	Acetochlor	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	67641	Acetone	mg/kg	4.21E+02		4.21E+02	3.58E+02		3.58E+02	1.22E+03		1.22E+03	1.79E+02		1.79E+02
N	75865	Acetone Cyanohydrin	mg/kg	8.25E+00		8.25E+00	8.98E+00		8.98E+00	2.73E+01		2.73E+01	3.84E+00		3.84E+00
N	75058	Acetonitrile	mg/kg	3.91E+01		3.91E+01	3.63E+01		3.63E+01	1.14E+02		1.14E+02	1.63E+01		1.63E+01
N	98862	Acetophenone	mg/kg	2.25E-01		2.25E-01	1.67E-01		1.67E-01	6.42E-01		6.42E-01	9.87E-02		9.87E-02
N	107028	Acrolein	mg/kg	3.92E-02		3.92E-02	2.90E-02		2.90E-02	1.11E-01		1.11E-01	1.71E-02		1.71E-02
N	79061	Acrylamide	mg/kg	2.06E+00	6.41E-02	6.41E-02	2.25E+00	6.99E-02	6.99E-02	6.82E+00	4.44E-02	4.44E-02	9.60E-01	4.44E-02	4.44E-02
N	79107	Acrylic Acid	mg/kg	5.15E+03		5.15E+03	5.61E+03		5.61E+03	1.70E+04		1.70E+04	2.40E+03		2.40E+03
Y	107131	Acrylonitrile	mg/kg	2.29E+00	2.48E-01	2.48E-01	1.83E+00	2.16E-01	2.16E-01	6.57E+00	1.67E-01	1.67E-01	9.86E-01	1.67E-01	1.67E-01
N	15972608	Alachlor	mg/kg	1.03E+02	3.61E+00	3.61E+00	1.12E+02	3.93E+00	3.93E+00	3.41E+02	2.50E+00	2.50E+00	4.80E+01	2.50E+00	2.50E+00
N	116063	Aldicarb	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	1646884	Aldicarb Sulfone	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	309002	Aldrin	mg/kg	3.09E-01	1.70E-02	1.70E-02	3.37E-01	1.85E-02	1.85E-02	1.02E+00	1.18E-02	1.18E-02	1.44E-01	1.18E-02	1.18E-02
N	74223646	Ally	mg/kg	2.58E+03		2.58E+03	2.81E+03		2.81E+03	8.52E+03		8.52E+03	1.20E+03		1.20E+03
N	107186	Allyl Alcohol	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	107051	Allyl Chloride	mg/kg	6.79E+02		6.79E+02	8.70E+02		8.70E+02	2.68E+03		2.68E+03	3.72E+02		3.72E+02
N	67485294	Amdro	mg/kg	3.09E+00		3.09E+00	3.37E+00		3.37E+00	1.02E+01		1.02E+01	1.44E+00		1.44E+00
N	834128	Ametryn	mg/kg	9.28E+01		9.28E+01	1.01E+02		1.01E+02	3.07E+02		3.07E+02	4.32E+01		4.32E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7664382	Phosphoric Acid	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05
N	151508	Potassium Cyanide	mg/kg	1.51E+02		1.51E+02	1.97E+02		1.97E+02	3.66E+01		3.66E+01
N	506616	Potassium Silver Cyanide	mg/kg	6.03E+02		6.03E+02	7.89E+02		7.89E+02	1.46E+02		1.46E+02
Y	7782492	Selenium	mg/kg	6.50E+01		6.50E+01	7.33E+01		7.33E+01	1.21E+01		1.21E+01
N	7446346	Selenium Sulfide	mg/kg									
Y	7440224	Silver	mg/kg	2.70E+01		2.70E+01	3.40E+01		3.40E+01	6.12E+00		6.12E+00
N	506649	Silver Cyanide	mg/kg	3.01E+02		3.01E+02	3.95E+02		3.95E+02	7.32E+01		7.32E+01
N	7440235	Sodium	mg/kg									
N	26628228	Sodium Azide	mg/kg	1.21E+01		1.21E+01	1.58E+01		1.58E+01	2.93E+00		2.93E+00
N	143339	Sodium Cyanide	mg/kg	1.21E+02		1.21E+02	1.58E+02		1.58E+02	2.93E+01		2.93E+01
N	13718268	Sodium Metavanadate	mg/kg	3.01E+00		3.01E+00	3.95E+00		3.95E+00	7.32E-01		7.32E-01
N	7440246	Strontium, Stable	mg/kg	3.60E+03		3.60E+03	4.49E+03		4.49E+03	8.01E+02		8.01E+02
N	14808798	Sulfate	mg/kg									
N	10102451	Thallium (I) Nitrate	mg/kg	5.39E-01		5.39E-01	6.74E-01		6.74E-01	1.20E-01		1.20E-01
N	7440280	Thallium (Soluble Salts)	mg/kg									
Y	7791120	Thallium Chloride	mg/kg	4.79E-01		4.79E-01	5.99E-01		5.99E-01	1.07E-01		1.07E-01
N	12039520	Thallium Selenite	mg/kg	5.39E-01		5.39E-01	6.74E-01		6.74E-01	1.20E-01		1.20E-01
N	7446186	Thallium Sulfate	mg/kg	4.79E-01		4.79E-01	5.99E-01		5.99E-01	1.07E-01		1.07E-01
N	7440291	Thorium	mg/kg									
N	7440315	Tin	mg/kg	1.81E+03		1.81E+03	2.37E+03		2.37E+03	4.39E+02		4.39E+02
N	7440326	Titanium	mg/kg									
Y	7440611	Uranium (Soluble Salts)	mg/kg	1.47E+01		1.47E+01	1.43E+01		1.43E+01	2.16E+00		2.16E+00
N	1314621	Vanadium Pentoxide	mg/kg	5.39E+01		5.39E+01	6.74E+01		6.74E+01	1.20E+01		1.20E+01
N	36907423	Vanadium Sulfate	mg/kg	1.20E+02		1.20E+02	1.50E+02		1.50E+02	2.67E+01		2.67E+01
Y	7440622	Vanadium, Metallic	mg/kg	2.12E+00		2.12E+00	2.90E+00		2.90E+00	5.62E-01		5.62E-01
N	27774136	Vanadyl Sulfate	mg/kg	1.20E+02		1.20E+02	1.50E+02		1.50E+02	2.67E+01		2.67E+01
N	7723140	White Phosphorus	mg/kg	1.20E-01		1.20E-01	1.50E-01		1.50E-01	2.67E-02		2.67E-02
Y	7440666	Zinc (Metallic)	mg/kg	1.80E+03		1.80E+03	2.25E+03		2.25E+03	4.01E+02		4.01E+02
N	557211	Zinc Cyanide	mg/kg	1.51E+02		1.51E+02	1.97E+02		1.97E+02	3.66E+01		3.66E+01
N	1314847	Zinc Phosphide	mg/kg	1.80E+00		1.80E+00	2.25E+00		2.25E+00	4.01E-01		4.01E-01
N	7440677	Zirconium	mg/kg									
N	1596845	ALAR	mg/kg	1.12E+03		1.12E+03	1.37E+03		1.37E+03	2.40E+02		2.40E+02
Y	83329	Acenaphthene	mg/kg	2.12E+02		2.12E+02	2.65E+02		2.65E+02	4.90E+01		4.90E+01
Y	208968	Acenaphthylene	mg/kg									
N	30560191	Acephate	mg/kg	2.99E+01	2.30E+01	2.30E+01	3.65E+01	1.08E+01	1.08E+01	6.39E+00	1.08E+01	6.39E+00
N	75070	Acetaldehyde	mg/kg	2.83E+01	2.51E+01	2.51E+01	1.15E+01	6.47E+00	6.47E+00	2.39E+00	6.47E+00	2.39E+00
N	34256821	Acetochlor	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	67641	Acetone	mg/kg	3.51E+02		3.51E+02	2.74E+02		2.74E+02	5.34E+01		5.34E+01
N	75865	Acetone Cyanohydrin	mg/kg	5.98E+00		5.98E+00	7.30E+00		7.30E+00	1.28E+00		1.28E+00
N	75058	Acetonitrile	mg/kg	2.67E+01		2.67E+01	2.94E+01		2.94E+01	5.47E+00		5.47E+00
N	98862	Acetophenone	mg/kg	2.93E-01		2.93E-01	1.19E-01		1.19E-01	2.47E-02		2.47E-02
N	107028	Acrolein	mg/kg	5.08E-02		5.08E-02	2.07E-02		2.07E-02	4.29E-03		4.29E-03
N	79061	Acrylamide	mg/kg	1.49E+00	4.44E-02	4.44E-02	1.82E+00	2.08E-02	2.08E-02	3.20E-01	2.08E-02	2.08E-02
N	79107	Acrylic Acid	mg/kg	3.73E+03		3.73E+03	4.56E+03		4.56E+03	7.98E+02		7.98E+02
Y	107131	Acrylonitrile	mg/kg	2.26E+00	1.67E-01	1.67E-01	1.35E+00	6.45E-02	6.45E-02	2.72E-01	6.45E-02	6.45E-02
N	15972608	Alachlor	mg/kg	7.47E+01	2.50E+00	2.50E+00	9.12E+01	1.17E+00	1.17E+00	1.60E+01	1.17E+00	1.17E+00
N	116063	Aldicarb	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	1646884	Aldicarb Sulfone	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	309002	Aldrin	mg/kg	2.24E-01	1.18E-02	1.18E-02	2.74E-01	5.51E-03	5.51E-03	4.80E-02	5.51E-03	5.51E-03
N	74223646	Ally	mg/kg	1.87E+03		1.87E+03	2.28E+03		2.28E+03	4.00E+02		4.00E+02
N	107186	Allyl Alcohol	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	107051	Allyl Chloride	mg/kg	5.93E+02		5.93E+02	6.79E+02		6.79E+02	1.13E+02		1.13E+02
N	67485294	Amdro	mg/kg	2.24E+00		2.24E+00	2.74E+00		2.74E+00	4.80E-01		4.80E-01
N	834128	Ametryn	mg/kg	6.72E+01		6.72E+01	8.21E+01		8.21E+01	1.44E+01		1.44E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on *best available information.*)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	591275	Aminophenol, m-	mg/kg	7.21E+02		7.21E+02	7.86E+02		7.86E+02	2.39E+03		2.39E+03	3.36E+02		3.36E+02
N	504245	Aminopyridine, 4-	mg/kg	2.06E-01		2.06E-01	2.25E-01		2.25E-01	6.82E-01		6.82E-01	9.60E-02		9.60E-02
N	33089611	Amitraz	mg/kg	2.58E+01		2.58E+01	2.81E+01		2.81E+01	8.52E+01		8.52E+01	1.20E+01		1.20E+01
N	62533	Aniline	mg/kg	7.21E+01	5.06E+01	5.06E+01	7.86E+01	5.52E+01	5.52E+01	2.39E+02	3.51E+01	3.51E+01	3.36E+01	3.51E+01	3.36E+01
Y	120127	Anthracene	mg/kg	3.34E+03		3.34E+03	3.79E+03		3.79E+03	1.16E+04		1.16E+04	1.63E+03		1.63E+03
N	74115245	Apollo	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	140578	Aramite	mg/kg	5.15E+02	1.15E+01	1.15E+01	5.62E+02	1.26E+01	1.26E+01	1.70E+03	8.00E+00	8.00E+00	2.40E+02	8.00E+00	8.00E+00
Y	12674112	Aroclor 1016	mg/kg	8.41E-01	1.68E-01	1.68E-01	9.95E-01	1.99E-01	1.99E-01	3.04E+00	1.27E-01	1.27E-01	4.26E-01	1.27E-01	1.27E-01
Y	11104282	Aroclor 1221	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
Y	11141165	Aroclor 1232	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
Y	53469219	Aroclor 1242	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
Y	12672296	Aroclor 1248	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
Y	11097691	Aroclor 1254	mg/kg	2.40E-01	1.68E-01	1.68E-01	2.84E-01	1.99E-01	1.99E-01	8.69E-01	1.27E-01	1.27E-01	1.22E-01	1.27E-01	1.22E-01
Y	11096825	Aroclor 1260	mg/kg		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
N	76578148	Assure	mg/kg	9.28E+01		9.28E+01	1.01E+02		1.01E+02	3.07E+02		3.07E+02	4.32E+01		4.32E+01
N	3337711	Asulam	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	1912249	Atrazine	mg/kg	3.61E+02	1.30E+00	1.30E+00	3.93E+02	1.42E+00	1.42E+00	1.19E+03	9.00E-01	9.00E-01	1.68E+02	9.00E-01	9.00E-01
N	65195553	Avermectin B1	mg/kg	4.12E+00		4.12E+00	4.49E+00		4.49E+00	1.36E+01		1.36E+01	1.92E+00		1.92E+00
N	103333	Azobenzene	mg/kg		2.62E+00	2.62E+00		2.86E+00	2.86E+00		1.82E+00	1.82E+00		1.82E+00	1.82E+00
N	114261	Baygon	mg/kg	4.12E+01		4.12E+01	4.49E+01		4.49E+01	1.36E+02		1.36E+02	1.92E+01		1.92E+01
N	43121433	Bayleton	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	68359375	Baythroid	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
N	1861401	Benefin	mg/kg	3.09E+03		3.09E+03	3.37E+03		3.37E+03	1.02E+04		1.02E+04	1.44E+03		1.44E+03
N	17804352	Benomyl	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	25057890	Bentazon	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
Y	56553	Benz[a]anthracene	mg/kg		2.32E-01	2.32E-01		2.12E-01	2.12E-01		1.33E-01	1.33E-01		1.33E-01	1.33E-01
N	100527	Benzaldehyde	mg/kg	1.36E+03		1.36E+03	1.74E+03		1.74E+03	5.36E+03		5.36E+03	7.44E+02		7.44E+02
Y	71432	Benzene	mg/kg	2.99E+00	1.40E+00	1.40E+00	2.29E+00	1.13E+00	1.13E+00	8.59E+00	1.05E+00	1.05E+00	1.31E+00	1.05E+00	1.05E+00
N	29224553	Benzene, Ethyldimethyl	mg/kg												
N	25550145	Benzene, Ethylmethyl	mg/kg												
N	768003	Benzene, Methylpropenyl	mg/kg												
N	28729546	Benzene, Methylpropyl	mg/kg												
N	25551137	Benzene, Trimethyl	mg/kg												
N	108985	Benzenethiol	mg/kg	5.25E-02		5.25E-02	4.65E-02		4.65E-02	1.39E-01		1.39E-01	1.98E-02		1.98E-02
N	92875	Benzidine	mg/kg	4.07E+01	1.65E-03	1.65E-03	5.22E+01	2.12E-03	2.12E-03	1.61E+02	1.37E-03	1.37E-03	2.23E+01	1.37E-03	1.37E-03
Y	50328	Benzo[a]pyrene	mg/kg		2.32E-02	2.32E-02		2.12E-02	2.12E-02		1.33E-02	1.33E-02		1.33E-02	1.33E-02
Y	205992	Benzo[b]fluoranthene	mg/kg		2.32E-01	2.32E-01		2.12E-01	2.12E-01		1.33E-01	1.33E-01		1.33E-01	1.33E-01
N	191242	Benzo[g,h,i]perylene	mg/kg												
Y	207089	Benzo[k]fluoranthene	mg/kg		2.32E+00	2.32E+00		2.12E+00	2.12E+00		1.33E+00	1.33E+00		1.33E+00	1.33E+00
N	65850	Benzoic Acid	mg/kg	6.07E+04		6.07E+04	8.52E+04		8.52E+04	1.00E+05		1.00E+05	3.65E+04		3.65E+04
N	98077	Benzotrichloride	mg/kg		2.22E-02	2.22E-02		2.42E-02	2.42E-02		1.54E-02	1.54E-02		1.54E-02	1.54E-02
N	100516	Benzyl Alcohol	mg/kg	3.66E+03		3.66E+03	4.37E+03		4.37E+03	1.34E+04		1.34E+04	1.87E+03		1.87E+03
N	100447	Benzyl Chloride	mg/kg		9.34E-01	9.34E-01		8.39E-01	8.39E-01		7.66E-01	7.66E-01		7.66E-01	7.66E-01
N	141662	Bidrin	mg/kg	1.03E+00		1.03E+00	1.12E+00		1.12E+00	3.41E+00		3.41E+00	4.80E-01		4.80E-01
N	82657043	Biphenthrin	mg/kg	1.55E+02		1.55E+02	1.68E+02		1.68E+02	5.11E+02		5.11E+02	7.20E+01		7.20E+01
N	92524	Biphenyl, 1,1'-	mg/kg	2.54E+02		2.54E+02	2.23E+02		2.23E+02	6.72E+02		6.72E+02	9.62E+01		9.62E+01
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/kg		4.12E+00	4.12E+00		4.49E+00	4.49E+00		2.86E+00	2.86E+00		2.86E+00	2.86E+00
N	111911	Bis(2-chloroethoxy)methane	mg/kg												
N	111444	Bis(2-chloroethyl)ether	mg/kg		1.09E-01	1.09E-01		9.31E-02	9.31E-02		6.42E-02	6.42E-02		6.42E-02	6.42E-02
N	39638329	Bis(2-chloroisopropyl)ether	mg/kg	2.10E+02	2.10E+00	2.10E+00	1.86E+02	1.86E+00	1.86E+00	5.55E+02	1.16E+00	1.16E+00	7.93E+01	1.16E+00	1.16E+00
N	117817	Bis(2-ethylhexyl)phthalate	mg/kg	1.01E+02	1.01E+01	1.01E+01	8.84E+01	8.84E+00	8.84E+00	2.64E+02	5.53E+00	5.53E+00	3.77E+01	5.53E+00	5.53E+00
N	542881	Bis(chloromethyl)ether	mg/kg		7.10E-04	7.10E-04		6.36E-04	6.36E-04		4.64E-04	4.64E-04		4.64E-04	4.64E-04
N	80057	Bisphenol A	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	108861	Bromobenzene	mg/kg	1.51E+02		1.51E+02	1.47E+02		1.47E+02	4.41E+02		4.41E+02	6.26E+01		6.26E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	591275	Aminophenol, m-	mg/kg	5.23E+02		5.23E+02	6.39E+02		6.39E+02	1.12E+02		1.12E+02
N	504245	Aminopyridine, 4-	mg/kg	1.49E-01		1.49E-01	1.82E-01		1.82E-01	3.20E-02		3.20E-02
N	33089611	Amitraz	mg/kg	1.87E+01		1.87E+01	2.28E+01		2.28E+01	4.00E+00		4.00E+00
N	62533	Aniline	mg/kg	5.23E+01	3.51E+01	3.51E+01	6.39E+01	1.64E+01	1.64E+01	1.12E+01	1.64E+01	1.12E+01
Y	120127	Anthracene	mg/kg	2.58E+03		2.58E+03	3.03E+03		3.03E+03	5.26E+02		5.26E+02
N	74115245	Apollo	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	140578	Aramite	mg/kg	3.73E+02	8.00E+00	8.00E+00	4.56E+02	3.74E+00	3.74E+00	7.99E+01	3.74E+00	3.74E+00
Y	12674112	Aroclor 1016	mg/kg	6.70E-01	1.27E-01	1.27E-01	7.93E-01	5.74E-02	5.74E-02	1.36E-01	5.74E-02	5.74E-02
Y	11104282	Aroclor 1221	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
Y	11141165	Aroclor 1232	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
Y	53469219	Aroclor 1242	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
Y	12672296	Aroclor 1248	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
Y	11097691	Aroclor 1254	mg/kg	1.91E-01	1.27E-01	1.27E-01	2.27E-01	5.74E-02	5.74E-02	3.88E-02	5.74E-02	3.88E-02
Y	11096825	Aroclor 1260	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
N	76578148	Assure	mg/kg	6.72E+01		6.72E+01	8.21E+01		8.21E+01	1.44E+01		1.44E+01
N	3337711	Asulam	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	1912249	Atrazine	mg/kg	2.61E+02	9.00E-01	9.00E-01	3.19E+02	4.22E-01	4.22E-01	5.59E+01	4.22E-01	4.22E-01
N	65195553	Avermectin B1	mg/kg	2.99E+00		2.99E+00	3.65E+00		3.65E+00	6.39E-01		6.39E-01
N	103333	Azobenzene	mg/kg		1.82E+00	1.82E+00		8.51E-01	8.51E-01		8.51E-01	8.51E-01
N	114261	Baygon	mg/kg	2.99E+01		2.99E+01	3.65E+01		3.65E+01	6.39E+00		6.39E+00
N	43121433	Bayleton	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	68359375	Baythroid	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
N	1861401	Benefin	mg/kg	2.24E+03		2.24E+03	2.74E+03		2.74E+03	4.80E+02		4.80E+02
N	17804352	Benomyl	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	25057890	Bentazon	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
Y	56553	Benz[a]anthracene	mg/kg		1.33E-01	1.33E-01		6.70E-02	6.70E-02		6.70E-02	6.70E-02
N	100527	Benzaldehyde	mg/kg	1.19E+03		1.19E+03	1.36E+03		1.36E+03	2.27E+02		2.27E+02
Y	71432	Benzene	mg/kg	3.51E+00	1.05E+00	1.05E+00	1.65E+00	3.27E-01	3.27E-01	3.38E-01	3.27E-01	3.27E-01
N	29224553	Benzene, Ethyldimethyl	mg/kg									
N	25550145	Benzene, Ethylmethyl	mg/kg									
N	768003	Benzene, Methylpropenyl	mg/kg									
N	28729546	Benzene, Methylpropyl	mg/kg									
N	25551137	Benzene, Trimethyl	mg/kg									
N	108985	Benzenethiol	mg/kg	3.01E-02		3.01E-02	3.95E-02		3.95E-02	7.32E-03		7.32E-03
N	92875	Benzidine	mg/kg	3.56E+01	1.37E-03	1.37E-03	4.07E+01	5.91E-04	5.91E-04	6.81E+00	5.91E-04	5.91E-04
Y	50328	Benzo[a]pyrene	mg/kg		1.33E-02	1.33E-02		6.70E-03	6.70E-03		6.70E-03	6.70E-03
Y	205992	Benzo[b]fluoranthene	mg/kg		1.33E-01	1.33E-01		6.70E-02	6.70E-02		6.70E-02	6.70E-02
N	191242	Benzo[g,h,i]perylene	mg/kg									
Y	207089	Benzo[k]fluoranthene	mg/kg		1.33E+00	1.33E+00		6.70E-01	6.70E-01		6.70E-01	6.70E-01
N	65850	Benzoic Acid	mg/kg	5.89E+04		5.89E+04	6.49E+04		6.49E+04	1.06E+04		1.06E+04
N	98077	Benzotrichloride	mg/kg		1.54E-02	1.54E-02		7.20E-03	7.20E-03		7.20E-03	7.20E-03
N	100516	Benzyl Alcohol	mg/kg	2.94E+03		2.94E+03	3.47E+03		3.47E+03	5.93E+02		5.93E+02
N	100447	Benzyl Chloride	mg/kg		7.66E-01	7.66E-01		2.37E-01	2.37E-01		2.37E-01	2.37E-01
N	141662	Bidrin	mg/kg	7.47E-01		7.47E-01	9.12E-01		9.12E-01	1.60E-01		1.60E-01
N	82657043	Biphenthrin	mg/kg	1.12E+02		1.12E+02	1.37E+02		1.37E+02	2.40E+01		2.40E+01
N	92524	Biphenyl, 1,1'-	mg/kg	1.48E+02		1.48E+02	1.88E+02		1.88E+02	3.50E+01		3.50E+01
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/kg		2.86E+00	2.86E+00		1.34E+00	1.34E+00		1.34E+00	1.34E+00
N	111911	Bis(2-chloroethoxy)methane	mg/kg									
N	111444	Bis(2-chloroethyl)ether	mg/kg		6.42E-02	6.42E-02		2.90E-02	2.90E-02		2.90E-02	2.90E-02
N	39638329	Bis(2-chloroisopropyl)ether	mg/kg	1.21E+02	1.16E+00	1.16E+00	1.58E+02	5.95E-01	5.95E-01	2.93E+01	5.95E-01	5.95E-01
N	117817	Bis(2-ethylhexyl)phthalate	mg/kg	5.73E+01	5.53E+00	5.53E+00	7.52E+01	2.84E+00	2.84E+00	1.40E+01	2.84E+00	2.84E+00
N	542881	Bis(chloromethyl)ether	mg/kg		4.64E-04	4.64E-04		1.92E-04	1.92E-04		1.92E-04	1.92E-04
N	80057	Bisphenol A	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	108861	Bromobenzene	mg/kg	9.61E+01		9.61E+01	1.22E+02		1.22E+02	2.21E+01		2.21E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action v[illegible] the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	74975	Bromochloromethane	mg/kg												
N	75274	Bromodichloromethane	mg/kg	7.14E+01	1.61E+00	1.61E+00	5.95E+01	1.34E+00	1.34E+00	2.10E+02	1.19E+00	1.19E+00	3.12E+01	1.19E+00	1.19E+00
N	101553	Bromodiphenyl Ether, p-	mg/kg												
N	75252	Bromoform	mg/kg	2.31E+02	4.09E+01	4.09E+01	2.67E+02	4.72E+01	4.72E+01	8.13E+02	3.02E+01	3.02E+01	1.14E+02	3.02E+01	3.02E+01
N	74839	Bromomethane	mg/kg	1.63E+00		1.63E+00	1.25E+00		1.25E+00	4.66E+00		4.66E+00	7.09E-01		7.09E-01
N	2104963	Bromophos	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	75627	Bromotrichloromethane	mg/kg												
N	1689845	Bromoxynil	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	1689992	Bromoxynil Octanoate	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	106990	Butadiene, 1,3-	mg/kg		1.39E-02	1.39E-02		1.06E-02	1.06E-02		1.09E-02	1.09E-02		1.09E-02	1.09E-02
N	71363	Butanol, N-	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/kg												
N	85687	Butyl Benzyl Phthlate	mg/kg	2.33E+03		2.33E+03	2.71E+03		2.71E+03	8.26E+03		8.26E+03	1.16E+03		1.16E+03
N	2008415	Butylate	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	104518	Butylbenzene, N-	mg/kg	7.57E+01		7.57E+01	7.33E+01		7.33E+01	2.20E+02		2.20E+02	3.13E+01		3.13E+01
N	135988	Butylbenzene, sec-	mg/kg	7.57E+01		7.57E+01	7.33E+01		7.33E+01	2.20E+02		2.20E+02	3.13E+01		3.13E+01
N	98066	Butylbenzene-tert	mg/kg	7.57E+01		7.57E+01	7.33E+01		7.33E+01	2.20E+02		2.20E+02	3.13E+01		3.13E+01
N	507200	Butylchloride, t-	mg/kg												
N	85701	Butylphthalyl Butylglycolate	mg/kg	1.03E+04		1.03E+04	1.12E+04		1.12E+04	3.41E+04		3.41E+04	4.80E+03		4.80E+03
N	75605	Cacodylic Acid	mg/kg	3.09E+01		3.09E+01	3.37E+01		3.37E+01	1.02E+02		1.02E+02	1.44E+01		1.44E+01
N	105602	Caprolactam	mg/kg	5.15E+03		5.15E+03	5.62E+03		5.62E+03	1.70E+04		1.70E+04	2.40E+03		2.40E+03
N	2425061	Captafol	mg/kg	2.06E+01	3.36E+01	2.06E+01	2.25E+01	3.66E+01	2.25E+01	6.82E+01	2.32E+01	2.32E+01	9.60E+00	2.32E+01	9.60E+00
N	133062	Captan	mg/kg	1.34E+03	8.25E+01	8.25E+01	1.46E+03	8.98E+01	8.98E+01	4.43E+03	5.71E+01	5.71E+01	6.24E+02	5.71E+01	5.71E+01
N	63252	Carbaryl	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	86748	Carbazole	mg/kg		1.77E+01	1.77E+01		2.15E+01	2.15E+01		1.38E+01	1.38E+01		1.38E+01	1.38E+01
N	1563662	Carbofuran	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	75150	Carbon Disulfide	mg/kg	1.37E+02		1.37E+02	1.06E+02		1.06E+02	3.86E+02		3.86E+02	5.84E+01		5.84E+01
Y	56235	Carbon Tetrachloride	mg/kg	8.54E-01	5.10E-01	5.10E-01	6.57E-01	4.08E-01	4.08E-01	2.42E+00	3.63E-01	3.63E-01	3.67E-01	3.63E-01	3.63E-01
N	55285148	Carbosulfan	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	5234684	Carboxin	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	75876	Chloral	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	133904	Chloramben	mg/kg	1.55E+02		1.55E+02	1.68E+02		1.68E+02	5.11E+02		5.11E+02	7.20E+01		7.20E+01
N	118752	Chloranil	mg/kg		7.16E-01	7.16E-01		7.80E-01	7.80E-01		4.96E-01	4.96E-01		4.96E-01	4.96E-01
N	57749	Chlordane	mg/kg	8.38E+00	1.34E+00	1.34E+00	1.30E+01	2.08E+00	2.08E+00	4.08E+01	1.37E+00	1.37E+00	5.56E+00	1.37E+00	1.37E+00
N	90982324	Chlorimuron, Ethyl-	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	10049044	Chlorine Dioxide	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	75683	Chloro-1,1-difluoroethane, 1-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	4.47E+04		4.47E+04
N	126998	Chloro-1,3-butadiene, 2-	mg/kg	1.54E+01		1.54E+01	1.16E+01		1.16E+01	4.38E+01		4.38E+01	6.68E+00		6.68E+00
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/kg		6.27E-01	6.27E-01		6.84E-01	6.84E-01		4.35E-01	4.35E-01		4.35E-01	4.35E-01
N	95692	Chloro-2-methylaniline, 4-	mg/kg		4.98E-01	4.98E-01		5.42E-01	5.42E-01		3.45E-01	3.45E-01		3.45E-01	3.45E-01
N	79118	Chloroacetic Acid	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	532274	Chloroacetophenone, 2-	mg/kg	4.38E-02		4.38E-02	3.86E-02		3.86E-02	1.16E-01		1.16E-01	1.66E-02		1.66E-02
N	106478	Chloroaniline, p-	mg/kg	4.12E+01		4.12E+01	4.49E+01		4.49E+01	1.36E+02		1.36E+02	1.92E+01		1.92E+01
N	108907	Chlorobenzene	mg/kg	3.68E+01		3.68E+01	2.89E+01		2.89E+01	9.70E+01		9.70E+01	1.43E+01		1.43E+01
N	510156	Chlorobenzilate	mg/kg	2.06E+02	1.07E+00	1.07E+00	2.25E+02	1.16E+00	1.16E+00	6.82E+02	7.40E-01	7.40E-01	9.60E+01	7.40E-01	7.40E-01
N	74113	Chlorobenzoic Acid, p-	mg/kg	2.06E+03		2.06E+03	2.25E+03		2.25E+03	6.82E+03		6.82E+03	9.60E+02		9.60E+02
N	98566	Chlorobenzotrifluoride, 4-	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	109693	Chlorobutane, 1-	mg/kg	3.03E+03		3.03E+03	2.93E+03		2.93E+03	8.82E+03		8.82E+03	1.25E+03		1.25E+03
N	78864	Chlorobutane, 2-	mg/kg												
N	41851507	Chlorocyclopentadiene	mg/kg												
N	73506942	Chlorodibromoethane	mg/kg		4.52E+00	4.52E+00		5.80E+00	5.80E+00		3.74E+00	3.74E+00		3.74E+00	3.74E+00
N	75456	Chlorodifluoromethane	mg/kg	8.01E+03		8.01E+03	6.03E+03		6.03E+03	2.28E+04		2.28E+04	3.49E+03		3.49E+03
Y	67663	Chloroform	mg/kg	1.66E-01	6.37E-01	1.66E-01	1.23E-01	4.73E-01	1.23E-01	4.71E-01	5.00E-01	4.71E-01	7.24E-02	5.00E-01	7.24E-02
N	74873	Chloromethane	mg/kg	2.97E+01	3.91E+00	3.91E+00	2.20E+01	3.06E+00	3.06E+00	8.46E+01	2.95E+00	2.95E+00	1.30E+01	2.95E+00	2.95E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	74975	Bromochloromethane	mg/kg									
N	75274	Bromodichloromethane	mg/kg	6.71E+01	1.19E+00	1.19E+00	4.45E+01	3.90E-01	3.90E-01	8.79E+00	3.90E-01	3.90E-01
N	101553	Bromodiphenyl Ether, p-	mg/kg									
N	75252	Bromoform	mg/kg	1.79E+02	3.02E+01	3.02E+01	2.14E+02	1.38E+01	1.38E+01	3.68E+01	1.38E+01	1.38E+01
N	74839	Bromomethane	mg/kg	1.83E+00		1.83E+00	9.11E-01		9.11E-01	1.86E-01		1.86E-01
N	2104963	Bromophos	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	75627	Bromotrichloromethane	mg/kg									
N	1689845	Bromoxynil	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	1689992	Bromoxynil Octanoate	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	106990	Butadiene, 1,3-	mg/kg		1.09E-02	1.09E-02		3.02E-03	3.02E-03		3.02E-03	3.02E-03
N	71363	Butanol, N-	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/kg									
N	85687	Butyl Benzyl Phthlate	mg/kg	1.82E+03		1.82E+03	2.17E+03		2.17E+03	3.73E+02		3.73E+02
N	2008415	Butylate	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	104518	Butylbenzene, N-	mg/kg	4.80E+01		4.80E+01	6.12E+01		6.12E+01	1.11E+01		1.11E+01
N	135988	Butylbenzene, sec-	mg/kg	4.80E+01		4.80E+01	6.12E+01		6.12E+01	1.11E+01		1.11E+01
N	98066	Butylbenzene-tert	mg/kg	4.80E+01		4.80E+01	6.12E+01		6.12E+01	1.11E+01		1.11E+01
N	507200	Butylchloride, t-	mg/kg									
N	85701	Butylphthalyl Butylglycolate	mg/kg	7.47E+03		7.47E+03	9.12E+03		9.12E+03	1.60E+03		1.60E+03
N	75605	Cacodylic Acid	mg/kg	2.24E+01		2.24E+01	2.74E+01		2.74E+01	4.80E+00		4.80E+00
N	105602	Caprolactam	mg/kg	3.73E+03		3.73E+03	4.56E+03		4.56E+03	7.99E+02		7.99E+02
N	2425061	Captafol	mg/kg	1.49E+01	2.32E+01	1.49E+01	1.82E+01	1.09E+01	1.09E+01	3.20E+00	1.09E+01	3.20E+00
N	133062	Captan	mg/kg	9.71E+02	5.71E+01	5.71E+01	1.19E+03	2.67E+01	2.67E+01	2.08E+02	2.67E+01	2.67E+01
N	63252	Carbaryl	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	86748	Carbazole	mg/kg		1.38E+01	1.38E+01		6.14E+00	6.14E+00		6.14E+00	6.14E+00
N	1563662	Carbofuran	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	75150	Carbon Disulfide	mg/kg	1.42E+02		1.42E+02	7.76E+01		7.76E+01	1.57E+01		1.57E+01
Y	56235	Carbon Tetrachloride	mg/kg	9.11E-01	3.63E-01	3.63E-01	4.80E-01	1.19E-01	1.19E-01	9.78E-02	1.19E-01	9.78E-02
N	55285148	Carbosulfan	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	5234684	Carboxin	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	75876	Chloral	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	133904	Chloramben	mg/kg	1.12E+02		1.12E+02	1.37E+02		1.37E+02	2.40E+01		2.40E+01
N	118752	Chloranil	mg/kg		4.96E-01	4.96E-01		2.32E-01	2.32E-01		2.32E-01	2.32E-01
N	57749	Chlordane	mg/kg	9.15E+00	1.37E+00	1.37E+00	9.61E+00	5.34E-01	5.34E-01	1.52E+00	5.34E-01	5.34E-01
N	90982324	Chlorimuron, Ethyl-	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	10049044	Chlorine Dioxide	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.79E+01		4.79E+01
N	75683	Chloro-1,1-difluoroethane, 1-	mg/kg	6.86E+04		6.86E+04	8.74E+04		8.74E+04	1.58E+04		1.58E+04
N	126998	Chloro-1,3-butadiene, 2-	mg/kg	1.80E+01		1.80E+01	8.41E+00		8.41E+00	1.72E+00		1.72E+00
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/kg		4.35E-01	4.35E-01		2.03E-01	2.03E-01		2.03E-01	2.03E-01
N	95692	Chloro-2-methylaniline, 4-	mg/kg		3.45E-01	3.45E-01		1.61E-01	1.61E-01		1.61E-01	1.61E-01
N	79118	Chloroacetic Acid	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	532274	Chloroacetophenone, 2-	mg/kg	2.55E-02		2.55E-02	3.26E-02		3.26E-02	6.07E-03		6.07E-03
N	106478	Chloroaniline, p-	mg/kg	2.99E+01		2.99E+01	3.65E+01		3.65E+01	6.39E+00		6.39E+00
N	108907	Chlorobenzene	mg/kg	2.73E+01		2.73E+01	2.25E+01		2.25E+01	4.47E+00		4.47E+00
N	510156	Chlorobenzilate	mg/kg	1.49E+02	7.40E-01	7.40E-01	1.82E+02	3.47E-01	3.47E-01	3.20E+01	3.47E-01	3.47E-01
N	74113	Chlorobenzoic Acid, p-	mg/kg	1.49E+03		1.49E+03	1.82E+03		1.82E+03	3.20E+02		3.20E+02
N	98566	Chlorobenzotrifluoride, 4-	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	109693	Chlorobutane, 1-	mg/kg	1.92E+03		1.92E+03	2.45E+03		2.45E+03	4.43E+02		4.43E+02
N	78864	Chlorobutane, 2-	mg/kg									
N	41851507	Chlorocyclopentadiene	mg/kg									
N	73506942	Chlorodibromoethane	mg/kg		3.74E+00	3.74E+00		1.62E+00	1.62E+00		1.62E+00	1.62E+00
N	75456	Chlorodifluoromethane	mg/kg	9.66E+03		9.66E+03	4.35E+03		4.35E+03	8.94E+02		8.94E+02
Y	67663	Chloroform	mg/kg	2.13E-01	5.00E-01	2.13E-01	8.77E-02	1.35E-01	8.77E-02	1.82E-02	1.35E-01	1.82E-02
N	74873	Chloromethane	mg/kg	3.86E+01	2.95E+00	2.95E+00	1.57E+01	8.84E-01	8.84E-01	3.25E+00	8.84E-01	8.84E-01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action v[illegible] the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No ..ction Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	107302	Chloromethyl Methyl Ether	mg/kg												
N	91587	Chloronaphthalene, Beta-	mg/kg	2.67E+02		2.67E+02	2.20E+02		2.20E+02	7.23E+02		7.23E+02	1.06E+02		1.06E+02
N	88733	Chloronitrobenzene, o-	mg/kg		2.81E+00	2.81E+00		2.25E+00	2.25E+00		2.06E+00	2.06E+00		2.06E+00	2.06E+00
N	121733	Chloronitrobenzene, p-	mg/kg		9.62E+00	9.62E+00		8.81E+00	8.81E+00		6.15E+00	6.15E+00		6.15E+00	6.15E+00
N	95578	Chlorophenol, 2-	mg/kg	2.12E+01		2.12E+01	1.81E+01		1.81E+01	5.68E+01		5.68E+01	8.23E+00		8.23E+00
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/kg												
N	934736	Chlorophenyl Methyl Sulfoxide	mg/kg												
N	75296	Chloropropane, 2-	mg/kg	4.33E+01		4.33E+01	3.36E+01		3.36E+01	1.24E+02		1.24E+02	1.87E+01		1.87E+01
N	1897456	Chlorothalonil	mg/kg	1.55E+02	2.62E+01	2.62E+01	1.68E+02	2.86E+01	2.86E+01	5.11E+02	1.82E+01	1.82E+01	7.20E+01	1.82E+01	1.82E+01
N	95498	Chlorotoluene, o-	mg/kg	7.99E+01		7.99E+01	6.75E+01		6.75E+01	2.30E+02		2.30E+02	3.39E+01		3.39E+01
N	101213	Chlorpropham	mg/kg	2.06E+03		2.06E+03	2.25E+03		2.25E+03	6.82E+03		6.82E+03	9.60E+02		9.60E+02
N	2921882	Chlorpyrifos	mg/kg	3.09E+01		3.09E+01	3.37E+01		3.37E+01	1.02E+02		1.02E+02	1.44E+01		1.44E+01
N	5598130	Chlorpyrifos Methyl	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	64902723	Chlorsulfuron	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	60238564	Chlorthiophos	mg/kg	8.25E+00		8.25E+00	8.98E+00		8.98E+00	2.73E+01		2.73E+01	3.84E+00		3.84E+00
Y	218019	Chrysene	mg/kg		2.32E+01	2.32E+01		2.12E+01	2.12E+01		1.33E+01	1.33E+01		1.33E+01	1.33E+01
N	8007452	Coke Oven Emissions	mg/kg		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05
N	8001589	Creosote	mg/kg												
N	108394	Cresol, m-	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	95487	Cresol, o-	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	106445	Cresol, p-	mg/kg	6.05E+01		6.05E+01	7.18E+01		7.18E+01	2.20E+02		2.20E+02	3.07E+01		3.07E+01
N	123739	Crotonaldehyde, trans-	mg/kg		6.23E-02	6.23E-02		5.31E-02	5.31E-02		3.68E-02	3.68E-02		3.68E-02	3.68E-02
N	98828	Cumene	mg/kg	4.15E+02		4.15E+02	3.52E+02		3.52E+02	1.19E+03		1.19E+03	1.76E+02		1.76E+02
N	21725462	Cyanazine	mg/kg	2.06E+01	3.44E-01	3.44E-01	2.25E+01	3.74E-01	3.74E-01	6.82E+01	2.38E-01	2.38E-01	9.60E+00	2.38E-01	2.38E-01
N	460195	Cyanogen	mg/kg	2.93E+01		2.93E+01	2.22E+01		2.22E+01	8.37E+01		8.37E+01	1.28E+01		1.28E+01
N	506683	Cyanogen Bromide	mg/kg	6.82E+02		6.82E+02	6.60E+02		6.60E+02	1.98E+03		1.98E+03	2.82E+02		2.82E+02
N	506774	Cyanogen Chloride	mg/kg	3.79E+02		3.79E+02	3.67E+02		3.67E+02	1.10E+03		1.10E+03	1.57E+02		1.57E+02
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/kg		1.25E+01	1.25E+01		1.37E+01	1.37E+01		8.69E+00	8.69E+00		8.69E+00	8.69E+00
N	108941	Cyclohexanone	mg/kg	6.79E+04		6.79E+04	8.70E+04		8.70E+04	1.00E+05		1.00E+05	3.72E+04		3.72E+04
N	108918	Cyclohexylamine	mg/kg	2.06E+03		2.06E+03	2.25E+03		2.25E+03	6.82E+03		6.82E+03	9.60E+02		9.60E+02
N	542927	Cyclopentadiene	mg/kg												
N	68085858	Cyhalothrin/karate	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	52315078	Cypermethrin	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	66215278	Cyromazine	mg/kg	7.73E+01		7.73E+01	8.42E+01		8.42E+01	2.56E+02		2.56E+02	3.60E+01		3.60E+01
N	72548	DDD	mg/kg		2.43E+00	2.43E+00		5.09E+00	5.09E+00		3.49E+00	3.49E+00		3.49E+00	3.49E+00
N	72559	DDE	mg/kg		1.71E+00	1.71E+00		3.59E+00	3.59E+00		2.47E+00	2.47E+00		2.47E+00	2.47E+00
N	50293	DDT	mg/kg	1.04E+01	1.71E+00	1.71E+00	2.18E+01	3.59E+00	3.59E+00	7.19E+01	2.47E+00	2.47E+00	9.38E+00	2.47E+00	2.47E+00
N	1861321	Dacthal	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	75990	Dalapon	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	1163195	Decabromodiphenyl Ether	mg/kg	1.36E+02		1.36E+02	1.74E+02		1.74E+02	5.36E+02		5.36E+02	7.44E+01		7.44E+01
N	8065483	Demeton	mg/kg	4.12E-01		4.12E-01	4.49E-01		4.49E-01	1.36E+00		1.36E+00	1.92E-01		1.92E-01
N	103231	Di(2-ethylhexyl)adipate	mg/kg	6.18E+03	2.40E+02	2.40E+02	6.74E+03	2.62E+02	2.62E+02	2.04E+04	1.67E+02	1.67E+02	2.88E+03	1.67E+02	1.67E+02
N	2303164	Diallate	mg/kg		6.23E+00	6.23E+00		7.98E+00	7.98E+00		5.15E+00	5.15E+00		5.15E+00	5.15E+00
N	505293	Diathane, 1,4-	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	333415	Diazinon	mg/kg	9.28E+00		9.28E+00	1.01E+01		1.01E+01	3.07E+01		3.07E+01	4.32E+00		4.32E+00
Y	53703	Dibenz[a,h]anthracene	mg/kg		2.32E-02	2.32E-02		2.12E-02	2.12E-02		1.33E-02	1.33E-02		1.33E-02	1.33E-02
N	132649	Dibenzofuran	mg/kg	2.10E+01		2.10E+01	1.86E+01		1.86E+01	5.55E+01		5.55E+01	7.93E+00		7.93E+00
N	96128	Dibromo-3-chloropropane, 1,2-	mg/kg	3.95E-01	1.51E-01	1.51E-01	3.73E-01	1.47E-01	1.47E-01	1.15E+00	9.24E-02	9.24E-02	1.64E-01	9.24E-02	9.24E-02
N	106376	Dibromobenzene, 1,4-	mg/kg	1.36E+02		1.36E+02	1.74E+02		1.74E+02	5.36E+02		5.36E+02	7.44E+01		7.44E+01
N	124481	Dibromochloromethane	mg/kg	7.86E+01	1.31E+00	1.31E+00	6.63E+01	1.10E+00	1.10E+00	2.18E+02	8.39E-01	8.39E-01	3.19E+01	8.39E-01	8.39E-01
N	594183	Dibromodichloromethane	mg/kg												
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/kg												
N	106934	Dibromoethane, 1,2-	mg/kg	3.07E-01	2.49E-03	2.49E-03	2.73E-01	2.40E-03	2.40E-03	8.88E-01	1.52E-03	1.52E-03	1.29E-01	1.52E-03	1.52E-03
N	74953	Dibromomethane (Methylene Bromide)	mg/kg	2.64E+01		2.64E+01	2.13E+01		2.13E+01	7.58E+01		7.58E+01	1.13E+01		1.13E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	107302	Chloromethyl Methyl Ether	mg/kg									
N	91587	Chloronaphthalene, Beta-	mg/kg	1.92E+02		1.92E+02	1.74E+02		1.74E+02	3.38E+01		3.38E+01
N	88733	Chloronitrobenzene, o-	mg/kg		2.06E+00	2.06E+00		6.55E-01	6.55E-01		6.55E-01	6.55E-01
N	121733	Chloronitrobenzene, p-	mg/kg		6.15E+00	6.15E+00		2.68E+00	2.68E+00		2.68E+00	2.68E+00
N	95578	Chlorophenol, 2-	mg/kg	1.36E+01		1.36E+01	1.47E+01		1.47E+01	2.81E+00		2.81E+00
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/kg									
N	934736	Chlorophenyl Methyl Sulfoxide	mg/kg									
N	75296	Chloropropane, 2-	mg/kg	4.65E+01		4.65E+01	2.46E+01		2.46E+01	4.99E+00		4.99E+00
N	1897456	Chlorothalonil	mg/kg	1.12E+02	1.82E+01	1.82E+01	1.37E+02	8.51E+00	8.51E+00	2.40E+01	8.51E+00	8.51E+00
N	95498	Chlorotoluene, o-	mg/kg	6.69E+01		6.69E+01	5.17E+01		5.17E+01	1.01E+01		1.01E+01
N	101213	Chlorpropham	mg/kg	1.49E+03		1.49E+03	1.82E+03		1.82E+03	3.20E+02		3.20E+02
N	2921882	Chlorpyrifos	mg/kg	2.24E+01		2.24E+01	2.74E+01		2.74E+01	4.80E+00		4.80E+00
N	5598130	Chlorpyrifos Methyl	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	64902723	Chlorsulfuron	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	60238564	Chlorthiophos	mg/kg	5.98E+00		5.98E+00	7.30E+00		7.30E+00	1.28E+00		1.28E+00
Y	218019	Chrysene	mg/kg		1.33E+01	1.33E+01		6.70E+00	6.70E+00		6.70E+00	6.70E+00
N	8007452	Coke Oven Emissions	mg/kg		1.00E+05	1.00E+05		6.00E+04	6.00E+04		6.00E+04	6.00E+04
N	8001589	Creosote	mg/kg									
N	108394	Cresol, m-	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	95487	Cresol, o-	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	106445	Cresol, p-	mg/kg	4.84E+01		4.84E+01	5.72E+01		5.72E+01	9.77E+00		9.77E+00
N	123739	Crotonaldehyde, trans-	mg/kg		3.68E-02	3.68E-02		1.65E-02	1.65E-02		1.65E-02	1.65E-02
N	98828	Cumene	mg/kg	3.42E+02		3.42E+02	2.70E+02		2.70E+02	5.26E+01		5.26E+01
N	21725462	Cyanazine	mg/kg	1.49E+01	2.38E-01	2.38E-01	1.82E+01	1.11E-01	1.11E-01	3.20E+00	1.11E-01	1.11E-01
N	460195	Cyanogen	mg/kg	3.46E+01		3.46E+01	1.60E+01		1.60E+01	3.29E+00		3.29E+00
N	506683	Cyanogen Bromide	mg/kg	4.32E+02		4.32E+02	5.50E+02		5.50E+02	9.97E+01		9.97E+01
N	506774	Cyanogen Chloride	mg/kg	2.40E+02		2.40E+02	3.06E+02		3.06E+02	5.54E+01		5.54E+01
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/kg		8.69E+00	8.69E+00		4.07E+00	4.07E+00		4.07E+00	4.07E+00
N	108941	Cyclohexanone	mg/kg	5.93E+04		5.93E+04	6.79E+04		6.79E+04	1.13E+04		1.13E+04
N	108918	Cyclohexylamine	mg/kg	1.49E+03		1.49E+03	1.82E+03		1.82E+03	3.20E+02		3.20E+02
N	542927	Cyclopentadiene	mg/kg									
N	68085858	Cyhalothrin/karate	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	52315078	Cypermethrin	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	66215278	Cyromazine	mg/kg	5.60E+01		5.60E+01	6.84E+01		6.84E+01	1.20E+01		1.20E+01
N	72548	DDD	mg/kg		3.49E+00	3.49E+00		1.13E+00	1.13E+00		1.13E+00	1.13E+00
N	72559	DDE	mg/kg		2.47E+00	2.47E+00		7.94E-01	7.94E-01		7.94E-01	7.94E-01
N	50293	DDT	mg/kg	1.66E+01	2.47E+00	2.47E+00	1.46E+01	7.94E-01	7.94E-01	2.10E+00	7.94E-01	7.94E-01
N	1861321	Dacthal	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	75990	Dalapon	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	1163195	Decabromodiphenyl Ether	mg/kg	1.19E+02		1.19E+02	1.36E+02		1.36E+02	2.27E+01		2.27E+01
N	8065483	Demeton	mg/kg	2.99E-01		2.99E-01	3.65E-01		3.65E-01	6.39E-02		6.39E-02
N	103231	Di(2-ethylhexyl)adipate	mg/kg	4.48E+03	1.67E+02	1.67E+02	5.47E+03	7.80E+01	7.80E+01	9.59E+02	7.80E+01	7.80E+01
N	2303164	Diallate	mg/kg		5.15E+00	5.15E+00		2.23E+00	2.23E+00		2.23E+00	2.23E+00
N	505293	Diathane, 1,4-	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	333415	Diazinon	mg/kg	6.72E+00		6.72E+00	8.21E+00		8.21E+00	1.44E+00		1.44E+00
Y	53703	Dibenz[a,h]anthracene	mg/kg		1.33E-02	1.33E-02		6.70E-03	6.70E-03		6.70E-03	6.70E-03
N	132649	Dibenzofuran	mg/kg	1.21E+01		1.21E+01	1.58E+01		1.58E+01	2.93E+00		2.93E+00
N	96128	Dibromo-3-chloropropane, 1,2-	mg/kg	2.62E-01	9.24E-02	9.24E-02	3.05E-01	4.55E-02	4.55E-02	5.61E-02	4.55E-02	4.55E-02
N	106376	Dibromobenzene, 1,4-	mg/kg	1.19E+02		1.19E+02	1.36E+02		1.36E+02	2.27E+01		2.27E+01
N	124481	Dibromochloromethane	mg/kg	5.78E+01	8.39E-01	8.39E-01	5.21E+01	3.34E-01	3.34E-01	1.01E+01	3.34E-01	3.34E-01
N	594183	Dibromodichloromethane	mg/kg									
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/kg									
N	106934	Dibromoethane, 1,2-	mg/kg	2.29E-01	1.52E-03	1.52E-03	2.15E-01	7.46E-04	7.46E-04	4.09E-02	7.46E-04	7.46E-04
N	74953	Dibromomethane (Methylene Bromide)	mg/kg	2.51E+01		2.51E+01	1.59E+01		1.59E+01	3.17E+00		3.17E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action = the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	84742	Dibutyl Phthalate	mg/kg	1.52E+03		1.52E+03	2.13E+03		2.13E+03	6.62E+03		6.62E+03	9.12E+02		9.12E+02
N	1918009	Dicamba	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	764410	Dichloro-2-butene, 1,4-	mg/kg		1.54E-02	1.54E-02		1.36E-02	1.36E-02		1.02E-02	1.02E-02		1.02E-02	1.02E-02
N	79436	Dichloroacetic Acid	mg/kg												
N	95501	Dichlorobenzene, 1,2-	mg/kg	3.22E+02		3.22E+02	2.68E+02		2.68E+02	9.26E+02		9.26E+02	1.37E+02		1.37E+02
N	541731	Dichlorobenzene, 1,3-	mg/kg	6.82E+00		6.82E+00	6.60E+00		6.60E+00	1.98E+01		1.98E+01	2.82E+00		2.82E+00
N	106467	Dichlorobenzene, 1,4-	mg/kg	1.32E+02	5.35E+00	5.35E+00	1.13E+02	4.62E+00	4.62E+00	3.87E+02	3.74E+00	3.74E+00	5.70E+01	3.74E+00	3.74E+00
N	91941	Dichlorobenzidine, 3,3'-	mg/kg		6.41E-01	6.41E-01		6.99E-01	6.99E-01		4.44E-01	4.44E-01		4.44E-01	4.44E-01
N	75718	Dichlorodifluoromethane	mg/kg	4.68E+01		4.68E+01	3.49E+01		3.49E+01	1.31E+02		1.31E+02	2.00E+01		2.00E+01
N	75343	Dichloroethane, 1,1-	mg/kg	1.97E+02		1.97E+02	1.55E+02		1.55E+02	5.71E+02		5.71E+02	8.62E+01		8.62E+01
N	107062	Dichloroethane, 1,2-	mg/kg	3.94E+00	6.65E-01	6.65E-01	2.93E+00	5.28E-01	5.28E-01	1.12E+01	5.10E-01	5.10E-01	1.73E+00	5.10E-01	5.10E-01
Y	75354	Dichloroethylene, 1,1-	mg/kg	8.40E+00	1.19E-01	1.19E-01	6.40E+00	9.59E-02	9.59E-02	2.41E+01	9.05E-02	9.05E-02	3.68E+00	9.05E-02	9.05E-02
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/kg	6.82E+01		6.82E+01	6.60E+01		6.60E+01	1.98E+02		1.98E+02	2.82E+01		2.82E+01
Y	156592	Dichloroethylene, 1,2-cis-	mg/kg	1.71E+01		1.71E+01	1.34E+01		1.34E+01	4.94E+01		4.94E+01	7.48E+00		7.48E+00
Y	156605	Dichloroethylene, 1,2-trans-	mg/kg	2.84E+01		2.84E+01	2.20E+01		2.20E+01	8.20E+01		8.20E+01	1.25E+01		1.25E+01
N	120832	Dichlorophenol, 2,4-	mg/kg	4.13E+01		4.13E+01	5.34E+01		5.34E+01	1.65E+02		1.65E+02	2.28E+01		2.28E+01
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/kg	1.84E+02		1.84E+02	3.21E+02		3.21E+02	1.03E+03		1.03E+03	1.38E+02		1.38E+02
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/kg	8.25E+01		8.25E+01	8.98E+01		8.98E+01	2.73E+02		2.73E+02	3.84E+01		3.84E+01
N	78875	Dichloropropane, 1,2-	mg/kg	2.19E+00	7.89E-01	7.89E-01	1.72E+00	6.21E-01	6.21E-01	6.24E+00	5.87E-01	5.87E-01	9.40E-01	5.87E-01	5.87E-01
N	616239	Dichloropropanol, 2,3-	mg/kg	3.09E+01		3.09E+01	3.37E+01		3.37E+01	1.02E+02		1.02E+02	1.44E+01		1.44E+01
N	542756	Dichloropropene, 1,3-	mg/kg	7.36E+00	9.99E-01	9.99E-01	5.49E+00	8.31E-01	8.31E-01	2.09E+01	6.36E-01	6.36E-01	3.20E+00	6.36E-01	6.36E-01
N	62737	Dichlorvos	mg/kg	5.15E+00	9.95E-01	9.95E-01	5.62E+00	1.08E+00	1.08E+00	1.70E+01	6.89E-01	6.89E-01	2.40E+00	6.89E-01	6.89E-01
N	115322	Dicofol	mg/kg		6.56E-01	6.56E-01		7.15E-01	7.15E-01		4.54E-01	4.54E-01		4.54E-01	4.54E-01
N	77736	Dicyclopentadiene	mg/kg	9.72E-01		9.72E-01	7.20E-01		7.20E-01	2.77E+00		2.77E+00	4.26E-01		4.26E-01
N	60571	Dieldrin	mg/kg	5.15E-01	1.80E-02	1.80E-02	5.62E-01	1.97E-02	1.97E-02	1.70E+00	1.25E-02	1.25E-02	2.40E-01	1.25E-02	1.25E-02
N	84662	Diethyl Phthalate	mg/kg	1.15E+04		1.15E+04	1.55E+04		1.55E+04	4.80E+04		4.80E+04	6.63E+03		6.63E+03
N	311455	Diethyl-p-nitrophenylphosphate	mg/kg												
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/kg												
N	112345	Diethylene Glycol Monobutyl Ether	mg/kg	5.89E+01		5.89E+01	6.42E+01		6.42E+01	1.95E+02		1.95E+02	2.74E+01		2.74E+01
N	111900	Diethylene Glycol Monoethyl Ether	mg/kg	2.06E+04		2.06E+04	2.25E+04		2.25E+04	6.82E+04		6.82E+04	9.60E+03		9.60E+03
N	617845	Diethylformamide	mg/kg	1.13E+02		1.13E+02	1.24E+02		1.24E+02	3.75E+02		3.75E+02	5.28E+01		5.28E+01
N	56531	*Diethylstilbesterol*	mg/kg		6.14E-05	6.14E-05		6.69E-05	6.69E-05		4.25E-05	4.25E-05		4.25E-05	4.25E-05
N	43222486	Difenzoquat	mg/kg	8.25E+02		8.25E+02	8.98E+02		8.98E+02	2.73E+03		2.73E+03	3.84E+02		3.84E+02
N	35367385	Diflubenzuron	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	75376	Difluoroethane, 1,1-	mg/kg	8.65E+04		8.65E+04	8.38E+04		8.38E+04	1.00E+05		1.00E+05	3.58E+04		3.58E+04
N	1445756	Diisopropyl Methylphosphonate	mg/kg	8.25E+02		8.25E+02	8.98E+02		8.98E+02	2.73E+03		2.73E+03	3.84E+02		3.84E+02
N	55290647	Dimethipin	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	60515	Dimethoate	mg/kg	2.06E+00		2.06E+00	2.25E+00		2.25E+00	6.82E+00		6.82E+00	9.60E-01		9.60E-01
N	119904	Dimethoxybenzidine, 3,3'-	mg/kg		2.06E+01	2.06E+01		2.25E+01	2.25E+01		1.43E+01	1.43E+01		1.43E+01	1.43E+01
N	77781	Dimethyl Sulfate	mg/kg												
N	124403	Dimethylamine	mg/kg	4.32E-02		4.32E-02	4.18E-02		4.18E-02	1.26E-01		1.26E-01	1.78E-02		1.78E-02
N	21436964	Dimethylaniline HCl, 2,4-	mg/kg		4.98E-01	4.98E-01		5.42E-01	5.42E-01		3.45E-01	3.45E-01		3.45E-01	3.45E-01
N	95681	Dimethylaniline, 2,4-	mg/kg		3.85E-01	3.85E-01		4.19E-01	4.19E-01		2.67E-01	2.67E-01		2.67E-01	2.67E-01
N	121697	Dimethylaniline, N,N-	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	119937	Dimethylbenzidine, 3,3'-	mg/kg		3.14E-02	3.14E-02		3.42E-02	3.42E-02		2.17E-02	2.17E-02		2.17E-02	2.17E-02
N	107584407	Dimethylethyl Lead	mg/kg												
N	68122	Dimethylformamide	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	57147	Dimethylhydrazine, 1,1-	mg/kg		9.62E-02	9.62E-02		1.05E-01	1.05E-01		6.66E-02	6.66E-02		6.66E-02	6.66E-02
N	540738	Dimethylhydrazine, 1,2-	mg/kg		7.80E-03	7.80E-03		8.50E-03	8.50E-03		5.40E-03	5.40E-03		5.40E-03	5.40E-03
N	105679	Dimethylphenol, 2,4-	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	576261	Dimethylphenol, 2,6-	mg/kg	6.18E+00		6.18E+00	6.74E+00		6.74E+00	2.04E+01		2.04E+01	2.88E+00		2.88E+00
N	95658	Dimethylphenol, 3,4-	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	131113	Dimethylphthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.29E+04		8.29E+04
N	120616	Dimethylterephthalate	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	84742	Dibutyl Phthalate	mg/kg	1.47E+03		1.47E+03	1.62E+03		1.62E+03	2.64E+02		2.64E+02
N	1918009	Dicamba	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	764410	Dichloro-2-butene, 1,4-	mg/kg		1.02E-02	1.02E-02		4.06E-03	4.06E-03		4.06E-03	4.06E-03
N	79436	Dichloroacetic Acid	mg/kg									
N	95501	Dichlorobenzene, 1,2-	mg/kg	2.80E+02		2.80E+02	2.03E+02		2.03E+02	4.00E+01		4.00E+01
N	541731	Dichlorobenzene, 1,3-	mg/kg	4.32E+00		4.32E+00	5.50E+00		5.50E+00	9.97E-01		9.97E-01
N	106467	Dichlorobenzene, 1,4-	mg/kg	1.13E+02	3.74E+00	3.74E+00	8.65E+01	1.36E+00	1.36E+00	1.68E+01	1.36E+00	1.36E+00
N	91941	Dichlorobenzidine, 3,3'-	mg/kg		4.44E-01	4.44E-01		2.08E-01	2.08E-01		2.08E-01	2.08E-01
N	75718	Dichlorodifluoromethane	mg/kg	5.37E+01		5.37E+01	2.53E+01		2.53E+01	5.20E+00		5.20E+00
N	75343	Dichloroethane, 1,1-	mg/kg	2.12E+02		2.12E+02	1.14E+02		1.14E+02	2.29E+01		2.29E+01
N	107062	Dichloroethane, 1,2-	mg/kg	5.05E+00	5.10E-01	5.10E-01	2.10E+00	1.52E-01	1.52E-01	4.33E-01	1.52E-01	1.52E-01
Y	75354	Dichloroethylene, 1,1-	mg/kg	9.95E+00	9.05E-02	9.05E-02	4.62E+00	2.76E-02	2.76E-02	9.47E-01	2.76E-02	2.76E-02
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/kg	4.32E+01		4.32E+01	5.50E+01		5.50E+01	9.97E+00		9.97E+00
Y	156592	Dichloroethylene, 1,2-cis-	mg/kg	1.88E+01		1.88E+01	9.74E+00		9.74E+00	1.98E+00		1.98E+00
Y	156605	Dichloroethylene, 1,2-trans-	mg/kg	3.22E+01		3.22E+01	1.60E+01		1.60E+01	3.26E+00		3.26E+00
N	120832	Dichlorophenol, 2,4-	mg/kg	3.64E+01		3.64E+01	4.16E+01		4.16E+01	6.93E+00		6.93E+00
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/kg	2.32E+02		2.32E+02	2.29E+02		2.29E+02	3.49E+01		3.49E+01
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/kg	5.98E+01		5.98E+01	7.30E+01		7.30E+01	1.28E+01		1.28E+01
N	78875	Dichloropropane, 1,2-	mg/kg	2.20E+00	5.87E-01	5.87E-01	1.27E+00	1.80E-01	1.80E-01	2.57E-01	1.80E-01	1.80E-01
N	616239	Dichloropropanol, 2,3-	mg/kg	2.24E+01		2.24E+01	2.74E+01		2.74E+01	4.80E+00		4.80E+00
N	542756	Dichloropropene, 1,3-	mg/kg	9.07E+00	6.36E-01	6.36E-01	3.94E+00	2.52E-01	2.52E-01	8.13E-01	2.52E-01	2.52E-01
N	62737	Dichlorvos	mg/kg	3.73E+00	6.89E-01	6.89E-01	4.56E+00	3.23E-01	3.23E-01	7.99E-01	3.23E-01	3.23E-01
N	115322	Dicofol	mg/kg		4.54E-01	4.54E-01		2.13E-01	2.13E-01		2.13E-01	2.13E-01
N	77736	Dicyclopentadiene	mg/kg	1.26E+00		1.26E+00	5.15E-01		5.15E-01	1.07E-01		1.07E-01
N	60571	Dieldrin	mg/kg	3.73E-01	1.25E-02	1.25E-02	4.56E-01	5.85E-03	5.85E-03	7.99E-02	5.85E-03	5.85E-03
N	84662	Diethyl Phthalate	mg/kg	1.06E+04		1.06E+04	1.19E+04		1.19E+04	1.97E+03		1.97E+03
N	311455	Diethyl-p-nitrophenylphosphate	mg/kg									
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/kg									
N	112345	Diethylene Glycol Monobutyl Ether	mg/kg	4.27E+01		4.27E+01	5.21E+01		5.21E+01	9.13E+00		9.13E+00
N	111900	Diethylene Glycol Monoethyl Ether	mg/kg	1.49E+04		1.49E+04	1.82E+04		1.82E+04	3.20E+03		3.20E+03
N	617845	Diethylformamide	mg/kg	8.22E+01		8.22E+01	1.00E+02		1.00E+02	1.76E+01		1.76E+01
N	56531	Diethylstilbesterol	mg/kg		4.25E-05	4.25E-05		1.99E-05	1.99E-05		1.99E-05	1.99E-05
N	43222486	Difenzoquat	mg/kg	5.98E+02		5.98E+02	7.30E+02		7.30E+02	1.28E+02		1.28E+02
N	35367385	Diflubenzuron	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	75376	Difluoroethane, 1,1-	mg/kg	5.49E+04		5.49E+04	6.99E+04		6.99E+04	1.27E+04		1.27E+04
N	1445756	Diisopropyl Methylphosphonate	mg/kg	5.98E+02		5.98E+02	7.30E+02		7.30E+02	1.28E+02		1.28E+02
N	55290647	Dimethipin	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	60515	Dimethoate	mg/kg	1.49E+00		1.49E+00	1.82E+00		1.82E+00	3.20E-01		3.20E-01
N	119904	Dimethoxybenzidine, 3,3'-	mg/kg		1.43E+01	1.43E+01		6.68E+00	6.68E+00		6.68E+00	6.68E+00
N	77781	Dimethyl Sulfate	mg/kg									
N	124403	Dimethylamine	mg/kg	2.74E-02		2.74E-02	3.49E-02		3.49E-02	6.31E-03		6.31E-03
N	21436964	Dimethylaniline HCl, 2,4-	mg/kg		3.45E-01	3.45E-01		1.61E-01	1.61E-01		1.61E-01	1.61E-01
N	95681	Dimethylaniline, 2,4-	mg/kg		2.67E-01	2.67E-01		1.25E-01	1.25E-01		1.25E-01	1.25E-01
N	121697	Dimethylaniline, N,N-	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	119937	Dimethylbenzidine, 3,3'-	mg/kg		2.17E-02	2.17E-02		1.02E-02	1.02E-02		1.02E-02	1.02E-02
N	107584407	Dimethylethyl Lead	mg/kg									
N	68122	Dimethylformamide	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	57147	Dimethylhydrazine, 1,1-	mg/kg		6.66E-02	6.66E-02		3.12E-02	3.12E-02		3.12E-02	3.12E-02
N	540738	Dimethylhydrazine, 1,2-	mg/kg		5.40E-03	5.40E-03		2.53E-03	2.53E-03		2.53E-03	2.53E-03
N	105679	Dimethylphenol, 2,4-	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	576261	Dimethylphenol, 2,6-	mg/kg	4.48E+00		4.48E+00	5.47E+00		5.47E+00	9.59E-01		9.59E-01
N	95658	Dimethylphenol, 3,4-	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	131113	Dimethylphthalate	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.46E+04		2.46E+04
N	120616	Dimethylterephthalate	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	534521	Dinitro-o-cresol, 4,6-	mg/kg												
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	528290	Dinitrobenzene, 1,2-	mg/kg	5.86E+00		5.86E+00	7.98E+00		7.98E+00	2.47E+01		2.47E+01	3.42E+00		3.42E+00
N	99650	Dinitrobenzene, 1,3-	mg/kg	1.21E+00		1.21E+00	1.44E+00		1.44E+00	4.39E+00		4.39E+00	6.14E-01		6.14E-01
N	100254	Dinitrobenzene, 1,4-	mg/kg	4.12E+00		4.12E+00	4.49E+00		4.49E+00	1.36E+01		1.36E+01	1.92E+00		1.92E+00
N	51285	Dinitrophenol, 2,4-	mg/kg	3.04E+01		3.04E+01	4.26E+01		4.26E+01	1.32E+02		1.32E+02	1.82E+01		1.82E+01
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/kg		5.77E-01	5.77E-01		7.57E-01	7.57E-01		4.89E-01	4.89E-01		4.89E-01	4.89E-01
N	121142	Dinitrotoluene, 2,4-	mg/kg	2.80E+01	5.77E-01	5.77E-01	3.68E+01	7.57E-01	7.57E-01	1.14E+02	4.89E-01	4.89E-01	1.57E+01	4.89E-01	4.89E-01
N	606202	Dinitrotoluene, 2,6-	mg/kg	1.40E+01	5.77E-01	5.77E-01	1.84E+01	7.57E-01	7.57E-01	5.68E+01	4.89E-01	4.89E-01	7.87E+00	4.89E-01	4.89E-01
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/kg												
N	88857	Dinoseb	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	123911	Dioxane, 1,4-	mg/kg		3.46E+01	3.46E+01		4.43E+01	4.43E+01		2.85E+01	2.85E+01		2.85E+01	2.85E+01
Y	1746016	Dioxins/Furans (Total)	mg/kg		3.49E-06	3.49E-06		6.19E-06	6.19E-06		4.15E-06	4.15E-06		4.15E-06	4.15E-06
N	957517	Diphenamid	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	127639	Diphenyl sulfone	mg/kg	9.28E+01		9.28E+01	1.01E+02		1.01E+02	3.07E+02		3.07E+02	4.32E+01		4.32E+01
N	122394	Diphenylamine	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
N	122667	Diphenylhydrazine, 1,2-	mg/kg		3.61E-01	3.61E-01		3.93E-01	3.93E-01		2.50E-01	2.50E-01		2.50E-01	2.50E-01
N	85007	Diquat	mg/kg	2.27E+01		2.27E+01	2.47E+01		2.47E+01	7.50E+01		7.50E+01	1.06E+01		1.06E+01
N	1937377	Direct Black 38	mg/kg		3.36E-02	3.36E-02		3.66E-02	3.66E-02		2.32E-02	2.32E-02		2.32E-02	2.32E-02
N	2602462	Direct Blue 6	mg/kg		3.56E-02	3.56E-02		3.88E-02	3.88E-02		2.47E-02	2.47E-02		2.47E-02	2.47E-02
N	16071866	Direct Brown 95	mg/kg		3.10E-02	3.10E-02		3.38E-02	3.38E-02		2.15E-02	2.15E-02		2.15E-02	2.15E-02
N	2610051	Direct Sky Blue	mg/kg												
N	298044	Disulfoton	mg/kg	4.12E-01		4.12E-01	4.49E-01		4.49E-01	1.36E+00		1.36E+00	1.92E-01		1.92E-01
N	330541	Diuron	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	2439103	Dodine	mg/kg	4.12E+01		4.12E+01	4.49E+01		4.49E+01	1.36E+02		1.36E+02	1.92E+01		1.92E+01
N	759944	EPTC	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
N	115297	Endosulfan	mg/kg	6.18E+01		6.18E+01	6.74E+01		6.74E+01	2.04E+02		2.04E+02	2.88E+01		2.88E+01
N	145733	Endothall	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	72208	Endrin	mg/kg	1.89E-01		1.89E-01	1.42E-01		1.42E-01	4.21E-01		4.21E-01	6.07E-02		6.07E-02
N	106898	Epichlorohydrin	mg/kg	3.29E+00	1.76E+01	3.29E+00	2.57E+00	1.61E+01	2.57E+00	9.41E+00	1.12E+01	9.41E+00	1.42E+00	1.12E+01	1.42E+00
N	106887	Epoxybutane, 1,2-	mg/kg	5.89E+01		5.89E+01	6.42E+01		6.42E+01	1.95E+02		1.95E+02	2.74E+01		2.74E+01
N	16672870	Ethephon	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	563122	Ethion	mg/kg	5.15E+00		5.15E+00	5.62E+00		5.62E+00	1.70E+01		1.70E+01	2.40E+00		2.40E+00
N	111159	Ethoxyethanol Acetate, 2-	mg/kg	3.09E+03		3.09E+03	3.37E+03		3.37E+03	1.02E+04		1.02E+04	1.44E+03		1.44E+03
N	110805	Ethoxyethanol, 2-	mg/kg	4.12E+03		4.12E+03	4.49E+03		4.49E+03	1.36E+04		1.36E+04	1.92E+03		1.92E+03
N	141786	Ethyl Acetate	mg/kg	3.36E+03		3.36E+03	2.81E+03		2.81E+03	9.67E+03		9.67E+03	1.43E+03		1.43E+03
N	140885	Ethyl Acrylate	mg/kg		1.80E+00	1.80E+00		1.48E+00	1.48E+00		1.15E+00	1.15E+00		1.15E+00	1.15E+00
N	75003	Ethyl Chloride	mg/kg	9.78E+02	4.57E+00	4.57E+00	7.83E+02	3.43E+00	3.43E+00	2.80E+03	3.65E+00	3.65E+00	4.20E+02	3.65E+00	3.65E+00
N	60297	Ethyl Ether	mg/kg	5.56E+02		5.56E+02	4.51E+02		4.51E+02	1.60E+03		1.60E+03	2.38E+02		2.38E+02
N	97632	Ethyl Methacrylate	mg/kg	6.82E+02		6.82E+02	6.60E+02		6.60E+02	1.98E+03		1.98E+03	2.82E+02		2.82E+02
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/kg	1.03E-01		1.03E-01	1.12E-01		1.12E-01	3.41E-01		3.41E-01	4.80E-02		4.80E-02
Y	100414	Ethylbenzene	mg/kg	4.91E+02	2.87E+01	2.87E+01	4.29E+02	2.12E+01	2.12E+01	1.45E+03	2.34E+01	2.34E+01	2.14E+02	2.34E+01	2.34E+01
N	109784	Ethylene Cyanohydrin	mg/kg	3.09E+03		3.09E+03	3.37E+03		3.37E+03	1.02E+04		1.02E+04	1.44E+03		1.44E+03
N	107153	Ethylene Diamine	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	107211	Ethylene Glycol	mg/kg	2.06E+04		2.06E+04	2.25E+04		2.25E+04	6.82E+04		6.82E+04	9.60E+03		9.60E+03
N	111762	Ethylene Glycol Monobutyl Ether	mg/kg	5.15E+03		5.15E+03	5.62E+03		5.62E+03	1.70E+04		1.70E+04	2.40E+03		2.40E+03
N	75218	Ethylene Oxide	mg/kg		1.29E-01	1.29E-01		1.12E-01	1.12E-01		8.71E-02	8.71E-02		8.71E-02	8.71E-02
N	96457	Ethylene Thiourea	mg/kg	8.25E-01	2.62E+00	8.25E-01	8.98E-01	2.86E+00	8.98E-01	2.73E+00	1.82E+00	1.82E+00	3.84E-01	1.82E+00	3.84E-01
N	84720	Ethylphthalyl Ethyl Glycolate	mg/kg	3.09E+04		3.09E+04	3.37E+04		3.37E+04	1.00E+05		1.00E+05	1.44E+04		1.44E+04
N	101200480	Express	mg/kg	8.25E+01		8.25E+01	8.98E+01		8.98E+01	2.73E+02		2.73E+02	3.84E+01		3.84E+01
N	22224926	Fenamiphos	mg/kg	2.58E+00		2.58E+00	2.81E+00		2.81E+00	8.52E+00		8.52E+00	1.20E+00		1.20E+00
N	39515418	Fenpropathrin	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
N	2164172	Fluometuron	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
Y	206440	Fluoranthene	mg/kg	2.42E+02		2.42E+02	2.21E+02		2.21E+02	6.60E+02		6.60E+02	9.42E+01		9.42E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	534521	Dinitro-o-cresol, 4,6-	mg/kg									
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	528290	Dinitrobenzene, 1,2-	mg/kg	5.49E+00		5.49E+00	6.13E+00		6.13E+00	1.01E+00		1.01E+00
N	99650	Dinitrobenzene, 1,3-	mg/kg	9.67E-01		9.67E-01	1.14E+00		1.14E+00	1.95E-01		1.95E-01
N	100254	Dinitrobenzene, 1,4-	mg/kg	2.99E+00		2.99E+00	3.65E+00		3.65E+00	6.39E-01		6.39E-01
N	51285	Dinitrophenol, 2,4-	mg/kg	2.95E+01		2.95E+01	3.24E+01		3.24E+01	5.28E+00		5.28E+00
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/kg		4.89E-01	4.89E-01		2.09E-01	2.09E-01		2.09E-01	2.09E-01
N	121142	Dinitrotoluene, 2,4-	mg/kg	2.52E+01	4.89E-01	4.89E-01	2.85E+01	2.09E-01	2.09E-01	4.73E+00	2.09E-01	2.09E-01
N	606202	Dinitrotoluene, 2,6-	mg/kg	1.26E+01	4.89E-01	4.89E-01	1.43E+01	2.09E-01	2.09E-01	2.37E+00	2.09E-01	2.09E-01
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/kg									
N	88857	Dinoseb	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	123911	Dioxane, 1,4-	mg/kg		2.85E+01	2.85E+01		1.24E+01	1.24E+01		1.24E+01	1.24E+01
Y	1746016	Dioxins/Furans (Total)	mg/kg		4.15E-06	4.15E-06		1.49E-06	1.49E-06		1.49E-06	1.49E-06
N	957517	Diphenamid	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	127639	Diphenyl sulfone	mg/kg	6.72E+01		6.72E+01	8.21E+01		8.21E+01	1.44E+01		1.44E+01
N	122394	Diphenylamine	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
N	122667	Diphenylhydrazine, 1,2-	mg/kg		2.50E-01	2.50E-01		1.17E-01	1.17E-01		1.17E-01	1.17E-01
N	85007	Diquat	mg/kg	1.64E+01		1.64E+01	2.01E+01		2.01E+01	3.52E+00		3.52E+00
N	1937377	Direct Black 38	mg/kg		2.32E-02	2.32E-02		1.09E-02	1.09E-02		1.09E-02	1.09E-02
N	2602462	Direct Blue 6	mg/kg		2.47E-02	2.47E-02		1.16E-02	1.16E-02		1.16E-02	1.16E-02
N	16071866	Direct Brown 95	mg/kg		2.15E-02	2.15E-02		1.01E-02	1.01E-02		1.01E-02	1.01E-02
N	2610051	Direct Sky Blue	mg/kg									
N	298044	Disulfoton	mg/kg	2.99E-01		2.99E-01	3.65E-01		3.65E-01	6.39E-02		6.39E-02
N	330541	Diuron	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	2439103	Dodine	mg/kg	2.99E+01		2.99E+01	3.65E+01		3.65E+01	6.39E+00		6.39E+00
N	759944	EPTC	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
N	115297	Endosulfan	mg/kg	4.48E+01		4.48E+01	5.47E+01		5.47E+01	9.59E+00		9.59E+00
N	145733	Endothall	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	72208	Endrin	mg/kg	9.08E-02		9.08E-02	1.24E-01		1.24E-01	2.41E-02		2.41E-02
N	106898	Epichlorohydrin	mg/kg	3.48E+00	1.12E+01	3.48E+00	1.88E+00	4.91E+00	1.88E+00	3.81E-01	4.91E+00	3.81E-01
N	106887	Epoxybutane, 1,2-	mg/kg	4.27E+01		4.27E+01	5.21E+01		5.21E+01	9.13E+00		9.13E+00
N	16672870	Ethephon	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	563122	Ethion	mg/kg	3.73E+00		3.73E+00	4.56E+00		4.56E+00	7.99E-01		7.99E-01
N	111159	Ethoxyethanol Acetate, 2-	mg/kg	2.24E+03		2.24E+03	2.74E+03		2.74E+03	4.80E+02		4.80E+02
N	110805	Ethoxyethanol, 2-	mg/kg	2.99E+03		2.99E+03	3.65E+03		3.65E+03	6.39E+02		6.39E+02
N	141786	Ethyl Acetate	mg/kg	2.88E+03		2.88E+03	2.14E+03		2.14E+03	4.20E+02		4.20E+02
N	140885	Ethyl Acrylate	mg/kg		1.15E+00	1.15E+00		4.46E-01	4.46E-01		4.46E-01	4.46E-01
N	75003	Ethyl Chloride	mg/kg	9.49E+02	3.65E+00	3.65E+00	5.82E+02	9.78E-01	9.78E-01	1.16E+02	9.78E-01	9.78E-01
N	60297	Ethyl Ether	mg/kg	5.22E+02		5.22E+02	3.37E+02		3.37E+02	6.71E+01		6.71E+01
N	97632	Ethyl Methacrylate	mg/kg	4.32E+02		4.32E+02	5.50E+02		5.50E+02	9.97E+01		9.97E+01
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/kg	7.47E-02		7.47E-02	9.12E-02		9.12E-02	1.60E-02		1.60E-02
Y	100414	Ethylbenzene	mg/kg	4.16E+02	2.34E+01	2.34E+01	3.28E+02	6.01E+00	6.01E+00	6.33E+01	6.01E+00	6.01E+00
N	109784	Ethylene Cyanohydrin	mg/kg	2.24E+03		2.24E+03	2.74E+03		2.74E+03	4.80E+02		4.80E+02
N	107153	Ethylene Diamine	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	107211	Ethylene Glycol	mg/kg	1.49E+04		1.49E+04	1.82E+04		1.82E+04	3.20E+03		3.20E+03
N	111762	Ethylene Glycol Monobutyl Ether	mg/kg	3.73E+03		3.73E+03	4.56E+03		4.56E+03	7.99E+02		7.99E+02
N	75218	Ethylene Oxide	mg/kg		8.71E-02	8.71E-02		3.34E-02	3.34E-02		3.34E-02	3.34E-02
N	96457	Ethylene Thiourea	mg/kg	5.98E-01	1.82E+00	5.98E-01	7.30E-01	8.51E-01	7.30E-01	1.28E-01	8.51E-01	1.28E-01
N	84720	Ethylphthalyl Ethyl Glycolate	mg/kg	2.24E+04		2.24E+04	2.74E+04		2.74E+04	4.80E+03		4.80E+03
N	101200480	Express	mg/kg	5.98E+01		5.98E+01	7.30E+01		7.30E+01	1.28E+01		1.28E+01
N	22224926	Fenamiphos	mg/kg	1.87E+00		1.87E+00	2.28E+00		2.28E+00	4.00E-01		4.00E-01
N	39515418	Fenpropathrin	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
N	2164172	Fluometuron	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
Y	206440	Fluoranthene	mg/kg	1.44E+02		1.44E+02	1.86E+02		1.86E+02	3.43E+01		3.43E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action [illegible]s the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
Y	86737	Fluorene	mg/kg	3.38E+02		3.38E+02	3.39E+02		3.39E+02	1.03E+03		1.03E+03	1.46E+02		1.46E+02
N	59756604	Fluridone	mg/kg	8.25E+02		8.25E+02	8.98E+02		8.98E+02	2.73E+03		2.73E+03	3.84E+02		3.84E+02
N	56425913	Flurprimidol	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	66332965	Flutolanil	mg/kg	6.18E+02		6.18E+02	6.74E+02		6.74E+02	2.04E+03		2.04E+03	2.88E+02		2.88E+02
N	69409945	Fluvalinate	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	133073	Folpet	mg/kg	1.03E+03	8.25E+01	8.25E+01	1.12E+03	8.98E+01	8.98E+01	3.41E+03	5.71E+01	5.71E+01	4.80E+02	5.71E+01	5.71E+01
N	72178020	Fomesafen	mg/kg		1.52E+00	1.52E+00		1.66E+00	1.66E+00		1.05E+00	1.05E+00		1.05E+00	1.05E+00
N	944229	Fonofos	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	50000	Formaldehyde	mg/kg	2.04E+03	1.00E+05	2.04E+03	2.61E+03	1.00E+05	2.61E+03	8.04E+03	1.00E+05	8.04E+03	1.12E+03	1.00E+05	1.12E+03
N	64186	Formic Acid	mg/kg	2.06E+04		2.06E+04	2.25E+04		2.25E+04	6.82E+04		6.82E+04	9.60E+03		9.60E+03
N	39148248	Fosetyl-AL	mg/kg	3.09E+04		3.09E+04	3.37E+04		3.37E+04	1.00E+05		1.00E+05	1.44E+04		1.44E+04
N	110009	Furan	mg/kg	1.31E+00		1.31E+00	1.01E+00		1.01E+00	3.73E+00		3.73E+00	5.66E-01		5.66E-01
N	67458	Furazolidone	mg/kg		7.59E-02	7.59E-02		8.28E-02	8.28E-02		5.26E-02	5.26E-02		5.26E-02	5.26E-02
N	98011	Furfural	mg/kg	3.09E+01		3.09E+01	3.37E+01		3.37E+01	1.02E+02		1.02E+02	1.44E+01		1.44E+01
N	531828	Furium	mg/kg		5.77E-03	5.77E-03		6.29E-03	6.29E-03		4.00E-03	4.00E-03		4.00E-03	4.00E-03
N	60568050	Furmecyclox	mg/kg		9.62E+00	9.62E+00		1.05E+01	1.05E+01		6.66E+00	6.66E+00		6.66E+00	6.66E+00
N	77182822	Glufosinate, Ammonium	mg/kg	4.12E+00		4.12E+00	4.49E+00		4.49E+00	1.36E+01		1.36E+01	1.92E+00		1.92E+00
N	765344	Glycidyl	mg/kg	4.12E+00		4.12E+00	4.49E+00		4.49E+00	1.36E+01		1.36E+01	1.92E+00		1.92E+00
N	1071836	Glyphosate	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	42874033	Goal	mg/kg	3.09E+01		3.09E+01	3.37E+01		3.37E+01	1.02E+02		1.02E+02	1.44E+01		1.44E+01
N	69806402	Haloxyfop, Methyl	mg/kg	5.15E-01		5.15E-01	5.62E-01		5.62E-01	1.70E+00		1.70E+00	2.40E-01		2.40E-01
N	79277273	Harmony	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	76448	Heptachlor	mg/kg	6.41E+00	7.98E-02	7.98E-02	7.90E+00	9.83E-02	9.83E-02	2.42E+01	6.31E-02	6.31E-02	3.38E+00	6.31E-02	6.31E-02
N	1024573	Heptachlor Epoxide	mg/kg	1.67E-01	3.94E-02	3.94E-02	2.05E-01	4.86E-02	4.86E-02	6.30E-01	3.12E-02	3.12E-02	8.78E-02	3.12E-02	3.12E-02
N	142825	Heptane, N-	mg/kg												
N	87821	Hexabromobenzene	mg/kg	2.71E+01		2.71E+01	3.48E+01		3.48E+01	1.07E+02		1.07E+02	1.49E+01		1.49E+01
N	118741	Hexachlorobenzene	mg/kg	8.25E+00	1.80E-01	1.80E-01	8.98E+00	1.97E-01	1.97E-01	2.73E+01	1.25E-01	1.25E-01	3.84E+00	1.25E-01	1.25E-01
N	87683	Hexachlorobutadiene	mg/kg	2.06E+00	3.70E+00	2.06E+00	2.25E+00	4.03E+00	2.25E+00	6.82E+00	2.56E+00	2.56E+00	9.60E-01	2.56E+00	9.60E-01
N	319846	Hexachlorocyclohexane, Alpha-	mg/kg		9.34E-02	9.34E-02		2.00E-01	2.00E-01		1.38E-01	1.38E-01		1.38E-01	1.38E-01
N	319857	Hexachlorocyclohexane, Beta-	mg/kg		3.21E-01	3.21E-01		6.65E-01	6.65E-01		4.56E-01	4.56E-01		4.56E-01	4.56E-01
N	319868	Hexachlorocyclohexane, Delta-	mg/kg												
N	6108107	Hexachlorocyclohexane, Epsilon	mg/kg												
N	58899	Hexachlorocyclohexane, Gamma-	mg/kg	6.30E+00	4.53E-01	4.53E-01	1.35E+01	9.68E-01	9.68E-01	4.46E+01	6.67E-01	6.67E-01	5.80E+00	6.67E-01	6.67E-01
N	608731	Hexachlorocyclohexane, Technical	mg/kg		3.27E-01	3.27E-01		6.99E-01	6.99E-01		4.82E-01	4.82E-01		4.82E-01	4.82E-01
N	77474	Hexachlorocyclopentadiene	mg/kg	6.18E+01		6.18E+01	6.74E+01		6.74E+01	2.04E+02		2.04E+02	2.88E+01		2.88E+01
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/kg		4.65E-05	4.65E-05		5.07E-05	5.07E-05		3.22E-05	3.22E-05		3.22E-05	3.22E-05
N	67721	Hexachloroethane	mg/kg	1.03E+01	2.06E+01	1.03E+01	1.12E+01	2.25E+01	1.12E+01	3.41E+01	1.43E+01	1.43E+01	4.80E+00	1.43E+01	4.80E+00
N	70304	Hexachlorophene	mg/kg	3.09E+00		3.09E+00	3.37E+00		3.37E+00	1.02E+01		1.02E+01	1.44E+00		1.44E+00
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/kg	4.55E+01	3.86E+00	3.86E+00	6.39E+01	5.42E+00	5.42E+00	1.99E+02	3.53E+00	3.53E+00	2.73E+01	3.53E+00	3.53E+00
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/kg	2.94E-02		2.94E-02	3.21E-02		3.21E-02	9.74E-02		9.74E-02	1.37E-02		1.37E-02
N	110543	Hexane, N-	mg/kg	3.96E+01		3.96E+01	2.99E+01		2.99E+01	1.13E+02		1.13E+02	1.73E+01		1.73E+01
N	591786	Hexanone, 2-	mg/kg												
N	51235042	Hexazinone	mg/kg	3.40E+02		3.40E+02	3.71E+02		3.71E+02	1.12E+03		1.12E+03	1.58E+02		1.58E+02
Y	37871004	HpCDD, 2,3,7,8-	mg/kg		3.49E-04	3.49E-04		6.19E-04	6.19E-04		4.15E-04	4.15E-04		4.15E-04	4.15E-04
Y	38998753	HpCDF, 2,3,7,8-	mg/kg		3.49E-04	3.49E-04		6.19E-04	6.19E-04		4.15E-04	4.15E-04		4.15E-04	4.15E-04
Y	34465468	HxCDD, 2,3,7,8-	mg/kg		3.49E-05	3.49E-05		6.19E-05	6.19E-05		4.15E-05	4.15E-05		4.15E-05	4.15E-05
Y	55684941	HxCDF, 2,3,7,8-	mg/kg		3.49E-05	3.49E-05		6.19E-05	6.19E-05		4.15E-05	4.15E-05		4.15E-05	4.15E-05
N	302012	Hydrazine	mg/kg		9.62E-02	9.62E-02		1.05E-01	1.05E-01		6.66E-02	6.66E-02		6.66E-02	6.66E-02
N	10034932	Hydrazine Sulfate	mg/kg		9.62E-02	9.62E-02		1.05E-01	1.05E-01		6.66E-02	6.66E-02		6.66E-02	6.66E-02
N	123319	Hydroquinone	mg/kg	4.12E+02		4.12E+02	4.49E+02		4.49E+02	1.36E+03		1.36E+03	1.92E+02		1.92E+02
N	35554440	Imazalil	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	81335377	Imazaquin	mg/kg	2.58E+03		2.58E+03	2.81E+03		2.81E+03	8.52E+03		8.52E+03	1.20E+03		1.20E+03
Y	193395	Indeno[1,2,3-cd]pyrene	mg/kg		2.32E-01	2.32E-01		2.12E-01	2.12E-01		1.33E-01	1.33E-01		1.33E-01	1.33E-01
N	36734197	Iprodione	mg/kg	4.12E+02		4.12E+02	4.49E+02		4.49E+02	1.36E+03		1.36E+03	1.92E+02		1.92E+02

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
Y	86737	Fluorene	mg/kg	2.28E+02		2.28E+02	2.79E+02		2.79E+02	5.01E+01		5.01E+01
N	59756604	Fluridone	mg/kg	5.98E+02		5.98E+02	7.30E+02		7.30E+02	1.28E+02		1.28E+02
N	56425913	Flurprimidol	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	66332965	Flutolanil	mg/kg	4.48E+02		4.48E+02	5.47E+02		5.47E+02	9.59E+01		9.59E+01
N	69409945	Fluvalinate	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	133073	Folpet	mg/kg	7.47E+02	5.71E+01	5.71E+01	9.12E+02	2.67E+01	2.67E+01	1.60E+02	2.67E+01	2.67E+01
N	72178020	Fomesafen	mg/kg		1.05E+00	1.05E+00		4.93E-01	4.93E-01		4.93E-01	4.93E-01
N	944229	Fonofos	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	50000	Formaldehyde	mg/kg	1.78E+03	1.00E+05	1.78E+03	2.04E+03	1.00E+05	2.04E+03	3.40E+02	1.00E+05	3.40E+02
N	64186	Formic Acid	mg/kg	1.49E+04		1.49E+04	1.82E+04		1.82E+04	3.20E+03		3.20E+03
N	39148248	Fosetyl-AL	mg/kg	2.24E+04		2.24E+04	2.74E+04		2.74E+04	4.80E+03		4.80E+03
N	110009	Furan	mg/kg	1.44E+00		1.44E+00	7.34E-01		7.34E-01	1.49E-01		1.49E-01
N	67458	Furazolidone	mg/kg		5.26E-02	5.26E-02		2.46E-02	2.46E-02		2.46E-02	2.46E-02
N	98011	Furfural	mg/kg	2.24E+01		2.24E+01	2.74E+01		2.74E+01	4.80E+00		4.80E+00
N	531828	Furium	mg/kg		4.00E-03	4.00E-03		1.87E-03	1.87E-03		1.87E-03	1.87E-03
N	60568050	Furmecyclox	mg/kg		6.66E+00	6.66E+00		3.12E+00	3.12E+00		3.12E+00	3.12E+00
N	77182822	Glufosinate, Ammonium	mg/kg	2.99E+00		2.99E+00	3.65E+00		3.65E+00	6.39E-01		6.39E-01
N	765344	Glycidyl	mg/kg	2.99E+00		2.99E+00	3.65E+00		3.65E+00	6.39E-01		6.39E-01
N	1071836	Glyphosate	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	42874033	Goal	mg/kg	2.24E+01		2.24E+01	2.74E+01		2.74E+01	4.80E+00		4.80E+00
N	69806402	Haloxyfop, Methyl	mg/kg	3.73E-01		3.73E-01	4.56E-01		4.56E-01	7.99E-02		7.99E-02
N	79277273	Harmony	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	76448	Heptachlor	mg/kg	5.35E+00	6.31E-02	6.31E-02	6.23E+00	2.79E-02	2.79E-02	1.05E+00	2.79E-02	2.79E-02
N	1024573	Heptachlor Epoxide	mg/kg	1.39E-01	3.12E-02	3.12E-02	1.62E-01	1.38E-02	1.38E-02	2.74E-02	1.38E-02	1.38E-02
N	142825	Heptane, N-	mg/kg									
N	87821	Hexabromobenzene	mg/kg	2.37E+01		2.37E+01	2.72E+01		2.72E+01	4.54E+00		4.54E+00
N	118741	Hexachlorobenzene	mg/kg	5.98E+00	1.25E-01	1.25E-01	7.30E+00	5.85E-02	5.85E-02	1.28E+00	5.85E-02	5.85E-02
N	87683	Hexachlorobutadiene	mg/kg	1.49E+00	2.56E+00	1.49E+00	1.82E+00	1.20E+00	1.20E+00	3.20E-01	1.20E+00	3.20E-01
N	319846	Hexachlorocyclohexane, Alpha-	mg/kg		1.38E-01	1.38E-01		4.37E-02	4.37E-02		4.37E-02	4.37E-02
N	319857	Hexachlorocyclohexane, Beta-	mg/kg		4.56E-01	4.56E-01		1.48E-01	1.48E-01		1.48E-01	1.48E-01
N	319868	Hexachlorocyclohexane, Delta-	mg/kg									
N	6108107	Hexachlorocyclohexane, Epsilon	mg/kg									
N	58899	Hexachlorocyclohexane, Gamma-	mg/kg	1.03E+01	6.67E-01	6.67E-01	8.96E+00	2.12E-01	2.12E-01	1.28E+00	2.12E-01	2.12E-01
N	608731	Hexachlorocyclohexane, Technical	mg/kg		4.82E-01	4.82E-01		1.53E-01	1.53E-01		1.53E-01	1.53E-01
N	77474	Hexachlorocyclopentadiene	mg/kg	4.48E+01		4.48E+01	5.47E+01		5.47E+01	9.59E+00		9.59E+00
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/kg		3.22E-05	3.22E-05		1.51E-05	1.51E-05		1.51E-05	1.51E-05
N	67721	Hexachloroethane	mg/kg	7.47E+00	1.43E+01	7.47E+00	9.12E+00	6.68E+00	6.68E+00	1.60E+00	6.68E+00	1.60E+00
N	70304	Hexachlorophene	mg/kg	2.24E+00		2.24E+00	2.74E+00		2.74E+00	4.80E-01		4.80E-01
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/kg	4.42E+01	3.53E+00	3.53E+00	4.87E+01	1.46E+00	1.46E+00	7.92E+00	1.46E+00	1.46E+00
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/kg	2.13E-02		2.13E-02	2.61E-02		2.61E-02	4.57E-03		4.57E-03
N	110543	Hexane, N-	mg/kg	4.71E+01		4.71E+01	2.16E+01		2.16E+01	4.43E+00		4.43E+00
N	591786	Hexanone, 2-	mg/kg									
N	51235042	Hexazinone	mg/kg	2.46E+02		2.46E+02	3.01E+02		3.01E+02	5.27E+01		5.27E+01
Y	37871004	HpCDD, 2,3,7,8-	mg/kg		4.15E-04	4.15E-04		1.49E-04	1.49E-04		1.49E-04	1.49E-04
Y	38998753	HpCDF, 2,3,7,8-	mg/kg		4.15E-04	4.15E-04		1.49E-04	1.49E-04		1.49E-04	1.49E-04
Y	34465468	HxCDD, 2,3,7,8-	mg/kg		4.15E-05	4.15E-05		1.49E-05	1.49E-05		1.49E-05	1.49E-05
Y	55684941	HxCDF, 2,3,7,8-	mg/kg		4.15E-05	4.15E-05		1.49E-05	1.49E-05		1.49E-05	1.49E-05
N	302012	Hydrazine	mg/kg		6.66E-02	6.66E-02		3.12E-02	3.12E-02		3.12E-02	3.12E-02
N	10034932	Hydrazine Sulfate	mg/kg		6.66E-02	6.66E-02		3.12E-02	3.12E-02		3.12E-02	3.12E-02
N	123319	Hydroquinone	mg/kg	2.99E+02		2.99E+02	3.65E+02		3.65E+02	6.39E+01		6.39E+01
N	35554440	Imazalil	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	81335377	Imazaquin	mg/kg	1.87E+03		1.87E+03	2.28E+03		2.28E+03	4.00E+02		4.00E+02
Y	193395	Indeno[1,2,3-cd]pyrene	mg/kg		1.33E-01	1.33E-01		6.70E-02	6.70E-02		6.70E-02	6.70E-02
N	36734197	Iprodione	mg/kg	2.99E+02		2.99E+02	3.65E+02		3.65E+02	6.39E+01		6.39E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action = the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	78831	Isobutyl Alcohol	mg/kg	1.96E+03		1.96E+03	1.82E+03		1.82E+03	5.70E+03		5.70E+03	8.18E+02		8.18E+02
N	78591	Isophorone	mg/kg	2.06E+03	3.04E+02	3.04E+02	2.25E+03	3.31E+02	3.31E+02	6.82E+03	2.10E+02	2.10E+02	9.60E+02	2.10E+02	2.10E+02
N	33820530	Isopropalin	mg/kg	1.55E+02		1.55E+02	1.68E+02		1.68E+02	5.11E+02		5.11E+02	7.20E+01		7.20E+01
N	67630	Isopropanol	mg/kg												
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	82558507	Isoxaben	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	143500	Kepone	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	8.64E+04		8.64E+04
N	23950585	Kerb	mg/kg	7.73E+02		7.73E+02	8.42E+02		8.42E+02	2.56E+03		2.56E+03	3.60E+02		3.60E+02
N	77501634	Lactofen	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N		Lead Alkyls	mg/kg												
N	330552	Linuron	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	83055996	Londax	mg/kg	2.06E+03		2.06E+03	2.25E+03		2.25E+03	6.82E+03		6.82E+03	9.60E+02		9.60E+02
N	94746	MCPA	mg/kg	5.15E+00		5.15E+00	5.62E+00		5.62E+00	1.70E+01		1.70E+01	2.40E+00		2.40E+00
N	94815	MCPB	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	93652	MCPP	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	121755	Malathion	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	108316	Maleic Anhydride	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	123331	Maleic Hydrazide	mg/kg	2.63E+03		2.63E+03	2.32E+03		2.32E+03	6.94E+03		6.94E+03	9.91E+02		9.91E+02
N	109773	Malononitrile	mg/kg	2.71E-01		2.71E-01	3.48E-01		3.48E-01	1.07E+00		1.07E+00	1.49E-01		1.49E-01
N	8018017	Mancozeb	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	12427382	Maneb	mg/kg	5.15E+01	4.81E+00	4.81E+00	5.62E+01	5.24E+00	5.24E+00	1.70E+02	3.33E+00	3.33E+00	2.40E+01	3.33E+00	3.33E+00
N	950107	Mephosfolan	mg/kg	9.28E-01		9.28E-01	1.01E+00		1.01E+00	3.07E+00		3.07E+00	4.32E-01		4.32E-01
N	24307264	Mepiquat Chloride	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	149304	Mercaptobenzothiazole, 2-	mg/kg	1.03E+03	9.95E+00	9.95E+00	1.12E+03	1.08E+01	1.08E+01	3.41E+03	6.89E+00	6.89E+00	4.80E+02	6.89E+00	6.89E+00
N	150505	Merphos	mg/kg	3.09E-01		3.09E-01	3.37E-01		3.37E-01	1.02E+00		1.02E+00	1.44E-01		1.44E-01
N	78488	Merphos Oxide	mg/kg	3.09E-01		3.09E-01	3.37E-01		3.37E-01	1.02E+00		1.02E+00	1.44E-01		1.44E-01
N	57837191	Metalaxyl	mg/kg	6.18E+02		6.18E+02	6.74E+02		6.74E+02	2.04E+03		2.04E+03	2.88E+02		2.88E+02
N	126987	Methacrylonitrile	mg/kg	5.18E-01		5.18E-01	4.57E-01		4.57E-01	1.50E+00		1.50E+00	2.18E-01		2.18E-01
N	10265926	Methamidophos	mg/kg	5.15E-01		5.15E-01	5.62E-01		5.62E-01	1.70E+00		1.70E+00	2.40E-01		2.40E-01
N	67561	Methanol	mg/kg	6.79E+03		6.79E+03	8.70E+03		8.70E+03	2.68E+04		2.68E+04	3.72E+03		3.72E+03
N	950378	Methidathion	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	16752775	Methomyl	mg/kg	1.24E+02		1.24E+02	1.08E+02		1.08E+02	3.28E+02		3.28E+02	4.71E+01		4.71E+01
N	99592	Methoxy-5-nitroaniline, 2-	mg/kg		6.27E+00	6.27E+00		6.84E+00	6.84E+00		4.35E+00	4.35E+00		4.35E+00	4.35E+00
N	72435	Methoxychlor	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	110496	Methoxyethanol Acetate, 2-	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	109864	Methoxyethanol, 2-	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	79209	Methyl Acetate	mg/kg	2.85E+03		2.85E+03	2.32E+03		2.32E+03	7.79E+03		7.79E+03	1.15E+03		1.15E+03
N	96333	Methyl Acrylate	mg/kg	1.51E+02		1.51E+02	1.32E+02		1.32E+02	3.99E+02		3.99E+02	5.72E+01		5.72E+01
N	78933	Methyl Ethyl Ketone	mg/kg	1.30E+03		1.30E+03	1.03E+03		1.03E+03	3.72E+03		3.72E+03	5.59E+02		5.59E+02
N	60344	Methyl Hydrazine	mg/kg		2.62E-01	2.62E-01		2.86E-01	2.86E-01		1.82E-01	1.82E-01		1.82E-01	1.82E-01
N	108101	Methyl Isobutyl Ketone	mg/kg	8.51E+01		8.51E+01	6.51E+01		6.51E+01	2.43E+02		2.43E+02	3.70E+01		3.70E+01
N	74931	Methyl Mercaptan	mg/kg	5.87E+00		5.87E+00	6.40E+00		6.40E+00	1.94E+01		1.94E+01	2.74E+00		2.74E+00
N	80626	Methyl Methacrylate	mg/kg	1.39E+03		1.39E+03	1.06E+03		1.06E+03	3.97E+03		3.97E+03	6.04E+02		6.04E+02
N	298000	Methyl Parathion	mg/kg	2.58E+00		2.58E+00	2.81E+00		2.81E+00	8.52E+00		8.52E+00	1.20E+00		1.20E+00
N	993135	Methyl Phosphonic Acid	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	25013154	Methyl Styrene (Mixed Isomers)	mg/kg	4.54E+01		4.54E+01	4.40E+01		4.40E+01	1.32E+02		1.32E+02	1.88E+01		1.88E+01
N	79221	Methyl chlorocarbonate	mg/kg	1.03E+04		1.03E+04	1.12E+04		1.12E+04	3.41E+04		3.41E+04	4.80E+03		4.80E+03
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/kg	2.95E+03		2.95E+03	2.18E+03		2.18E+03	8.39E+03		8.39E+03	1.29E+03		1.29E+03
N	99558	Methyl-5-Nitroaniline, 2-	mg/kg		8.74E+00	8.74E+00		9.53E+00	9.53E+00		6.06E+00	6.06E+00		6.06E+00	6.06E+00
N	636215	Methylaniline Hydrochloride, 2-	mg/kg		1.60E+00	1.60E+00		*1.75E+00*	*1.75E+00*		*1.11E+00*	*1.11E+00*		*1.11E+00*	*1.11E+00*
N	108872	Methylcyclohexane	mg/kg	8.86E+02		8.86E+02	6.78E+02		6.78E+02	2.53E+03		2.53E+03	3.85E+02		3.85E+02
N	75092	Methylene Chloride	mg/kg	3.87E+02	1.57E+01	1.57E+01	3.58E+02	1.34E+01	1.34E+01	1.16E+03	1.13E+01	1.13E+01	1.67E+02	1.13E+01	1.13E+01
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/kg	7.21E+00	2.22E+00	2.22E+00	7.86E+00	2.42E+00	2.42E+00	2.39E+01	1.54E+00	1.54E+00	3.36E+00	1.54E+00	1.54E+00
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/kg		6.27E+00	6.27E+00		6.84E+00	6.84E+00		4.35E+00	4.35E+00		4.35E+00	4.35E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	78831	Isobutyl Alcohol	mg/kg	1.34E+03		1.34E+03	1.48E+03		1.48E+03	2.75E+02		2.75E+02
N	78591	Isophorone	mg/kg	1.49E+03	2.10E+02	2.10E+02	1.82E+03	9.85E+01	9.85E+01	3.20E+02	9.85E+01	9.85E+01
N	33820530	Isopropalin	mg/kg	1.12E+02		1.12E+02	1.37E+02		1.37E+02	2.40E+01		2.40E+01
N	67630	Isopropanol	mg/kg									
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	82558507	Isoxaben	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	143500	Kepone	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.88E+04		2.88E+04
N	23950585	Kerb	mg/kg	5.60E+02		5.60E+02	6.84E+02		6.84E+02	1.20E+02		1.20E+02
N	77501634	Lactofen	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N		Lead Alkyls	mg/kg									
N	330552	Linuron	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	83055996	Londax	mg/kg	1.49E+03		1.49E+03	1.82E+03		1.82E+03	3.20E+02		3.20E+02
N	94746	MCPA	mg/kg	3.73E+00		3.73E+00	4.56E+00		4.56E+00	7.99E-01		7.99E-01
N	94815	MCPB	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	93652	MCPP	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	121755	Malathion	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	108316	Maleic Anhydride	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	123331	Maleic Hydrazide	mg/kg	1.51E+03		1.51E+03	1.97E+03		1.97E+03	3.66E+02		3.66E+02
N	109773	Malononitrile	mg/kg	2.37E-01		2.37E-01	2.72E-01		2.72E-01	4.54E-02		4.54E-02
N	8018017	Mancozeb	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	12427382	Maneb	mg/kg	3.73E+01	3.33E+00	3.33E+00	4.56E+01	1.56E+00	1.56E+00	7.99E+00	1.56E+00	1.56E+00
N	950107	Mephosfolan	mg/kg	6.72E-01		6.72E-01	8.21E-01		8.21E-01	1.44E-01		1.44E-01
N	24307264	Mepiquat Chloride	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	149304	Mercaptobenzothiazole, 2-	mg/kg	7.47E+02	6.89E+00	6.89E+00	9.12E+02	3.23E+00	3.23E+00	1.60E+02	3.23E+00	3.23E+00
N	150505	Merphos	mg/kg	2.24E-01		2.24E-01	2.74E-01		2.74E-01	4.80E-02		4.80E-02
N	78488	Merphos Oxide	mg/kg	2.24E-01		2.24E-01	2.74E-01		2.74E-01	4.80E-02		4.80E-02
N	57837191	Metalaxyl	mg/kg	4.48E+02		4.48E+02	5.47E+02		5.47E+02	9.59E+01		9.59E+01
N	126987	Methacrylonitrile	mg/kg	3.92E-01		3.92E-01	3.58E-01		3.58E-01	6.85E-02		6.85E-02
N	10265926	Methamidophos	mg/kg	3.73E-01		3.73E-01	4.56E-01		4.56E-01	7.99E-02		7.99E-02
N	67561	Methanol	mg/kg	5.93E+03		5.93E+03	6.79E+03		6.79E+03	1.13E+03		1.13E+03
N	950378	Methidathion	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	16752775	Methomyl	mg/kg	7.33E+01		7.33E+01	9.07E+01		9.07E+01	1.70E+01		1.70E+01
N	99592	Methoxy-5-nitroaniline, 2-	mg/kg		4.35E+00	4.35E+00		2.03E+00	2.03E+00		2.03E+00	2.03E+00
N	72435	Methoxychlor	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	110496	Methoxyethanol Acetate, 2-	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	109864	Methoxyethanol, 2-	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	79209	Methyl Acetate	mg/kg	2.20E+03		2.20E+03	1.80E+03		1.80E+03	3.54E+02		3.54E+02
N	96333	Methyl Acrylate	mg/kg	8.86E+01		8.86E+01	1.11E+02		1.11E+02	2.08E+01		2.08E+01
N	78933	Methyl Ethyl Ketone	mg/kg	1.30E+03		1.30E+03	7.61E+02		7.61E+02	1.53E+02		1.53E+02
N	60344	Methyl Hydrazine	mg/kg		1.82E-01	1.82E-01		8.51E-02	8.51E-02		8.51E-02	8.51E-02
N	108101	Methyl Isobutyl Ketone	mg/kg	9.64E+01		9.64E+01	4.73E+01		4.73E+01	9.66E+00		9.66E+00
N	74931	Methyl Mercaptan	mg/kg	4.26E+00		4.26E+00	5.20E+00		5.20E+00	9.11E-01		9.11E-01
N	80626	Methyl Methacrylate	mg/kg	1.59E+03		1.59E+03	7.70E+02		7.70E+02	1.57E+02		1.57E+02
N	298000	Methyl Parathion	mg/kg	1.87E+00		1.87E+00	2.28E+00		2.28E+00	4.00E-01		4.00E-01
N	993135	Methyl Phosphonic Acid	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	25013154	Methyl Styrene (Mixed Isomers)	mg/kg	2.88E+01		2.88E+01	3.67E+01		3.67E+01	6.64E+00		6.64E+00
N	79221	Methyl chlorocarbonate	mg/kg	7.47E+03		7.47E+03	9.12E+03		9.12E+03	1.60E+03		1.60E+03
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/kg	3.83E+03		3.83E+03	1.56E+03		1.56E+03	3.23E+02		3.23E+02
N	99558	Methyl-5-Nitroaniline, 2-	mg/kg		6.06E+00	6.06E+00		2.84E+00	2.84E+00		2.84E+00	2.84E+00
N	636215	Methylaniline Hydrochloride, 2-	mg/kg		1.11E+00	1.11E+00		5.20E-01	5.20E-01		5.20E-01	5.20E-01
N	108872	Methylcyclohexane	mg/kg	1.01E+03		1.01E+03	4.92E+02		4.92E+02	1.00E+02		1.00E+02
N	75092	Methylene Chloride	mg/kg	2.92E+02	1.13E+01	1.13E+01	2.82E+02	3.92E+00	3.92E+00	5.30E+01	3.92E+00	3.92E+00
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/kg	5.23E+00	1.54E+00	1.54E+00	6.39E+00	7.20E-01	7.20E-01	1.12E+00	7.20E-01	7.20E-01
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/kg		4.35E+00	4.35E+00		2.03E+00	2.03E+00		2.03E+00	2.03E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action v[illegible]he lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	101779	Methylenebisbenzenamine, 4,4'-	mg/kg		1.15E+00	1.15E+00		1.26E+00	1.26E+00		8.00E-01	8.00E-01		8.00E-01	8.00E-01
N	101688	Methylenediphenyl Diisocyanate	mg/kg	2.33E+00		2.33E+00	2.98E+00		2.98E+00	9.19E+00		9.19E+00	1.28E+00		1.28E+00
N	98839	Methylstyrene, Alpha-	mg/kg	1.58E+02		1.58E+02	1.26E+02		1.26E+02	4.53E+02		4.53E+02	6.80E+01		6.80E+01
N	1762283	Methyltriethyl Lead	mg/kg												
N	51218452	Metolachlor	mg/kg	1.55E+03		1.55E+03	1.68E+03		1.68E+03	5.11E+03		5.11E+03	7.20E+02		7.20E+02
N	21087649	Metribuzin	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
N	2385855	Mirex	mg/kg	2.06E+00	1.60E-01	1.60E-01	2.25E+00	1.75E-01	1.75E-01	6.82E+00	1.11E-01	1.11E-01	9.60E-01	1.11E-01	1.11E-01
N	2212671	Molinate	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	10599903	Monochloramine	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	25154421	Monochlorobutanes	mg/kg	4.12E+03		4.12E+03	4.49E+03		4.49E+03	1.36E+04		1.36E+04	1.92E+03		1.92E+03
N	300765	Naled	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
Y	91203	Naphthalene	mg/kg	3.04E+01		3.04E+01	2.36E+01		2.36E+01	8.89E+01		8.89E+01	1.35E+01		1.35E+01
N	90120	Naphthalene, 1-Methyl	mg/kg												
N	91576	Naphthalene, 2-Methyl	mg/kg												
N	15299997	Napropamide	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	2429745	Niagara Blue 4B	mg/kg												
N	13463393	Nickel Carbonyl	mg/kg												
N	1929824	Nitrapyrin	mg/kg	1.55E+01		1.55E+01	1.68E+01		1.68E+01	5.11E+01		5.11E+01	7.20E+00		7.20E+00
N	88744	Nitroaniline, 2-	mg/kg	5.89E-01		5.89E-01	6.42E-01		6.42E-01	1.95E+00		1.95E+00	2.74E-01		2.74E-01
N	98953	Nitrobenzene	mg/kg	3.52E+00		3.52E+00	3.33E+00		3.33E+00	1.06E+01		1.06E+01	1.53E+00		1.53E+00
N	67209	Nitrofurantoin	mg/kg	7.21E+02		7.21E+02	7.86E+02		7.86E+02	2.39E+03		2.39E+03	3.36E+02		3.36E+02
N	59870	Nitrofurazone	mg/kg		1.92E-01	1.92E-01		2.10E-01	2.10E-01		1.33E-01	1.33E-01		1.33E-01	1.33E-01
N	55630	Nitroglycerin	mg/kg	1.44E+02		1.44E+02	1.57E+02		1.57E+02	4.77E+02		4.77E+02	6.72E+01		6.72E+01
N	556887	Nitroguanidine	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	100027	Nitrophenol, 4-	mg/kg	1.21E+02		1.21E+02	1.70E+02		1.70E+02	5.30E+02		5.30E+02	7.29E+01		7.29E+01
N	79469	Nitropropane, 2-	mg/kg	2.60E+01	1.35E-02	1.35E-02	2.24E+01	1.17E-02	1.17E-02	7.49E+01	9.18E-03	9.18E-03	1.10E+01	9.18E-03	9.18E-03
N	759739	Nitroso-N-ethylurea, N-	mg/kg		2.06E-03	2.06E-03		2.25E-03	2.25E-03		1.43E-03	1.43E-03		1.43E-03	1.43E-03
N	684935	Nitroso-N-methylurea, N-	mg/kg												
N	924163	Nitroso-di-N-butylamine, N-	mg/kg		2.72E-02	2.72E-02		2.41E-02	2.41E-02		1.51E-02	1.51E-02		1.51E-02	1.51E-02
N	621647	Nitroso-di-N-propylamine, N-	mg/kg		2.51E-02	2.51E-02		2.31E-02	2.31E-02		1.45E-02	1.45E-02		1.45E-02	1.45E-02
N	1116547	Nitrosodiethanolamine, N-	mg/kg		1.03E-01	1.03E-01		1.12E-01	1.12E-01		7.14E-02	7.14E-02		7.14E-02	7.14E-02
N	55185	Nitrosodiethylamine, N-	mg/kg		1.92E-03	1.92E-03		2.10E-03	2.10E-03		1.33E-03	1.33E-03		1.33E-03	1.33E-03
N	62759	Nitrosodimethylamine, N-	mg/kg		5.66E-03	5.66E-03		6.17E-03	6.17E-03		3.92E-03	3.92E-03		3.92E-03	3.92E-03
N	86306	Nitrosodiphenylamine, N-	mg/kg		3.59E+01	3.59E+01		3.30E+01	3.30E+01		2.07E+01	2.07E+01		2.07E+01	2.07E+01
N	10595956	Nitrosomethylethylamine, N-	mg/kg		1.31E-02	1.31E-02		1.43E-02	1.43E-02		9.09E-03	9.09E-03		9.09E-03	9.09E-03
N	4549400	Nitrosomethylvinylamine, N-	mg/kg												
N	930552	Nitrosopyrrolidine, N-	mg/kg		1.37E-01	1.37E-01		1.50E-01	1.50E-01		9.52E-02	9.52E-02		9.52E-02	9.52E-02
N	119324	Nitrotoluene, 4-Amino-2-	mg/kg												
N	99081	Nitrotoluene, m-	mg/kg	6.01E+01		6.01E+01	5.47E+01		5.47E+01	1.74E+02		1.74E+02	2.51E+01		2.51E+01
N	88722	Nitrotoluene, o-	mg/kg	5.87E+01		5.87E+01	5.32E+01		5.32E+01	1.70E+02		1.70E+02	2.46E+01		2.46E+01
N	99990	Nitrotoluene, p-	mg/kg	4.67E+01		4.67E+01	4.04E+01		4.04E+01	1.35E+02		1.35E+02	1.97E+01		1.97E+01
N	27314132	Norflurazon	mg/kg	4.12E+02		4.12E+02	4.49E+02		4.49E+02	1.36E+03		1.36E+03	1.92E+02		1.92E+02
N	85509199	Nustar	mg/kg	7.21E+00		7.21E+00	7.86E+00		7.86E+00	2.39E+01		2.39E+01	3.36E+00		3.36E+00
Y	3268879	OCDD	mg/kg		3.49E-03	3.49E-03		6.19E-03	6.19E-03		4.15E-03	4.15E-03		4.15E-03	4.15E-03
Y	39001020	OCDF	mg/kg		3.49E-03	3.49E-03		6.19E-03	6.19E-03		4.15E-03	4.15E-03		4.15E-03	4.15E-03
N	32536520	Octabromodiphenyl Ether	mg/kg	3.09E+01		3.09E+01	3.37E+01		3.37E+01	1.02E+02		1.02E+02	1.44E+01		1.44E+01
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/kg	2.06E+02		2.06E+02	1.75E+02		1.75E+02	5.22E+02		5.22E+02	7.48E+01		7.48E+01
N	152169	Octamethylpyrophosphoramide	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	117840	Octyl Phthalate, di-N-	mg/kg	2.88E+02		2.88E+02	3.87E+02		3.87E+02	1.20E+03		1.20E+03	1.66E+02		1.66E+02
N	19044883	Oryzalin	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	19666309	Oxadiazon	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	23135220	Oxamyl	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
N	76738620	Paclobutrazol	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	1910425	Paraquat	mg/kg	4.64E+01		4.64E+01	5.05E+01		5.05E+01	1.53E+02		1.53E+02	2.16E+01		2.16E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	101779	Methylenebisbenzenamine, 4,4'-	mg/kg		8.00E-01	8.00E-01		3.74E-01	3.74E-01		3.74E-01	3.74E-01
N	101688	Methylenediphenyl Diisocyanate	mg/kg	2.03E+00		2.03E+00	2.33E+00		2.33E+00	3.89E-01		3.89E-01
N	98839	Methylstyrene, Alpha-	mg/kg	1.56E+02		1.56E+02	9.32E+01		9.32E+01	1.87E+01		1.87E+01
N	1762283	Methyltriethyl Lead	mg/kg									
N	51218452	Metolachlor	mg/kg	1.12E+03		1.12E+03	1.37E+03		1.37E+03	2.40E+02		2.40E+02
N	21087649	Metribuzin	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
N	2385855	Mirex	mg/kg	1.49E+00	1.11E-01	1.11E-01	1.82E+00	5.20E-02	5.20E-02	3.20E-01	5.20E-02	5.20E-02
N	2212671	Molinate	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	10599903	Monochloramine	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	25154421	Monochlorobutanes	mg/kg	2.99E+03		2.99E+03	3.65E+03		3.65E+03	6.39E+02		6.39E+02
N	300765	Naled	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
Y	91203	Naphthalene	mg/kg	3.64E+01		3.64E+01	1.70E+01		1.70E+01	3.47E+00		3.47E+00
N	90120	Naphthalene, 1-Methyl	mg/kg									
N	91576	Naphthalene, 2-Methyl	mg/kg									
N	15299997	Napropamide	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	2429745	Niagara Blue 4B	mg/kg									
N	13463393	Nickel Carbonyl	mg/kg									
N	1929824	Nitrapyrin	mg/kg	1.12E+01		1.12E+01	1.37E+01		1.37E+01	2.40E+00		2.40E+00
N	88744	Nitroaniline, 2-	mg/kg	4.27E-01		4.27E-01	5.21E-01		5.21E-01	9.13E-02		9.13E-02
N	98953	Nitrobenzene	mg/kg	2.59E+00		2.59E+00	2.65E+00		2.65E+00	4.92E-01		4.92E-01
N	67209	Nitrofurantoin	mg/kg	5.23E+02		5.23E+02	6.39E+02		6.39E+02	1.12E+02		1.12E+02
N	59870	Nitrofurazone	mg/kg		1.33E-01	1.33E-01		6.24E-02	6.24E-02		6.24E-02	6.24E-02
N	55630	Nitroglycerin	mg/kg	1.05E+02		1.05E+02	1.28E+02		1.28E+02	2.24E+01		2.24E+01
N	556887	Nitroguanidine	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	100027	Nitrophenol, 4-	mg/kg	1.18E+02		1.18E+02	1.30E+02		1.30E+02	2.11E+01		2.11E+01
N	79469	Nitropropane, 2-	mg/kg	2.07E+01	9.18E-03	9.18E-03	1.73E+01	3.47E-03	3.47E-03	3.35E+00	3.47E-03	3.47E-03
N	759739	Nitroso-N-ethylurea, N-	mg/kg		1.43E-03	1.43E-03		6.68E-04	6.68E-04		6.68E-04	6.68E-04
N	684935	Nitroso-N-methylurea, N-	mg/kg									
N	924163	Nitroso-di-N-butylamine, N-	mg/kg		1.51E-02	1.51E-02		7.71E-03	7.71E-03		7.71E-03	7.71E-03
N	621647	Nitroso-di-N-propylamine, N-	mg/kg		1.45E-02	1.45E-02		7.30E-03	7.30E-03		7.30E-03	7.30E-03
N	1116547	Nitrosodiethanolamine, N-	mg/kg		7.14E-02	7.14E-02		3.34E-02	3.34E-02		3.34E-02	3.34E-02
N	55185	Nitrosodiethylamine, N-	mg/kg		1.33E-03	1.33E-03		6.24E-04	6.24E-04		6.24E-04	6.24E-04
N	62759	Nitrosodimethylamine, N-	mg/kg		3.92E-03	3.92E-03		1.84E-03	1.84E-03		1.84E-03	1.84E-03
N	86306	Nitrosodiphenylamine, N-	mg/kg		2.07E+01	2.07E+01		1.04E+01	1.04E+01		1.04E+01	1.04E+01
N	10595956	Nitrosomethylethylamine, N-	mg/kg		9.09E-03	9.09E-03		4.25E-03	4.25E-03		4.25E-03	4.25E-03
N	4549400	Nitrosomethylvinylamine, N-	mg/kg									
N	930552	Nitrosopyrrolidine, N-	mg/kg		9.52E-02	9.52E-02		4.46E-02	4.46E-02		4.46E-02	4.46E-02
N	119324	Nitrotoluene, 4-Amino-2-	mg/kg									
N	99081	Nitrotoluene, m-	mg/kg	4.26E+01		4.26E+01	4.37E+01		4.37E+01	8.21E+00		8.21E+00
N	88722	Nitrotoluene, o-	mg/kg	4.21E+01		4.21E+01	4.24E+01		4.24E+01	7.99E+00		7.99E+00
N	99990	Nitrotoluene, p-	mg/kg	3.68E+01		3.68E+01	3.13E+01		3.13E+01	6.04E+00		6.04E+00
N	27314132	Norflurazon	mg/kg	2.99E+02		2.99E+02	3.65E+02		3.65E+02	6.39E+01		6.39E+01
N	85509199	Nustar	mg/kg	5.23E+00		5.23E+00	6.39E+00		6.39E+00	1.12E+00		1.12E+00
Y	3268879	OCDD	mg/kg		4.15E-03	4.15E-03		1.49E-03	1.49E-03		1.49E-03	1.49E-03
Y	39001020	OCDF	mg/kg		4.15E-03	4.15E-03		1.49E-03	1.49E-03		1.49E-03	1.49E-03
N	32536520	Octabromodiphenyl Ether	mg/kg	2.24E+01		2.24E+01	2.74E+01		2.74E+01	4.80E+00		4.80E+00
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/kg	1.13E+02		1.13E+02	1.50E+02		1.50E+02	2.81E+01		2.81E+01
N	152169	Octamethylpyrophosphoramide	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	117840	Octyl Phthalate, di-N-	mg/kg	2.66E+02		2.66E+02	2.99E+02		2.99E+02	4.92E+01		4.92E+01
N	19044883	Oryzalin	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	19666309	Oxadiazon	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	23135220	Oxamyl	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
N	76738620	Paclobutrazol	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	1910425	Paraquat	mg/kg	3.36E+01		3.36E+01	4.11E+01		4.11E+01	7.19E+00		7.19E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	56382	Parathion	mg/kg	6.18E+01		6.18E+01	6.74E+01		6.74E+01	2.04E+02		2.04E+02	2.88E+01		2.88E+01
Y	36088229	PeCDD, 2,3,7,8-	mg/kg		6.99E-06	6.99E-06		1.24E-05	1.24E-05		8.29E-06	8.29E-06		8.29E-06	8.29E-06
Y	57117416	PeCDF, 1,2,3,7,8-	mg/kg		6.99E-06	6.99E-06		1.24E-05	1.24E-05		8.29E-06	8.29E-06		8.29E-06	8.29E-06
Y	57117314	PeCDF, 2,3,4,7,8-	mg/kg		6.99E-05	6.99E-05		1.24E-04	1.24E-04		8.29E-05	8.29E-05		8.29E-05	8.29E-05
N	1114712	Pebulate	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	40487421	Pendimethalin	mg/kg	4.12E+02		4.12E+02	4.49E+02		4.49E+02	1.36E+03		1.36E+03	1.92E+02		1.92E+02
N	32534819	Pentabromodiphenyl Ether	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	608935	*Pentachlorobenzene*	*mg/kg*	1.09E+01		1.09E+01	1.39E+01		1.39E+01	4.29E+01		4.29E+01	5.95E+00		5.95E+00
N	25329355	Pentachlorocyclopentadiene	mg/kg												
N	82688	Pentachloronitrobenzene	mg/kg	4.07E+01	1.46E+00	1.46E+00	5.22E+01	1.87E+00	1.87E+00	1.61E+02	1.21E+00	1.21E+00	2.23E+01	1.21E+00	1.21E+00
N	87865	Pentachlorophenol	mg/kg	2.66E+02	2.07E+00	2.07E+00	2.73E+02	2.12E+00	2.12E+00	8.23E+02	1.34E+00	1.34E+00	1.16E+02	1.34E+00	1.34E+00
N	71410	Pentyl Alcohol, N-	mg/kg												
N	7601903	Perchlorate	mg/kg	7.59E+00		7.59E+00	1.06E+01		1.06E+01	3.31E+01		3.31E+01	4.56E+00		4.56E+00
N	52645531	Permethrin	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
Y	85018	Phenanthrene	mg/kg												
N	13684634	Phenmedipham	mg/kg	2.58E+03		2.58E+03	2.81E+03		2.81E+03	8.52E+03		8.52E+03	1.20E+03		1.20E+03
N	108952	Phenol	mg/kg	8.65E+03		8.65E+03	1.16E+04		1.16E+04	3.60E+04		3.60E+04	4.97E+03		4.97E+03
N	92842	Phenothiazine	mg/kg	2.06E+01		2.06E+01	2.25E+01		2.25E+01	6.82E+01		6.82E+01	9.60E+00		9.60E+00
N	108452	Phenylenediamine, m-	mg/kg	6.18E+01		6.18E+01	6.74E+01		6.74E+01	2.04E+02		2.04E+02	2.88E+01		2.88E+01
N	95545	Phenylenediamine, o-	mg/kg		6.14E+00	6.14E+00		6.69E+00	6.69E+00		4.25E+00	4.25E+00		4.25E+00	4.25E+00
N	106503	Phenylenediamine, p-	mg/kg	1.96E+03		1.96E+03	2.13E+03		2.13E+03	6.48E+03		6.48E+03	9.12E+02		9.12E+02
N	62384	Phenylmercuric Acetate	mg/kg	8.25E-01		8.25E-01	8.98E-01		8.98E-01	2.73E+00		2.73E+00	3.84E-01		3.84E-01
N	90437	Phenylphenol, 2-	mg/kg		1.49E+02	1.49E+02		1.62E+02	1.62E+02		1.03E+02	1.03E+02		1.03E+02	1.03E+02
N	298022	Phorate	mg/kg	2.06E+00		2.06E+00	2.25E+00		2.25E+00	6.82E+00		6.82E+00	9.60E-01		9.60E-01
N	732116	Phosmet	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	100210	Phthalic Acid, P-	mg/kg	1.03E+04		1.03E+04	1.12E+04		1.12E+04	3.41E+04		3.41E+04	4.80E+03		4.80E+03
N	85449	Phthalic Anhydride	mg/kg	2.06E+04		2.06E+04	2.25E+04		2.25E+04	6.82E+04		6.82E+04	9.60E+03		9.60E+03
N	1918021	Picloram	mg/kg	7.21E+02		7.21E+02	7.86E+02		7.86E+02	2.39E+03		2.39E+03	3.36E+02		3.36E+02
N	29232937	Pirimiphos, Methyl	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	59536651	Polybrominated Biphenyls	mg/kg	1.03E-01	4.61E-02	4.61E-02	1.40E-01	6.28E-02	6.28E-02	4.33E-01	4.07E-02	4.07E-02	5.98E-02	4.07E-02	4.07E-02
Y	1336363	Polychlorinated Biphenyls *(Total) (high risk)*	*mg/kg*		1.68E-01	1.68E-01		1.99E-01	1.99E-01		1.27E-01	1.27E-01		1.27E-01	1.27E-01
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		4.81E+00	4.81E+00		5.69E+00	5.69E+00		3.64E+00	3.64E+00		3.64E+00	3.64E+00
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/kg	2.33E+00		2.33E+00	2.98E+00		2.98E+00	9.19E+00		9.19E+00	1.28E+00		1.28E+00
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		2.32E-02	2.32E-02		2.12E-02	2.12E-02		1.33E-02	1.33E-02		1.33E-02	1.33E-02
N	67747095	Prochloraz	mg/kg	9.28E+01	1.92E+00	1.92E+00	1.01E+02	2.10E+00	2.10E+00	3.07E+02	1.33E+00	1.33E+00	4.32E+01	1.33E+00	1.33E+00
N	26399360	Profluralin	mg/kg	6.18E+01		6.18E+01	6.74E+01		6.74E+01	2.04E+02		2.04E+02	2.88E+01		2.88E+01
N	1610180	Prometon	mg/kg	1.55E+02		1.55E+02	1.68E+02		1.68E+02	5.11E+02		5.11E+02	7.20E+01		7.20E+01
N	7287196	Prometryn	mg/kg	4.12E+01		4.12E+01	4.49E+01		4.49E+01	1.36E+02		1.36E+02	1.92E+01		1.92E+01
N	1918167	Propachlor	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	709988	*Propanil*	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	2312358	Propargite	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	107197	Propargyl Alcohol	mg/kg	2.71E+01		2.71E+01	3.48E+01		3.48E+01	1.07E+02		1.07E+02	1.49E+01		1.49E+01
N	139402	Propazine	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	122429	Propham	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	60207901	Propiconazole	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	103651	Propylbenzene, n-	mg/kg	7.57E+01		7.57E+01	7.33E+01		7.33E+01	2.20E+02		2.20E+02	3.13E+01		3.13E+01
N	57556	Propylene Glycol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	9.60E+04		9.60E+04
N	1569024	Propylene Glycol Monoethyl Ether	mg/kg	7.21E+03		7.21E+03	7.86E+03		7.86E+03	2.39E+04		2.39E+04	3.36E+03		3.36E+03
N	107982	Propylene Glycol Monomethyl Ether	mg/kg	7.21E+03		7.21E+03	7.86E+03		7.86E+03	2.39E+04		2.39E+04	3.36E+03		3.36E+03
N	75569	Propylene Oxide	mg/kg	2.44E+01	8.11E-01	8.11E-01	1.98E+01	7.66E-01	7.66E-01	6.99E+01	5.05E-01	5.05E-01	1.04E+01	5.05E-01	5.05E-01
N	81335775	Pursuit	mg/kg	2.58E+03		2.58E+03	2.81E+03		2.81E+03	8.52E+03		8.52E+03	1.20E+03		1.20E+03
N	51630581	Pydrin	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
Y	129000	Pyrene	mg/kg	1.81E+02		1.81E+02	1.65E+02		1.65E+02	4.95E+02		4.95E+02	7.06E+01		7.06E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	56382	Parathion	mg/kg	4.48E+01		4.48E+01	5.47E+01		5.47E+01	9.59E+00		9.59E+00
Y	36088229	PeCDD, 2,3,7,8-	mg/kg		8.29E-06	8.29E-06		2.99E-06	2.99E-06		2.99E-06	2.99E-06
Y	57117416	PeCDF, 1,2,3,7,8-	mg/kg		8.29E-06	8.29E-06		2.99E-06	2.99E-06		2.99E-06	2.99E-06
Y	57117314	PeCDF, 2,3,4,7,8-	mg/kg		8.29E-05	8.29E-05		2.99E-05	2.99E-05		2.99E-05	2.99E-05
N	1114712	Pebulate	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	40487421	Pendimethalin	mg/kg	2.99E+02		2.99E+02	3.65E+02		3.65E+02	6.39E+01		6.39E+01
N	32534819	Pentabromodiphenyl Ether	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	608935	Pentachlorobenzene	mg/kg	9.48E+00		9.48E+00	1.09E+01		1.09E+01	1.82E+00		1.82E+00
N	25329355	Pentachlorocyclopentadiene	mg/kg									
N	82688	Pentachloronitrobenzene	mg/kg	3.56E+01	1.21E+00	1.21E+00	4.07E+01	5.23E-01	5.23E-01	6.81E+00	5.23E-01	5.23E-01
N	87865	Pentachlorophenol	mg/kg	1.80E+02	1.34E+00	1.34E+00	2.25E+02	6.46E-01	6.46E-01	4.01E+01	6.46E-01	6.46E-01
N	71410	Pentyl Alcohol, N-	mg/kg									
N	7601903	Perchlorate	mg/kg	7.37E+00		7.37E+00	8.11E+00		8.11E+00	1.32E+00		1.32E+00
N	52645531	Permethrin	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
Y	85018	Phenanthrene	mg/kg									
N	13684634	Phenmedipham	mg/kg	1.87E+03		1.87E+03	2.28E+03		2.28E+03	4.00E+02		4.00E+02
N	108952	Phenol	mg/kg	7.98E+03		7.98E+03	8.96E+03		8.96E+03	1.48E+03		1.48E+03
N	92842	Phenothiazine	mg/kg	1.49E+01		1.49E+01	1.82E+01		1.82E+01	3.20E+00		3.20E+00
N	108452	Phenylenediamine, m-	mg/kg	4.48E+01		4.48E+01	5.47E+01		5.47E+01	9.59E+00		9.59E+00
N	95545	Phenylenediamine, o-	mg/kg		4.25E+00	4.25E+00		1.99E+00	1.99E+00		1.99E+00	1.99E+00
N	106503	Phenylenediamine, p-	mg/kg	1.42E+03		1.42E+03	1.73E+03		1.73E+03	3.04E+02		3.04E+02
N	62384	Phenylmercuric Acetate	mg/kg	5.98E-01		5.98E-01	7.30E-01		7.30E-01	1.28E-01		1.28E-01
N	90437	Phenylphenol, 2-	mg/kg		1.03E+02	1.03E+02		4.82E+01	4.82E+01		4.82E+01	4.82E+01
N	298022	Phorate	mg/kg	1.49E+00		1.49E+00	1.82E+00		1.82E+00	3.20E-01		3.20E-01
N	732116	Phosmet	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	100210	Phthalic Acid, P-	mg/kg	7.47E+03		7.47E+03	9.12E+03		9.12E+03	1.60E+03		1.60E+03
N	85449	Phthalic Anhydride	mg/kg	1.49E+04		1.49E+04	1.82E+04		1.82E+04	3.20E+03		3.20E+03
N	1918021	Picloram	mg/kg	5.23E+02		5.23E+02	6.39E+02		6.39E+02	1.12E+02		1.12E+02
N	29232937	Pirimiphos, Methyl	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	59536651	Polybrominated Biphenyls	mg/kg	9.61E-02	4.07E-02	4.07E-02	1.07E-01	1.71E-02	1.71E-02	1.76E-02	1.71E-02	1.71E-02
Y	1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/kg		1.27E-01	1.27E-01		5.74E-02	5.74E-02		5.74E-02	5.74E-02
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/kg		3.64E+00	3.64E+00		1.64E+00	1.64E+00		1.64E+00	1.64E+00
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/kg	2.03E+00		2.03E+00	2.33E+00		2.33E+00	3.89E-01		3.89E-01
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/kg		1.33E-02	1.33E-02		6.70E-03	6.70E-03		6.70E-03	6.70E-03
N	67747095	Prochloraz	mg/kg	6.72E+01	1.33E+00	1.33E+00	8.21E+01	6.24E-01	6.24E-01	1.44E+01	6.24E-01	6.24E-01
N	26399360	Profluralin	mg/kg	4.48E+01		4.48E+01	5.47E+01		5.47E+01	9.59E+00		9.59E+00
N	1610180	Prometon	mg/kg	1.12E+02		1.12E+02	1.37E+02		1.37E+02	2.40E+01		2.40E+01
N	7287196	Prometryn	mg/kg	2.99E+01		2.99E+01	3.65E+01		3.65E+01	6.39E+00		6.39E+00
N	1918167	Propachlor	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	709988	Propanil	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	2312358	Propargite	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	107197	Propargyl Alcohol	mg/kg	2.37E+01		2.37E+01	2.72E+01		2.72E+01	4.54E+00		4.54E+00
N	139402	Propazine	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	122429	Propham	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	60207901	Propiconazole	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	103651	Propylbenzene, n-	mg/kg	4.80E+01		4.80E+01	6.12E+01		6.12E+01	1.11E+01		1.11E+01
N	57556	Propylene Glycol	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	3.20E+04		3.20E+04
N	1569024	Propylene Glycol Monoethyl Ether	mg/kg	5.23E+03		5.23E+03	6.39E+03		6.39E+03	1.12E+03		1.12E+03
N	107982	Propylene Glycol Monomethyl Ether	mg/kg	5.23E+03		5.23E+03	6.39E+03		6.39E+03	1.12E+03		1.12E+03
N	75569	Propylene Oxide	mg/kg	2.27E+01	5.05E-01	5.05E-01	1.48E+01	2.35E-01	2.35E-01	2.95E+00	2.35E-01	2.35E-01
N	81335775	Pursuit	mg/kg	1.87E+03		1.87E+03	2.28E+03		2.28E+03	4.00E+02		4.00E+02
N	51630581	Pydrin	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
Y	129000	Pyrene	mg/kg	1.08E+02		1.08E+02	1.40E+02		1.40E+02	2.57E+01		2.57E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action = the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	110861	Pyridine	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	13593038	Quinalphos	mg/kg	5.15E+00		5.15E+00	5.62E+00		5.62E+00	1.70E+01		1.70E+01	2.40E+00		2.40E+00
N	91225	Quinoline	mg/kg		2.40E-02	2.40E-02		2.62E-02	2.62E-02		1.67E-02	1.67E-02		1.67E-02	1.67E-02
N		Refractory Ceramic Fibers	mg/kg												
N	10453868	Resmethrin	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	299843	Ronnel	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
N	83794	Rotenone	mg/kg	4.12E+01		4.12E+01	4.49E+01		4.49E+01	1.36E+02		1.36E+02	1.92E+01		1.92E+01
N	78587050	Savey	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
N	7783008	Selenious Acid	mg/kg	7.09E+01		7.09E+01	9.39E+01		9.39E+01	2.90E+02		2.90E+02	4.02E+01		4.02E+01
N	14124675	Selenite	mg/kg												
N	630104	Selenourea	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	74051802	Sethoxydim	mg/kg	9.28E+02		9.28E+02	1.01E+03		1.01E+03	3.07E+03		3.07E+03	4.32E+02		4.32E+02
N	122349	Simazine	mg/kg	5.15E+01	2.40E+00	2.40E+00	5.62E+01	2.62E+00	2.62E+00	1.70E+02	1.67E+00	1.67E+00	2.40E+01	1.67E+00	1.67E+00
N	62476599	Sodium Acifluorfen	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	148185	Sodium Diethyldithiocarbamate	mg/kg	3.09E+02	1.07E+00	1.07E+00	3.37E+02	1.16E+00	1.16E+00	1.02E+03	7.40E-01	7.40E-01	1.44E+02	7.40E-01	7.40E-01
N	62748	Sodium Fluoroacetate	mg/kg	2.06E-01		2.06E-01	2.25E-01		2.25E-01	6.82E-01		6.82E-01	9.60E-02		9.60E-02
N	961115	Stirofos (Tetrachlorovinphos)	mg/kg	3.09E+02	1.20E+01	1.20E+01	3.37E+02	1.31E+01	1.31E+01	1.02E+03	8.33E+00	8.33E+00	1.44E+02	8.33E+00	8.33E+00
N	57249	Strychnine	mg/kg	3.09E+00		3.09E+00	3.37E+00		3.37E+00	1.02E+01		1.02E+01	1.44E+00		1.44E+00
N	100425	Styrene	mg/kg	9.82E+02		9.82E+02	8.58E+02		8.58E+02	2.84E+03		2.84E+03	4.14E+02		4.14E+02
N	88671890	Systhane	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
Y	1746016	TCDD, 2,3,7,8-	mg/kg		3.49E-06	3.49E-06		6.19E-06	6.19E-06		4.15E-06	4.15E-06		4.15E-06	4.15E-06
Y	51207319	TCDF, 2,3,7,8-	mg/kg		3.49E-05	3.49E-05		6.19E-05	6.19E-05		4.15E-05	4.15E-05		4.15E-05	4.15E-05
N	21564170	TCMTB	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	34014181	Tebuthiuron	mg/kg	7.21E+02		7.21E+02	7.86E+02		7.86E+02	2.39E+03		2.39E+03	3.36E+02		3.36E+02
N	3383968	Temephos	mg/kg	2.06E+02		2.06E+02	2.25E+02		2.25E+02	6.82E+02		6.82E+02	9.60E+01		9.60E+01
N	5902512	Terbacil	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	13071799	Terbufos	mg/kg	2.58E-01		2.58E-01	2.81E-01		2.81E-01	8.52E-01		8.52E-01	1.20E-01		1.20E-01
N	886500	Terbutryn	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	1920907	Tetrabutyl Lead	mg/kg												
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/kg	4.07E+00		4.07E+00	5.22E+00		5.22E+00	1.61E+01		1.61E+01	2.23E+00		2.23E+00
N	630206	Tetrachloroethane, 1,1,1,2-	mg/kg	1.51E+02	5.44E+00	5.44E+00	1.33E+02	4.77E+00	4.77E+00	4.37E+02	3.62E+00	3.62E+00	6.38E+01	3.62E+00	3.62E+00
N	79345	Tetrachloroethane, 1,1,2,2-	mg/kg	2.47E+02	5.73E-01	5.73E-01	2.10E+02	4.86E-01	4.86E-01	6.99E+02	3.81E-01	3.81E-01	1.03E+02	3.81E-01	3.81E-01
Y	127184	Tetrachloroethylene	mg/kg	6.95E+01	4.04E+00	4.04E+00	6.56E+01	3.90E+00	3.90E+00	2.11E+02	2.70E+00	2.70E+00	3.04E+01	2.70E+00	2.70E+00
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/kg	3.09E+02		3.09E+02	3.37E+02		3.37E+02	1.02E+03		1.02E+03	1.44E+02		1.44E+02
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/kg		1.90E-02	1.90E-02		2.44E-02	2.44E-02		1.57E-02	1.57E-02		1.57E-02	1.57E-02
N	3689245	Tetraethyl Dithiopyrophosphate	mg/kg	5.15E+00		5.15E+00	5.62E+00		5.62E+00	1.70E+01		1.70E+01	2.40E+00		2.40E+00
N	78002	Tetraethyl Lead	mg/kg	1.03E-03		1.03E-03	1.12E-03		1.12E-03	3.41E-03		3.41E-03	4.80E-04		4.80E-04
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	1.00E+05		1.00E+05	7.16E+04		7.16E+04
N	109999	Tetrahydrofuran	mg/kg	2.16E+03	3.80E+01	3.80E+01	2.36E+03	4.14E+01	4.14E+01	7.16E+03	2.63E+01	2.63E+01	1.01E+03	2.63E+01	2.63E+01
N	75741	Tetramethyl Lead	mg/kg												
N	3440753	Tetrapropyl Lead	mg/kg												
N	1314325	Thallic Oxide	mg/kg	1.06E+00		1.06E+00	1.49E+00		1.49E+00	4.64E+00		4.64E+00	6.38E-01		6.38E-01
N	563688	Thallium Acetate	mg/kg	1.37E+00		1.37E+00	1.92E+00		1.92E+00	5.96E+00		5.96E+00	8.20E-01		8.20E-01
N	6533739	Thallium Carbonate	mg/kg	1.21E+00		1.21E+00	1.70E+00		1.70E+00	5.30E+00		5.30E+00	7.29E-01		7.29E-01
N	28249776	Thiobencarb	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	39196184	Thiofanox	mg/kg	3.09E+00		3.09E+00	3.37E+00		3.37E+00	1.02E+01		1.02E+01	1.44E+00		1.44E+00
N	23564058	Thiophanate, Methyl	mg/kg	8.25E+02		8.25E+02	8.98E+02		8.98E+02	2.73E+03		2.73E+03	3.84E+02		3.84E+02
N	137268	Thiram	mg/kg	5.15E+01		5.15E+01	5.62E+01		5.62E+01	1.70E+02		1.70E+02	2.40E+01		2.40E+01
N	108883	Toluene	mg/kg	2.72E+02		2.72E+02	2.11E+02		2.11E+02	7.79E+02		7.79E+02	1.18E+02		1.18E+02
N	26471625	Toluene diisocyanate mixture (TDI)	mg/kg	2.06E-01		2.06E-01	2.25E-01		2.25E-01	6.82E-01		6.82E-01	9.60E-02		9.60E-02
N	95807	Toluene-2,4-diamine	mg/kg		9.02E-02	9.02E-02		9.83E-02	9.83E-02		6.25E-02	6.25E-02		6.25E-02	6.25E-02
N	95705	Toluene-2,5-diamine	mg/kg	6.18E+03		6.18E+03	6.74E+03		6.74E+03	2.04E+04		2.04E+04	2.88E+03		2.88E+03
N	823405	Toluene-2,6-diamine	mg/kg	2.06E+03		2.06E+03	2.25E+03		2.25E+03	6.82E+03		6.82E+03	9.60E+02		9.60E+02
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/kg		1.20E+00	1.20E+00		1.31E+00	1.31E+00		8.33E-01	8.33E-01		8.33E-01	8.33E-01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	110861	*Pyridine*	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	13593038	Quinalphos	mg/kg	3.73E+00		3.73E+00	4.56E+00		4.56E+00	7.99E-01		7.99E-01
N	91225	Quinoline	mg/kg		1.67E-02	1.67E-02		7.80E-03	7.80E-03		7.80E-03	7.80E-03
N		*Refractory Ceramic Fibers*	mg/kg									
N	10453868	Resmethrin	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	299843	Ronnel	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
N	83794	*Rotenone*	mg/kg	2.99E+01		2.99E+01	3.65E+01		3.65E+01	6.39E+00		6.39E+00
N	78587050	Savey	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
N	7783008	Selenious Acid	mg/kg	6.43E+01		6.43E+01	7.27E+01		7.27E+01	1.20E+01		1.20E+01
N	14124675	Selenite	mg/kg									
N	630104	Selenourea	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	74051802	Sethoxydim	mg/kg	6.72E+02		6.72E+02	8.21E+02		8.21E+02	1.44E+02		1.44E+02
N	122349	Simazine	mg/kg	3.73E+01	1.67E+00	1.67E+00	4.56E+01	7.80E-01	7.80E-01	7.99E+00	7.80E-01	7.80E-01
N	62476599	Sodium Acifluorfen	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	148185	Sodium Diethyldithiocarbamate	mg/kg	2.24E+02	7.40E-01	7.40E-01	2.74E+02	3.47E-01	3.47E-01	4.80E+01	3.47E-01	3.47E-01
N	62748	Sodium Fluoroacetate	mg/kg	1.49E-01		1.49E-01	1.82E-01		1.82E-01	3.20E-02		3.20E-02
N	961115	Stirofos (Tetrachlorovinphos)	mg/kg	2.24E+02	8.33E+00	8.33E+00	2.74E+02	3.90E+00	3.90E+00	4.80E+01	3.90E+00	3.90E+00
N	57249	Strychnine	mg/kg	2.24E+00		2.24E+00	2.74E+00		2.74E+00	4.80E-01		4.80E-01
N	100425	Styrene	mg/kg	7.60E+02		7.60E+02	6.69E+02		6.69E+02	1.28E+02		1.28E+02
N	88671890	Systhane	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
Y	1746016	TCDD, 2,3,7,8-	mg/kg		4.15E-06	4.15E-06		1.49E-06	1.49E-06		1.49E-06	1.49E-06
Y	51207319	TCDF, 2,3,7,8-	mg/kg		4.15E-05	4.15E-05		1.49E-05	1.49E-05		1.49E-05	1.49E-05
N	21564170	TCMTB	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	34014181	Tebuthiuron	mg/kg	5.23E+02		5.23E+02	6.39E+02		6.39E+02	1.12E+02		1.12E+02
N	3383968	Temephos	mg/kg	1.49E+02		1.49E+02	1.82E+02		1.82E+02	3.20E+01		3.20E+01
N	5902512	Terbacil	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	13071799	Terbufos	mg/kg	1.87E-01		1.87E-01	2.28E-01		2.28E-01	4.00E-02		4.00E-02
N	886500	Terbutryn	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	1920907	Tetrabutyl Lead	mg/kg									
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/kg	3.56E+00		3.56E+00	4.07E+00		4.07E+00	6.81E-01		6.81E-01
N	630206	Tetrachloroethane, 1,1,1,2-	mg/kg	1.16E+02	3.62E+00	3.62E+00	1.04E+02	1.43E+00	1.43E+00	1.99E+01	1.43E+00	1.43E+00
N	79345	Tetrachloroethane, 1,1,2,2-	mg/kg	1.92E+02	3.81E-01	3.81E-01	1.63E+02	1.45E-01	1.45E-01	3.16E+01	1.45E-01	1.45E-01
Y	127184	Tetrachloroethylene	mg/kg	5.24E+01	2.70E+00	2.70E+00	5.19E+01	1.17E+00	1.17E+00	9.66E+00	1.17E+00	1.17E+00
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/kg	2.24E+02		2.24E+02	2.74E+02		2.74E+02	4.80E+01		4.80E+01
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/kg		1.57E-02	1.57E-02		6.80E-03	6.80E-03		6.80E-03	6.80E-03
N	3689245	Tetraethyl Dithiopyrophosphate	mg/kg	3.73E+00		3.73E+00	4.56E+00		4.56E+00	7.99E-01		7.99E-01
N	78002	Tetraethyl Lead	mg/kg	7.47E-04		7.47E-04	9.12E-04		9.12E-04	1.60E-04		1.60E-04
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/kg	1.00E+05		1.00E+05	1.00E+05		1.00E+05	2.53E+04		2.53E+04
N	109999	Tetrahydrofuran	mg/kg	1.57E+03	2.63E+01	2.63E+01	1.92E+03	1.23E+01	1.23E+01	3.36E+02	1.23E+01	1.23E+01
N	75741	Tetramethyl Lead	mg/kg									
N	3440753	Tetrapropyl Lead	mg/kg									
N	1314325	Thallic Oxide	mg/kg	1.03E+00		1.03E+00	1.14E+00		1.14E+00	1.85E-01		1.85E-01
N	563688	Thallium Acetate	mg/kg	1.33E+00		1.33E+00	1.46E+00		1.46E+00	2.38E-01		2.38E-01
N	6533739	Thallium Carbonate	mg/kg	1.18E+00		1.18E+00	1.30E+00		1.30E+00	2.11E-01		2.11E-01
N	28249776	*Thiobencarb*	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	39196184	Thiofanox	mg/kg	2.24E+00		2.24E+00	2.74E+00		2.74E+00	4.80E-01		4.80E-01
N	23564058	Thiophanate, Methyl	mg/kg	5.98E+02		5.98E+02	7.30E+02		7.30E+02	1.28E+02		1.28E+02
N	137268	*Thiram*	mg/kg	3.73E+01		3.73E+01	4.56E+01		4.56E+01	7.99E+00		7.99E+00
N	108883	Toluene	mg/kg	2.98E+02		2.98E+02	1.54E+02		1.54E+02	3.12E+01		3.12E+01
N	26471625	Toluene diisocyanate mixture (TDI)	mg/kg	1.49E-01		1.49E-01	1.82E-01		1.82E-01	3.20E-02		3.20E-02
N	95807	Toluene-2,4-diamine	mg/kg		6.25E-02	6.25E-02		2.92E-02	2.92E-02		2.92E-02	2.92E-02
N	95705	Toluene-2,5-diamine	mg/kg	4.48E+03		4.48E+03	5.47E+03		5.47E+03	9.59E+02		9.59E+02
N	823405	Toluene-2,6-diamine	mg/kg	1.49E+03		1.49E+03	1.82E+03		1.82E+03	3.20E+02		3.20E+02
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/kg		8.33E-01	8.33E-01		3.90E-01	3.90E-01		3.90E-01	3.90E-01

Hazard-based values calculated using target *HI* of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action v[illegible] the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	106490	Toluidine, p-	mg/kg		6.13E-01	6.13E-01		5.25E-01	5.25E-01		3.59E-01	3.59E-01		3.59E-01	3.59E-01
N	8001352	Toxaphene	mg/kg		2.62E-01	2.62E-01		2.86E-01	2.86E-01		1.82E-01	1.82E-01		1.82E-01	1.82E-01
N	66841256	Tralomethrin	mg/kg	7.73E+01		7.73E+01	8.42E+01		8.42E+01	2.56E+02		2.56E+02	3.60E+01		3.60E+01
N	2303175	Triallate	mg/kg	1.34E+02		1.34E+02	1.46E+02		1.46E+02	4.43E+02		4.43E+02	6.24E+01		6.24E+01
N	82097505	Triasulfuron	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	615543	Tribromobenzene, 1,2,4-	mg/kg	6.79E+01		6.79E+01	8.70E+01		8.70E+01	2.68E+02		2.68E+02	3.72E+01		3.72E+01
N	594150	Tribromochloromethane	mg/kg												
N	49690940	Tribromodiphenyl Ether	mg/kg												
N	56359	Tributyltin Oxide	mg/kg	3.09E+00		3.09E+00	3.37E+00		3.37E+00	1.02E+01		1.02E+01	1.44E+00		1.44E+00
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/kg	1.12E+04		1.12E+04	8.42E+03		8.42E+03	3.20E+04		3.20E+04	4.91E+03		4.91E+03
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/kg												
N	76039	Trichloroacetic Acid	mg/kg												
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/kg		9.95E+00	9.95E+00		1.08E+01	1.08E+01		6.89E+00	6.89E+00		6.89E+00	6.89E+00
N	634935	Trichloroaniline, 2,4,6-	mg/kg		8.49E+00	8.49E+00		9.25E+00	9.25E+00		5.88E+00	5.88E+00		5.88E+00	5.88E+00
N	120821	Trichlorobenzene, 1,2,4-	mg/kg	8.30E+01		8.30E+01	8.28E+01		8.28E+01	2.53E+02		2.53E+02	3.60E+01		3.60E+01
N	71556	Trichloroethane, 1,1,1-	mg/kg	1.78E+02		1.78E+02	1.56E+02		1.56E+02	5.22E+02		5.22E+02	7.64E+01		7.64E+01
N	79005	Trichloroethane, 1,1,2-	mg/kg	1.17E+01	1.45E+00	1.45E+00	9.53E+00	1.18E+00	1.18E+00	3.36E+01	1.05E+00	1.05E+00	5.02E+00	1.05E+00	1.05E+00
Y	79016	Trichloroethylene	mg/kg	6.15E+00	3.25E+00	3.25E+00	4.70E+00	2.51E+00	2.51E+00	1.55E+01	1.80E+00	1.80E+00	2.29E+00	1.80E+00	1.80E+00
N	75694	Trichlorofluoromethane	mg/kg	1.70E+02		1.70E+02	1.28E+02		1.28E+02	4.66E+02		4.66E+02	7.04E+01		7.04E+01
N	95954	Trichlorophenol, 2,4,5-	mg/kg	1.03E+03		1.03E+03	1.12E+03		1.12E+03	3.41E+03		3.41E+03	4.80E+02		4.80E+02
N	88062	Trichlorophenol, 2,4,6-	mg/kg		2.62E+01	2.62E+01		2.86E+01	2.86E+01		1.82E+01	1.82E+01		1.82E+01	1.82E+01
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/kg	8.25E+01		8.25E+01	8.98E+01		8.98E+01	2.73E+02		2.73E+02	3.84E+01		3.84E+01
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	598776	Trichloropropane, 1,1,2-	mg/kg	5.44E+00		5.44E+00	4.16E+00		4.16E+00	1.55E+01		1.55E+01	2.36E+00		2.36E+00
N	96184	Trichloropropane, 1,2,3-	mg/kg	3.69E+00	2.91E-03	2.91E-03	2.79E+00	2.20E-03	2.20E-03	1.05E+01	2.30E-03	2.30E-03	1.61E+00	2.30E-03	2.30E-03
N	96195	Trichloropropene, 1,2,3-	mg/kg	3.79E+01		3.79E+01	3.67E+01		3.67E+01	1.10E+02		1.10E+02	1.57E+01		1.57E+01
N	2077465	Trichlorotoluene, 2,3,6-	mg/kg												
N	2014837	Trichlorotoluene, alpha 2,6-	mg/kg												
N	58138082	Tridiphane	mg/kg	3.09E+01		3.09E+01	3.37E+01		3.37E+01	1.02E+02		1.02E+02	1.44E+01		1.44E+01
N	5224237	Triethyl Lead	mg/kg												
N	121448	Triethylamine	mg/kg	1.06E+01		1.06E+01	9.35E+00		9.35E+00	3.05E+01		3.05E+01	4.44E+00		4.44E+00
N	1582098	Trifluralin	mg/kg	7.73E+01	3.75E+01	3.75E+01	8.42E+01	4.08E+01	4.08E+01	2.56E+02	2.60E+01	2.60E+01	3.60E+01	2.60E+01	2.60E+01
N	7442139	Trimethyl Lead	mg/kg												
N	512561	Trimethyl Phosphate	mg/kg		7.80E+00	7.80E+00		8.50E+00	8.50E+00		5.40E+00	5.40E+00		5.40E+00	5.40E+00
N	95636	Trimethylbenzene, 1,2,4-	mg/kg	3.79E+02		3.79E+02	3.67E+02		3.67E+02	1.10E+03		1.10E+03	1.57E+02		1.57E+02
N	108678	Trimethylbenzene, 1,3,5-	mg/kg	3.79E+02		3.79E+02	3.67E+02		3.67E+02	1.10E+03		1.10E+03	1.57E+02		1.57E+02
N	1762261	Trimethylethyl Lead	mg/kg												
N	99354	Trinitrobenzene, 1,3,5-	mg/kg	3.63E+02		3.63E+02	4.31E+02		4.31E+02	1.32E+03		1.32E+03	1.84E+02		1.84E+02
N	479458	Trinitrophenylmethylnitramine	mg/kg	1.03E+02		1.03E+02	1.12E+02		1.12E+02	3.41E+02		3.41E+02	4.80E+01		4.80E+01
N	118967	Trinitrotoluene, 2,4,6-	mg/kg	5.77E+00	1.08E+01	5.77E+00	6.67E+00	1.24E+01	6.67E+00	2.03E+01	7.95E+00	7.95E+00	2.85E+00	7.95E+00	2.85E+00
N	6618037	Tripropyl Lead	mg/kg												
N	1929777	Vernolate	mg/kg	1.03E+01		1.03E+01	1.12E+01		1.12E+01	3.41E+01		3.41E+01	4.80E+00		4.80E+00
N	50471448	Vinclozolin	mg/kg	2.58E+02		2.58E+02	2.81E+02		2.81E+02	8.52E+02		8.52E+02	1.20E+02		1.20E+02
N	108054	Vinyl Acetate	mg/kg	1.94E+02		1.94E+02	1.44E+02		1.44E+02	5.51E+02		5.51E+02	8.45E+01		8.45E+01
N	593602	Vinyl Bromide	mg/kg	1.93E+00	5.74E-01	5.74E-01	1.54E+00	4.57E-01	4.57E-01	5.54E+00	4.25E-01	4.25E-01	8.32E-01	4.25E-01	4.25E-01
Y	75014	Vinyl Chloride	mg/kg	1.20E+01	1.41E-01	1.41E-01	1.01E+01	1.34E-01	1.34E-01	3.53E+01	9.54E-02	9.54E-02	5.23E+00	9.54E-02	9.54E-02
N	81812	Warfarin	mg/kg	3.09E+00		3.09E+00	3.37E+00		3.37E+00	1.02E+01		1.02E+01	1.44E+00		1.44E+00
Y	1330207	Xylene, Mixture	mg/kg	9.63E+02		9.63E+02	7.24E+02		7.24E+02	2.77E+03		2.77E+03	4.25E+02		4.25E+02
Y	108383	Xylene, m-	mg/kg	5.56E+03		5.56E+03	4.50E+03		4.50E+03	1.68E+04		1.68E+04	2.54E+03		2.54E+03
Y	95476	Xylene, o-	mg/kg	5.59E+03		5.59E+03	4.53E+03		4.53E+03	1.69E+04		1.69E+04	2.55E+03		2.55E+03
Y	106423	Xylene, p-	mg/kg												
N	12122677	Zineb	mg/kg	5.15E+02		5.15E+02	5.62E+02		5.62E+02	1.70E+03		1.70E+03	2.40E+02		2.40E+02
Y	14596102	Am-241	pCi/g		1.74E+00	1.74E+00		5.16E+00	5.16E+00		1.16E+01	1.16E+01		1.16E+01	1.16E+01
Y	10198400	Co-60	pCi/g		2.38E-02	2.38E-02		1.77E-02	1.77E-02		3.67E-02	3.67E-02		3.67E-02	3.67E-02

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	106490	Toluidine, p-	mg/kg		3.59E-01	3.59E-01		1.64E-01	1.64E-01		1.64E-01	1.64E-01
N	8001352	Toxaphene	mg/kg		1.82E-01	1.82E-01		8.51E-02	8.51E-02		8.51E-02	8.51E-02
N	66841256	Tralomethrin	mg/kg	5.60E+01		5.60E+01	6.84E+01		6.84E+01	1.20E+01		1.20E+01
N	2303175	Triallate	mg/kg	9.71E+01		9.71E+01	1.19E+02		1.19E+02	2.08E+01		2.08E+01
N	82097505	Triasulfuron	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	615543	Tribromobenzene, 1,2,4-	mg/kg	5.93E+01		5.93E+01	6.79E+01		6.79E+01	1.13E+01		1.13E+01
N	594150	Tribromochloromethane	mg/kg									
N	49690940	Tribromodiphenyl Ether	mg/kg									
N	56359	Tributyltin Oxide	mg/kg	2.24E+00		2.24E+00	2.74E+00		2.74E+00	4.80E-01		4.80E-01
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/kg	1.39E+04		1.39E+04	6.05E+03		6.05E+03	1.25E+03		1.25E+03
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/kg									
N	76039	Trichloroacetic Acid	mg/kg									
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/kg		6.89E+00	6.89E+00		3.23E+00	3.23E+00		3.23E+00	3.23E+00
N	634935	Trichloroaniline, 2,4,6-	mg/kg		5.88E+00	5.88E+00		2.75E+00	2.75E+00		2.75E+00	2.75E+00
N	120821	Trichlorobenzene, 1,2,4-	mg/kg	5.67E+01		5.67E+01	6.77E+01		6.77E+01	1.22E+01		1.22E+01
N	71556	Trichloroethane, 1,1,1-	mg/kg	1.44E+02		1.44E+02	1.21E+02		1.21E+02	2.32E+01		2.32E+01
N	79005	Trichloroethane, 1,1,2-	mg/kg	1.09E+01	1.05E+00	1.05E+00	7.13E+00	3.45E-01	3.45E-01	1.42E+00	3.45E-01	3.45E-01
Y	79016	Trichloroethylene	mg/kg	4.21E+00	1.80E+00	1.80E+00	3.72E+00	7.92E-01	7.92E-01	7.41E-01	7.92E-01	7.41E-01
N	75694	Trichlorofluoromethane	mg/kg	1.68E+02		1.68E+02	9.47E+01		9.47E+01	1.93E+01		1.93E+01
N	95954	Trichlorophenol, 2,4,5-	mg/kg	7.47E+02		7.47E+02	9.12E+02		9.12E+02	1.60E+02		1.60E+02
N	88062	Trichlorophenol, 2,4,6-	mg/kg		1.82E+01	1.82E+01		8.51E+00	8.51E+00		8.51E+00	8.51E+00
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/kg	5.98E+01		5.98E+01	7.30E+01		7.30E+01	1.28E+01		1.28E+01
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	598776	Trichloropropane, 1,1,2-	mg/kg	6.14E+00		6.14E+00	3.02E+00		3.02E+00	6.18E-01		6.18E-01
N	96184	Trichloropropane, 1,2,3-	mg/kg	4.42E+00	2.30E-03	2.30E-03	2.01E+00	6.29E-04	6.29E-04	4.13E-01	6.29E-04	6.29E-04
N	96195	Trichloropropene, 1,2,3-	mg/kg	2.40E+01		2.40E+01	3.06E+01		3.06E+01	5.54E+00		5.54E+00
N	2077465	Trichlorotoluene, 2,3,6-	mg/kg									
N	2014837	Trichlorotoluene, alpha 2,6-	mg/kg									
N	58138082	Tridiphane	mg/kg	2.24E+01		2.24E+01	2.74E+01		2.74E+01	4.80E+00		4.80E+00
N	5224237	Triethyl Lead	mg/kg									
N	121448	Triethylamine	mg/kg	7.93E+00		7.93E+00	7.35E+00		7.35E+00	1.40E+00		1.40E+00
N	1582098	Trifluralin	mg/kg	5.60E+01	2.60E+01	2.60E+01	6.84E+01	1.22E+01	1.22E+01	1.20E+01	1.22E+01	1.20E+01
N	7442139	Trimethyl Lead	mg/kg									
N	512561	Trimethyl Phosphate	mg/kg		5.40E+00	5.40E+00		2.53E+00	2.53E+00		2.53E+00	2.53E+00
N	95636	Trimethylbenzene, 1,2,4-	mg/kg	2.40E+02		2.40E+02	3.06E+02		3.06E+02	5.54E+01		5.54E+01
N	108678	Trimethylbenzene, 1,3,5-	mg/kg	2.40E+02		2.40E+02	3.06E+02		3.06E+02	5.54E+01		5.54E+01
N	1762261	Trimethylethyl Lead	mg/kg									
N	99354	Trinitrobenzene, 1,3,5-	mg/kg	2.90E+02		2.90E+02	3.43E+02		3.43E+02	5.86E+01		5.86E+01
N	479458	Trinitrophenylmethylnitramine	mg/kg	7.47E+01		7.47E+01	9.12E+01		9.12E+01	1.60E+01		1.60E+01
N	118967	Trinitrotoluene, 2,4,6-	mg/kg	4.47E+00	7.95E+00	4.47E+00	5.34E+00	3.62E+00	3.62E+00	9.20E-01	3.62E+00	9.20E-01
N	6618037	Tripropyl Lead	mg/kg									
N	1929777	Vernolate	mg/kg	7.47E+00		7.47E+00	9.12E+00		9.12E+00	1.60E+00		1.60E+00
N	50471448	Vinclozolin	mg/kg	1.87E+02		1.87E+02	2.28E+02		2.28E+02	4.00E+01		4.00E+01
N	108054	Vinyl Acetate	mg/kg	2.43E+02		2.43E+02	1.03E+02		1.03E+02	2.13E+01		2.13E+01
N	593602	Vinyl Bromide	mg/kg	1.91E+00	4.25E-01	4.25E-01	1.14E+00	1.32E-01	1.32E-01	2.29E-01	1.32E-01	1.32E-01
Y	75014	Vinyl Chloride	mg/kg	1.10E+01	9.54E-02	9.54E-02	7.59E+00	4.00E-02	4.00E-02	1.49E+00	4.00E-02	4.00E-02
N	81812	Warfarin	mg/kg	2.24E+00		2.24E+00	2.74E+00		2.74E+00	4.80E-01		4.80E-01
Y	1330207	Xylene, Mixture	mg/kg	1.24E+03		1.24E+03	5.18E+02		5.18E+02	1.07E+02		1.07E+02
Y	108383	Xylene, m-	mg/kg	6.56E+03		6.56E+03	3.25E+03		3.25E+03	6.55E+02		6.55E+02
Y	95476	Xylene, o-	mg/kg	6.60E+03		6.60E+03	3.27E+03		3.27E+03	6.59E+02		6.59E+02
Y	106423	Xylene, p-	mg/kg									
N	12122677	Zineb	mg/kg	3.73E+02		3.73E+02	4.56E+02		4.56E+02	7.99E+01		7.99E+01
Y	14596102	Am-241	pCi/g		1.16E+01	1.16E+01		8.36E-01	8.36E-01		8.36E-01	8.36E-01
Y	10198400	Co-60	pCi/g		3.67E-02	3.67E-02		2.63E-03	2.63E-03		2.63E-03	2.63E-03

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action = the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational User			Child Recreational User		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
Y	10045973	Cs-137+D	pCi/g		1.15E-01	1.15E-01		8.58E-02	8.58E-02		1.78E-01	1.78E-01		1.78E-01	1.78E-01
Y	13994202	Np-237+D	pCi/g		3.28E-01	3.28E-01		2.71E-01	2.71E-01		5.65E-01	5.65E-01		5.65E-01	5.65E-01
Y	13981163	Pu-238	pCi/g		1.66E+00	1.66E+00		1.17E+01	1.17E+01		3.10E+01	3.10E+01		3.10E+01	3.10E+01
Y	15117483	Pu-239	pCi/g		1.63E+00	1.63E+00		1.15E+01	1.15E+01		3.03E+01	3.03E+01		3.03E+01	3.03E+01
Y	14119336	Pu-240	pCi/g		1.63E+00	1.63E+00		1.15E+01	1.15E+01		3.05E+01	3.05E+01		3.05E+01	3.05E+01
Y	13982633	Ra-226+D	pCi/g		3.30E-02	3.30E-02		2.56E-02	2.56E-02		5.34E-02	5.34E-02		5.34E-02	5.34E-02
Y	14859677	Rn-222+D	pCi/g		4.59E+07	4.59E+07		3.39E+07	3.39E+07		7.06E+07	7.06E+07		7.06E+07	7.06E+07
Y	10098972	Sr-90+D	pCi/g		2.59E+00	2.59E+00		7.44E+00	7.44E+00		1.67E+01	1.67E+01		1.67E+01	1.67E+01
Y	14133767	Tc-99	pCi/g		5.79E+01	5.79E+01		3.62E+02	3.62E+02		9.26E+02	9.26E+02		9.26E+02	9.26E+02
Y	14274829	Th-228+D	pCi/g		3.57E-02	3.57E-02		2.80E-02	2.80E-02		5.84E-02	5.84E-02		5.84E-02	5.84E-02
Y	14269637	Th-230	pCi/g		2.22E+00	2.22E+00		1.49E+01	1.49E+01		3.90E+01	3.90E+01		3.90E+01	3.90E+01
Y	N2608	Th-232	pCi/g		1.95E+00	1.95E+00		1.35E+01	1.35E+01		3.57E+01	3.57E+01		3.57E+01	3.57E+01
Y	13966295	U-234	pCi/g		2.84E+00	2.84E+00		1.98E+01	1.98E+01		5.22E+01	5.22E+01		5.22E+01	5.22E+01
Y	15117961	U-235+D	pCi/g		4.55E-01	4.55E-01		3.95E-01	3.95E-01		8.26E-01	8.26E-01		8.26E-01	8.26E-01
Y	24678828	U-238+D	pCi/g		1.17E+00	1.17E+00		1.71E+00	1.71E+00		3.64E+00	3.64E+00		3.64E+00	3.64E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action value is the lesser of the hazard- and cancer-based value.

Table A.17. Soil/Sediment No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on best available information.)

Primary COPC?	Parameter	Chemical	Units	Teen Recreational User			Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
Y	10045973	Cs-137+D	pCi/g		1.78E-01	1.78E-01		1.28E-02	1.28E-02		1.28E-02	1.28E-02
Y	13994202	Np-237+D	pCi/g		5.65E-01	5.65E-01		4.05E-02	4.05E-02		4.05E-02	4.05E-02
Y	13981163	Pu-238	pCi/g		3.10E+01	3.10E+01		2.27E+00	2.27E+00		2.27E+00	2.27E+00
Y	15117483	Pu-239	pCi/g		3.03E+01	3.03E+01		2.22E+00	2.22E+00		2.22E+00	2.22E+00
Y	14119336	Pu-240	pCi/g		3.05E+01	3.05E+01		2.23E+00	2.23E+00		2.23E+00	2.23E+00
Y	13982633	Ra-226+D	pCi/g		5.34E-02	5.34E-02		3.82E-03	3.82E-03		3.82E-03	3.82E-03
Y	14859677	Rn-222+D	pCi/g		7.06E+07	7.06E+07		1.51E+07	1.51E+07		1.51E+07	1.51E+07
Y	10098972	Sr-90+D	pCi/g		1.67E+01	1.67E+01		1.20E+00	1.20E+00		1.20E+00	1.20E+00
Y	14133767	Tc-99	pCi/g		9.26E+02	9.26E+02		6.74E+01	6.74E+01		6.74E+01	6.74E+01
Y	14274829	Th-228+D	pCi/g		5.84E-02	5.84E-02		4.18E-03	4.18E-03		4.18E-03	4.18E-03
Y	14269637	Th-230	pCi/g		3.90E+01	3.90E+01		2.85E+00	2.85E+00		2.85E+00	2.85E+00
Y	N2608	Th-232	pCi/g		3.57E+01	3.57E+01		2.61E+00	2.61E+00		2.61E+00	2.61E+00
Y	13966295	U-234	pCi/g		5.22E+01	5.22E+01		3.81E+00	3.81E+00		3.81E+00	3.81E+00
Y	15117961	U-235+D	pCi/g		8.26E-01	8.26E-01		5.91E-02	5.91E-02		5.91E-02	5.91E-02
Y	24678828	U-238+D	pCi/g		3.64E+00	3.64E+00		2.61E-01	2.61E-01		2.61E-01	2.61E-01

Hazard-based values calculated using target HI of 0.1.
Cancer-based value calculated using target ELCR of 1E-06.
No action the lesser of the hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7429905	Aluminum	mg/L	3.58E+00		3.58E+00	1.49E+00		1.49E+00
N	20859738	Aluminum Phosphide	mg/L	1.45E-03		1.45E-03	6.01E-04		6.01E-04
N	7664417	Ammonia	mg/L	4.63E-02		4.63E-02	9.60E-03		9.60E-03
N	7773060	Ammonium Sulfamate	mg/L	7.23E-01		7.23E-01	3.00E-01		3.00E-01
Y	7440360	Antimony (metallic)	mg/L	1.34E-03		1.34E-03	5.64E-04		5.64E-04
N	1314609	Antimony Pentoxide	mg/L	1.81E-03		1.81E-03	7.51E-04		7.51E-04
N	304610	Antimony Potassium Tartrate	mg/L	3.26E-03		3.26E-03	1.35E-03		1.35E-03
N	1332816	Antimony Tetroxide	mg/L	1.45E-03		1.45E-03	6.01E-04		6.01E-04
N	1309644	Antimony Trioxide	mg/L	1.45E-03		1.45E-03	6.01E-04		6.01E-04
N		Arsenic Salts	mg/L						
Y	7440382	Arsenic, Inorganic	mg/L	1.09E-03	3.50E-05	3.50E-05	4.52E-04	3.50E-05	3.50E-05
N	7784421	Arsine	mg/L		3.48E-05	3.48E-05		3.48E-05	3.48E-05
N	1332214	Asbestos	mg/L						
N	7440393	Barium	mg/L	2.49E-01		2.49E-01	1.04E-01		1.04E-01
N	542621	Barium Cyanide	mg/L	3.62E-01		3.62E-01	1.50E-01		1.50E-01
Y	7440417	Beryllium and compounds	mg/L	6.18E-03		6.18E-03	2.64E-03		2.64E-03
N	7440428	Boron And Borates Only	mg/L	3.28E-01		3.28E-01	1.36E-01		1.36E-01
N	7637072	Boron Trifluoride	mg/L						
Y	7440439	Cadmium (Water)	mg/L	1.54E-03		1.54E-03	6.61E-04		6.61E-04
N	592018	Calcium Cyanide	mg/L	1.45E-01		1.45E-01	6.01E-02		6.01E-02
N	16887006	Chloride	mg/L						
N	7782505	Chlorine	mg/L	3.62E-01		3.62E-01	1.50E-01		1.50E-01
N	7758192	Chlorite (Sodium Salt)	mg/L	1.09E-01		1.09E-01	4.50E-02		4.50E-02
Y	16065831	Chromium (III) (Insoluble Salts)	mg/L	4.02E+00		4.02E+00	1.76E+00		1.76E+00
Y	7440473	Chromium (Total)	mg/L	4.02E+00		4.02E+00	1.76E+00		1.76E+00
N		Chromium Salts	mg/L						
Y	18540299	Chromium VI (chromic acid mists)	mg/L	1.00E-02		1.00E-02	4.23E-03		4.23E-03
N	7440484	Cobalt	mg/L	2.19E-01		2.19E-01	9.06E-02		9.06E-02
Y	7440508	Copper	mg/L	1.34E-01		1.34E-01	5.57E-02		5.57E-02
N	544923	Copper Cyanide	mg/L	1.81E-02		1.81E-02	7.51E-03		7.51E-03
N	57125	Cyanide (CN-)	mg/L	6.76E-02		6.76E-02	2.84E-02		2.84E-02
N	7782414	Fluorine (Soluble Fluoride)	mg/L	2.19E-01		2.19E-01	9.06E-02		9.06E-02
N	7647010	Hydrogen Chloride	mg/L	9.27E-03		9.27E-03	1.92E-03		1.92E-03
N	74908	Hydrogen Cyanide	mg/L	1.36E-03		1.36E-03	2.85E-04		2.85E-04
N	7783064	Hydrogen Sulfide	mg/L	4.44E-04		4.44E-04	9.39E-05		9.39E-05
Y	7439896	Iron	mg/L	1.08E+00		1.08E+00	4.49E-01		4.49E-01
Y	7439921	Lead And Compounds	mg/L			1.50E-02			1.50E-02
N	7439932	Lithium	mg/L	7.28E-02		7.28E-02	3.02E-02		3.02E-02
N	7439954	Magnesium	mg/L						
Y	7439965	Manganese	mg/L	8.38E-02		8.38E-02	3.50E-02		3.50E-02
N	7487947	Mercuric Chloride	mg/L	1.07E-03		1.07E-03	4.44E-04		4.44E-04
N	1344485	Mercuric Sulfide	mg/L						
N	7439976	Mercury (elemental)	mg/L						
Y	7439976	Mercury, Inorganic Salts	mg/L	1.07E-03		1.07E-03	4.44E-04		4.44E-04
N	22967926	Methyl Mercury	mg/L	3.64E-04		3.64E-04	1.51E-04		1.51E-04
Y	7439987	Molybdenum	mg/L	1.82E-02		1.82E-02	7.53E-03		7.53E-03
N		Nickel Refinery Dust	mg/L						
Y	7440020	Nickel Soluble Salts	mg/L	7.25E-02		7.25E-02	3.01E-02		3.01E-02
N	12035722	Nickel Subsulfide	mg/L						
N	14797558	Nitrate	mg/L	5.82E+00		5.82E+00	2.41E+00		2.41E+00
N	10102439	Nitric Oxide	mg/L	3.62E-01		3.62E-01	1.50E-01		1.50E-01
N	14797650	Nitrite	mg/L	3.64E-01		3.64E-01	1.51E-01		1.51E-01
N	10102440	Nitrogen Dioxide	mg/L	3.62E+00		3.62E+00	1.50E+00		1.50E+00
N	7803512	Phosphine	mg/L	1.09E-03		1.09E-03	4.50E-04		4.50E-04
N	7664382	Phosphoric Acid	mg/L						
N	151508	Potassium Cyanide	mg/L	1.82E-01		1.82E-01	7.53E-02		7.53E-02
N	506616	Potassium Silver Cyanide	mg/L	7.23E-01		7.23E-01	3.00E-01		3.00E-01
Y	7782492	Selenium	mg/L	1.82E-02		1.82E-02	7.54E-03		7.54E-03
N	7446346	Selenium Sulfide	mg/L						
Y	7440224	Silver	mg/L	1.81E-02		1.81E-02	7.50E-03		7.50E-03
N	506649	Silver Cyanide	mg/L	3.62E-01		3.62E-01	1.50E-01		1.50E-01
N	7440235	Sodium	mg/L						
N	26628228	Sodium Azide	mg/L	1.45E-02		1.45E-02	6.01E-03		6.01E-03
N	143339	Sodium Cyanide	mg/L	1.46E-01		1.46E-01	6.04E-02		6.04E-02
N	13718268	Sodium Metavanadate	mg/L	3.62E-03		3.62E-03	1.50E-03		1.50E-03
N	7440246	Strontium, Stable	mg/L	2.17E+00		2.17E+00	9.01E-01		9.01E-01
N	14808798	Sulfate	mg/L						
N	10102451	Thallium (I) Nitrate	mg/L	3.26E-04		3.26E-04	1.35E-04		1.35E-04
N	7440280	Thallium (Soluble Salts)	mg/L						
Y	7791120	Thallium Chloride	mg/L	2.89E-04		2.89E-04	1.20E-04		1.20E-04
N	12039520	Thallium Selenite	mg/L	3.26E-04		3.26E-04	1.35E-04		1.35E-04
N	7446186	Thallium Sulfate	mg/L	2.89E-04		2.89E-04	1.20E-04		1.20E-04
N	7440291	Thorium	mg/L						
N	7440315	Tin	mg/L	2.15E+00		2.15E+00	8.94E-01		8.94E-01
N	7440326	Titanium	mg/L						
Y	7440611	Uranium (Soluble Salts)	mg/L	2.19E-03		2.19E-03	9.06E-04		9.06E-04

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	1314621	Vanadium Pentoxide	mg/L	3.26E-02		3.26E-02	1.35E-02		1.35E-02
N	36907423	Vanadium Sulfate	mg/L	7.23E-02		7.23E-02	3.00E-02		3.00E-02
Y	7440622	Vanadium, Metallic	mg/L	2.16E-02		2.16E-02	9.25E-03		9.25E-03
N	27774136	Vanadyl Sulfate	mg/L	7.23E-02		7.23E-02	3.00E-02		3.00E-02
N	7723140	White Phosphorus	mg/L	7.23E-05		7.23E-05	3.00E-05		3.00E-05
Y	7440666	Zinc (Metallic)	mg/L	1.09E+00		1.09E+00	4.50E-01		4.50E-01
N	557211	Zinc Cyanide	mg/L	1.81E-01		1.81E-01	7.51E-02		7.51E-02
N	1314847	Zinc Phosphide	mg/L	1.09E-03		1.09E-03	4.50E-04		4.50E-04
N	7440677	Zirconium	mg/L						
N	1596845	ALAR	mg/L	5.47E-01		5.47E-01	2.27E-01		2.27E-01
Y	83329	Acenaphthene	mg/L	4.63E-02		4.63E-02	1.36E-02		1.36E-02
Y	208968	Acenaphthylene	mg/L						
N	30560191	Acephate	mg/L	1.46E-02	6.06E-03	6.06E-03	6.05E-03	6.06E-03	6.05E-03
N	75070	Acetaldehyde	mg/L	4.17E-03	2.34E-03	2.34E-03	8.64E-04	2.34E-03	8.64E-04
N	34256821	Acetochlor	mg/L	7.14E-02		7.14E-02	2.97E-02		2.97E-02
N	67641	Acetone	mg/L	1.12E-01		1.12E-01	2.75E-02		2.75E-02
N	75865	Acetone Cyanohydrin	mg/L	2.91E-03		2.91E-03	1.21E-03		1.21E-03
N	75058	Acetonitrile	mg/L	1.22E-02		1.22E-02	3.52E-03		3.52E-03
N	98862	Acetophenone	mg/L	9.27E-06		9.27E-06	1.92E-06		1.92E-06
N	107028	Acrolein	mg/L	9.27E-06		9.27E-06	1.92E-06		1.92E-06
N	79061	Acrylamide	mg/L	7.29E-04	1.17E-05	1.17E-05	3.02E-04	1.17E-05	1.17E-05
N	79107	Acrylic Acid	mg/L	1.82E+00		1.82E+00	7.54E-01		7.54E-01
Y	107131	Acrylonitrile	mg/L	7.39E-04	4.26E-05	4.26E-05	1.70E-04	4.26E-05	4.26E-05
N	15972608	Alachlor	mg/L	3.59E-02	6.48E-04	6.48E-04	1.49E-02	6.48E-04	6.48E-04
N	116063	Aldicarb	mg/L	3.64E-03		3.64E-03	1.51E-03		1.51E-03
N	1646884	Aldicarb Sulfone	mg/L	3.65E-03		3.65E-03	1.51E-03		1.51E-03
N	309002	Aldrin	mg/L	1.09E-04	3.08E-06	3.08E-06	4.52E-05	3.08E-06	3.08E-06
N	74223646	Ally	mg/L	9.12E-01		9.12E-01	3.78E-01		3.78E-01
N	107186	Allyl Alcohol	mg/L	1.82E-02		1.82E-02	7.55E-03		7.55E-03
N	107051	Allyl Chloride	mg/L	1.80E-01		1.80E-01	7.47E-02		7.47E-02
N	67485294	Amdro	mg/L	1.10E-03		1.10E-03	4.54E-04		4.54E-04
N	834128	Ametryn	mg/L	3.28E-02		3.28E-02	1.36E-02		1.36E-02
N	591275	Aminophenol, m-	mg/L	2.55E-01		2.55E-01	1.06E-01		1.06E-01
N	504245	Aminopyridine, 4-	mg/L	7.28E-05		7.28E-05	3.02E-05		3.02E-05
N	33089611	Amitraz	mg/L	4.78E-03		4.78E-03	2.20E-03		2.20E-03
N	62533	Aniline	mg/L	2.22E-02	8.11E-03	8.11E-03	9.47E-03	8.11E-03	8.11E-03
Y	120127	Anthracene	mg/L	2.90E-01		2.90E-01	7.66E-02		7.66E-02
N	74115245	Apollo	mg/L	4.67E-02		4.67E-02	1.94E-02		1.94E-02
N	140578	Aramite	mg/L	1.56E-01	1.82E-03	1.82E-03	6.68E-02	1.82E-03	1.82E-03
Y	12674112	Aroclor 1016	mg/L	9.85E-05	5.28E-05	5.28E-05	4.68E-05	5.28E-05	4.68E-05
Y	11104282	Aroclor 1221	mg/L		1.12E-04	1.12E-04		1.12E-04	1.12E-04
Y	11141165	Aroclor 1232	mg/L		1.28E-04	1.28E-04		1.28E-04	1.28E-04
Y	53469219	Aroclor 1242	mg/L		1.23E-04	1.23E-04		1.23E-04	1.23E-04
Y	12672296	Aroclor 1248	mg/L		7.75E-05	7.75E-05		7.75E-05	7.75E-05
Y	11097691	Aroclor 1254	mg/L	4.28E-05	7.93E-05	4.28E-05	1.94E-05	7.93E-05	1.94E-05
Y	11096825	Aroclor 1260	mg/L		4.28E-05	4.28E-05		4.28E-05	4.28E-05
N	76578148	Assure	mg/L	3.16E-02		3.16E-02	1.32E-02		1.32E-02
N	3337711	Asulam	mg/L	1.82E-01		1.82E-01	7.56E-02		7.56E-02
N	1912249	Atrazine	mg/L	1.24E-01	2.31E-04	2.31E-04	5.18E-02	2.31E-04	2.31E-04
N	65195553	Avermectin B1	mg/L	1.46E-03		1.46E-03	6.05E-04		6.05E-04
N	103333	Azobenzene	mg/L		3.83E-04	3.83E-04		3.83E-04	3.83E-04
N	114261	Baygon	mg/L	1.45E-02		1.45E-02	6.02E-03		6.02E-03
N	43121433	Bayleton	mg/L	1.09E-01		1.09E-01	4.52E-02		4.52E-02
N	68359375	Baythroid	mg/L	7.23E-02		7.23E-02	3.13E-02		3.13E-02
N	1861401	Benefin	mg/L	9.91E-01		9.91E-01	4.19E-01		4.19E-01
N	17804352	Benomyl	mg/L	1.82E-01		1.82E-01	7.53E-02		7.53E-02
N	25057890	Bentazon	mg/L	1.09E-01		1.09E-01	4.53E-02		4.53E-02
Y	56553	Benz[a]anthracene	mg/L		1.32E-05	1.32E-05		1.32E-05	1.32E-05
N	100527	Benzaldehyde	mg/L	3.51E-01		3.51E-01	1.46E-01		1.46E-01
Y	71432	Benzene	mg/L	2.18E-03	3.85E-04	3.85E-04	5.04E-04	3.85E-04	3.85E-04
N	29224553	Benzene, Ethyldimethyl	mg/L						
N	25550145	Benzene, Ethylmethyl	mg/L						
N	768003	Benzene, Methylpropenyl	mg/L						
N	28729546	Benzene, Methylpropyl	mg/L						
N	25551137	Benzene, Trimethyl	mg/L						
N	108985	Benzenethiol	mg/L	1.09E-05		1.09E-05	2.71E-06		2.71E-06
N	92875	Benzidine	mg/L	1.09E-02	2.28E-07	2.28E-07	4.53E-03	2.28E-07	2.28E-07
Y	50328	Benzo[a]pyrene	mg/L		9.51E-07	9.51E-07		9.51E-07	9.51E-07
Y	205992	Benzo[b]fluoranthene	mg/L		9.51E-06	9.51E-06		9.51E-06	9.51E-06
N	191242	Benzo[g,h,i]perylene	mg/L						
Y	207089	Benzo[k]fluoranthene	mg/L		1.68E-04	1.68E-04		1.68E-04	1.68E-04
N	65850	Benzoic Acid	mg/L	1.44E+01		1.44E+01	5.99E+00		5.99E+00
N	98077	Benzotrichloride	mg/L		3.86E-06	3.86E-06		3.86E-06	3.86E-06
N	100516	Benzyl Alcohol	mg/L	1.08E+00		1.08E+00	4.48E-01		4.48E-01
N	100447	Benzyl Chloride	mg/L		7.84E-05	7.84E-05		7.84E-05	7.84E-05
N	141662	Bidrin	mg/L	3.65E-04		3.65E-04	1.51E-04		1.51E-04

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	82657043	Biphenthrin	mg/L	5.48E-02		5.48E-02	2.27E-02		2.27E-02
N	92524	Biphenyl, 1,1'-	mg/L	4.67E-02		4.67E-02	1.26E-02		1.26E-02
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/L		7.23E-04	7.23E-04		7.23E-04	7.23E-04
N	111911	Bis(2-chloroethoxy)methane	mg/L						
N	111444	Bis(2-chloroethyl)ether	mg/L		1.18E-05	1.18E-05		1.18E-05	1.18E-05
N	39638329	Bis(2-chloroisopropyl)ether	mg/L	4.46E-02	3.04E-04	3.04E-04	1.10E-02	3.04E-04	3.04E-04
N	117817	Bis(2-ethylhexyl)phthalate	mg/L	5.99E-02	3.12E-03	3.12E-03	2.58E-02	3.12E-03	3.12E-03
N	542881	Bis(chloromethyl)ether	mg/L		6.17E-08	6.17E-08		6.17E-08	6.17E-08
N	80057	Bisphenol A	mg/L	1.66E-01		1.66E-01	7.00E-02		7.00E-02
N	108861	Bromobenzene	mg/L	4.42E-03		4.42E-03	9.44E-04		9.44E-04
N	74975	Bromochloromethane	mg/L						
N	75274	Bromodichloromethane	mg/L	2.24E-02	2.16E-04	2.16E-04	5.49E-03	2.16E-04	2.16E-04
N	101553	Bromodiphenyl Ether, p-	mg/L						
N	75252	Bromoform	mg/L	7.24E-02	6.62E-03	6.62E-03	3.01E-02	6.62E-03	6.62E-03
N	74839	Bromomethane	mg/L	1.59E-03		1.59E-03	3.91E-04		3.91E-04
N	2104963	Bromophos	mg/L	1.52E-02		1.52E-02	6.51E-03		6.51E-03
N	75627	Bromotrichloromethane	mg/L						
N	1689845	Bromoxynil	mg/L	7.30E-02		7.30E-02	3.02E-02		3.02E-02
N	1689992	Bromoxynil Octanoate	mg/L	4.84E-02		4.84E-02	2.16E-02		2.16E-02
N	106990	Butadiene, 1,3-	mg/L		1.11E-05	1.11E-05		1.11E-05	1.11E-05
N	71363	Butanol, N-	mg/L	3.62E-01		3.62E-01	1.50E-01		1.50E-01
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/L						
N	85687	Butyl Benzyl Phthlate	mg/L	6.03E-01		6.03E-01	2.59E-01		2.59E-01
N	2008415	Butylate	mg/L	1.42E-01		1.42E-01	6.16E-02		6.16E-02
N	104518	Butylbenzene, N-	mg/L	1.12E-02		1.12E-02	2.75E-03		2.75E-03
N	135988	Butylbenzene, sec-	mg/L	1.12E-02		1.12E-02	2.75E-03		2.75E-03
N	98066	Butylbenzene-tert	mg/L	1.12E-02		1.12E-02	2.75E-03		2.75E-03
N	507200	Butylchloride, t-	mg/L						
N	85701	Butylphthalyl Butylglycolate	mg/L	3.46E+00		3.46E+00	1.45E+00		1.45E+00
N	75605	Cacodylic Acid	mg/L	1.09E-02		1.09E-02	4.53E-03		4.53E-03
N	105602	Caprolactam	mg/L	1.82E+00		1.82E+00	7.55E-01		7.55E-01
N	2425061	Captafol	mg/L	7.28E-03	6.11E-03	6.11E-03	3.02E-03	6.11E-03	3.02E-03
N	133062	Captan	mg/L	4.72E-01	1.50E-02	1.50E-02	1.96E-01	1.50E-02	1.50E-02
N	63252	Carbaryl	mg/L	3.59E-01		3.59E-01	1.49E-01		1.49E-01
N	86748	Carbazole	mg/L		2.16E-03	2.16E-03		2.16E-03	2.16E-03
N	1563662	Carbofuran	mg/L	1.82E-02		1.82E-02	7.53E-03		7.53E-03
N	75150	Carbon Disulfide	mg/L	1.66E-01		1.66E-01	4.57E-02		4.57E-02
Y	56235	Carbon Tetrachloride	mg/L	7.69E-04	1.81E-04	1.81E-04	1.90E-04	1.81E-04	1.81E-04
N	55285148	Carbosulfan	mg/L	3.65E-02		3.65E-02	1.51E-02		1.51E-02
N	5234684	Carboxin	mg/L	3.62E-01		3.62E-01	1.50E-01		1.50E-01
N	75876	Chloral	mg/L	3.63E-01		3.63E-01	1.51E-01		1.51E-01
N	133904	Chloramben	mg/L	5.43E-02		5.43E-02	2.25E-02		2.25E-02
N	118752	Chloranil	mg/L		1.30E-04	1.30E-04		1.30E-04	1.30E-04
N	57749	Chlordane	mg/L	1.54E-03	1.28E-04	1.28E-04	6.58E-04	1.28E-04	1.28E-04
N	90982324	Chlorimuron, Ethyl-	mg/L	7.29E-02		7.29E-02	3.02E-02		3.02E-02
N	10049044	Chlorine Dioxide	mg/L	1.10E-01		1.10E-01	4.54E-02		4.54E-02
N	75683	Chloro-1,1-difluoroethane, 1-	mg/L	1.60E+01		1.60E+01	3.92E+00		3.92E+00
N	126998	Chloro-1,3-butadiene, 2-	mg/L	3.10E-03		3.10E-03	6.57E-04		6.57E-04
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/L		1.12E-04	1.12E-04		1.12E-04	1.12E-04
N	95692	Chloro-2-methylaniline, 4-	mg/L		8.76E-05	8.76E-05		8.76E-05	8.76E-05
N	79118	Chloroacetic Acid	mg/L	7.21E-03		7.21E-03	2.99E-03		2.99E-03
N	532274	Chloroacetophenone, 2-	mg/L	9.55E-06		9.55E-06	2.35E-06		2.35E-06
N	106478	Chloroaniline, p-	mg/L	1.31E-02		1.31E-02	5.55E-03		5.55E-03
N	108907	Chlorobenzene	mg/L	1.88E-02		1.88E-02	4.66E-03		4.66E-03
N	510156	Chlorobenzilate	mg/L	6.56E-02	1.77E-04	1.77E-04	2.78E-02	1.77E-04	1.77E-04
N	74113	Chlorobenzoic Acid, p-	mg/L	6.88E-01		6.88E-01	2.88E-01		2.88E-01
N	98566	Chlorobenzotrifluoride, 4-	mg/L	5.85E-02		5.85E-02	2.53E-02		2.53E-02
N	109693	Chlorobutane, 1-	mg/L	4.38E-01		4.38E-01	1.09E-01		1.09E-01
N	78864	Chlorobutane, 2-	mg/L						
N	41851507	Chlorocyclopentadiene	mg/L						
N	73506942	Chlorodibromoethane	mg/L		6.27E-04	6.27E-04		6.27E-04	6.27E-04
N	75456	Chlorodifluoromethane	mg/L	1.60E+01		1.60E+01	3.92E+00		3.92E+00
Y	67663	Chloroform	mg/L	1.38E-04	2.18E-04	1.38E-04	2.87E-05	2.18E-04	2.87E-05
N	74873	Chloromethane	mg/L	4.17E-02	1.67E-03	1.67E-03	8.64E-03	1.67E-03	1.67E-03
N	107302	Chloromethyl Methyl Ether	mg/L						
N	91587	Chloronaphthalene, Beta-	mg/L	7.62E-02		7.62E-02	2.03E-02		2.03E-02
N	88733	Chloronitrobenzene, o-	mg/L		5.35E-04	5.35E-04		5.35E-04	5.35E-04
N	121733	Chloronitrobenzene, p-	mg/L		7.42E-04	7.42E-04		7.42E-04	7.42E-04
N	95578	Chlorophenol, 2-	mg/L	5.41E-03		5.41E-03	1.35E-03		1.35E-03
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/L						
N	934736	Chlorophenyl Methyl Sulfoxide	mg/L						
N	75296	Chloropropane, 2-	mg/L	3.18E-02		3.18E-02	7.82E-03		7.82E-03
N	1897456	Chlorothalonil	mg/L	5.02E-02	4.41E-03	4.41E-03	2.12E-02	4.41E-03	4.41E-03
N	95498	Chlorotoluene, o-	mg/L	2.12E-02		2.12E-02	5.35E-03		5.35E-03
N	101213	Chlorpropham	mg/L	7.02E-01		7.02E-01	2.93E-01		2.93E-01
N	2921882	Chlorpyrifos	mg/L	8.49E-03		8.49E-03	3.69E-03		3.69E-03

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	5598130	Chlorpyrifos Methyl	mg/L	3.49E-02		3.49E-02	1.46E-02		1.46E-02
N	64902723	Chlorsulfuron	mg/L	1.82E-01		1.82E-01	7.56E-02		7.56E-02
N	60238564	Chlorthiophos	mg/L	2.92E-03		2.92E-03	1.21E-03		1.21E-03
Y	218019	Chrysene	mg/L		1.32E-03	1.32E-03		1.32E-03	1.32E-03
N	8007452	Coke Oven Emissions	mg/L						
N	8001589	Creosote	mg/L						
N	108394	Cresol, m-	mg/L	1.73E-01		1.73E-01	7.25E-02		7.25E-02
N	95487	Cresol, o-	mg/L	1.72E-01		1.72E-01	7.23E-02		7.23E-02
N	106445	Cresol, p-	mg/L	1.74E-02		1.74E-02	7.27E-03		7.27E-03
N	123739	Crotonaldehyde, trans-	mg/L		6.98E-06	6.98E-06		6.98E-06	6.98E-06
N	98828	Cumene	mg/L	1.13E-01		1.13E-01	2.94E-02		2.94E-02
N	21725462	Cyanazine	mg/L	7.24E-03	6.22E-05	6.22E-05	3.00E-03	6.22E-05	6.22E-05
N	460195	Cyanogen	mg/L	4.49E-02		4.49E-02	1.10E-02		1.10E-02
N	506683	Cyanogen Bromide	mg/L	1.01E-01		1.01E-01	2.47E-02		2.47E-02
N	506774	Cyanogen Chloride	mg/L	5.61E-02		5.61E-02	1.37E-02		1.37E-02
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/L		2.27E-03	2.27E-03		2.27E-03	2.27E-03
N	108941	Cyclohexanone	mg/L	1.82E+01		1.82E+01	7.54E+00		7.54E+00
N	108918	Cyclohexylamine	mg/L	7.16E-01		7.16E-01	2.98E-01		2.98E-01
N	542927	Cyclopentadiene	mg/L						
N	68085858	Cyhalothrin/karate	mg/L	9.22E-03		9.22E-03	4.25E-03		4.25E-03
N	52315078	Cypermethrin	mg/L	2.68E-02		2.68E-02	1.17E-02		1.17E-02
N	66215278	Cyromazine	mg/L	2.74E-02		2.74E-02	1.13E-02		1.13E-02
N	72548	DDD	mg/L		1.31E-04	1.31E-04		1.31E-04	1.31E-04
N	72559	DDE	mg/L		9.79E-05	9.79E-05		9.79E-05	9.79E-05
N	50293	DDT	mg/L	8.63E-04	7.58E-05	7.58E-05	4.01E-04	7.58E-05	7.58E-05
N	1861321	Dacthal	mg/L	3.36E-02		3.36E-02	1.41E-02		1.41E-02
N	75990	Dalapon	mg/L	1.09E-01		1.09E-01	4.52E-02		4.52E-02
N	1163195	Decabromodiphenyl Ether	mg/L	3.65E-02		3.65E-02	1.51E-02		1.51E-02
N	8065483	Demeton	mg/L	1.46E-04		1.46E-04	6.05E-05		6.05E-05
N	103231	Di(2-ethylhexyl)adipate	mg/L	1.56E-01	3.31E-03	3.31E-03	7.98E-02	3.31E-03	3.31E-03
N	2303164	Diallate	mg/L		8.64E-04	8.64E-04		8.64E-04	8.64E-04
N	505293	Diathane, 1,4-	mg/L	3.61E-02		3.61E-02	1.50E-02		1.50E-02
N	333415	Diazinon	mg/L	3.14E-03		3.14E-03	1.31E-03		1.31E-03
Y	53703	Dibenz[a,h]anthracene	mg/L		4.56E-07	4.56E-07		4.56E-07	4.56E-07
N	132649	Dibenzofuran	mg/L	4.49E-03		4.49E-03	1.10E-03		1.10E-03
N	96128	Dibromo-3-chloropropane, 1,2-	mg/L	6.39E-05	3.71E-05	3.71E-05	1.57E-05	3.71E-05	1.57E-05
N	106376	Dibromobenzene, 1,4-	mg/L	3.38E-02		3.38E-02	1.42E-02		1.42E-02
N	124481	Dibromochloromethane	mg/L	2.24E-02	1.59E-04	1.59E-04	5.49E-03	1.59E-04	1.59E-04
N	594183	Dibromodichloromethane	mg/L						
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/L						
N	106934	Dibromoethane, 1,2-	mg/L	6.40E-05	6.00E-07	6.00E-07	1.57E-05	6.00E-07	6.00E-07
N	74953	Dibromomethane (Methylene Bromide)	mg/L	1.12E-02		1.12E-02	2.75E-03		2.75E-03
N	84742	Dibutyl Phthalate	mg/L	3.00E-01		3.00E-01	1.29E-01		1.29E-01
N	1918009	Dicamba	mg/L	1.05E-01		1.05E-01	4.38E-02		4.38E-02
N	764410	Dichloro-2-butene, 1,4-	mg/L		1.44E-06	1.44E-06		1.44E-06	1.44E-06
N	79436	Dichloroacetic Acid	mg/L						
N	95501	Dichlorobenzene, 1,2-	mg/L	7.01E-02		7.01E-02	1.66E-02		1.66E-02
N	541731	Dichlorobenzene, 1,3-	mg/L	9.53E-04		9.53E-04	2.41E-04		2.41E-04
N	106467	Dichlorobenzene, 1,4-	mg/L	3.24E-02	5.78E-04	5.78E-04	8.10E-03	5.78E-04	5.78E-04
N	91941	Dichlorobenzidine, 3,3'-	mg/L		1.11E-04	1.11E-04		1.11E-04	1.11E-04
N	75718	Dichlorodifluoromethane	mg/L	8.14E-02		8.14E-02	1.80E-02		1.80E-02
N	75343	Dichloroethane, 1,1-	mg/L	1.41E-01		1.41E-01	3.63E-02		3.63E-02
N	107062	Dichloroethane, 1,2-	mg/L	2.22E-03	1.47E-04	1.47E-04	4.65E-04	1.47E-04	1.47E-04
Y	75354	Dichloroethylene, 1,1-	mg/L	1.00E-02	4.70E-05	4.70E-05	2.46E-03	4.70E-05	4.70E-05
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	1.01E-02		1.01E-02	2.47E-03		2.47E-03
Y	156592	Dichloroethylene, 1,2-cis-	mg/L	1.11E-02		1.11E-02	2.73E-03		2.73E-03
Y	156605	Dichloroethylene, 1,2-trans-	mg/L	2.24E-02		2.24E-02	5.48E-03		5.48E-03
N	120832	Dichlorophenol, 2,4-	mg/L	9.67E-03		9.67E-03	4.10E-03		4.10E-03
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/L	3.61E-02		3.61E-02	1.50E-02		1.50E-02
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/L	2.87E-02		2.87E-02	1.19E-02		1.19E-02
N	78875	Dichloropropane, 1,2-	mg/L	1.27E-03	1.96E-04	1.96E-04	3.13E-04	1.96E-04	1.96E-04
N	616239	Dichloropropanol, 2,3-	mg/L	1.09E-02		1.09E-02	4.53E-03		4.53E-03
N	542756	Dichloropropene, 1,3-	mg/L	8.53E-03	3.69E-04	3.69E-04	1.84E-03	3.69E-04	3.69E-04
N	62737	Dichlorvos	mg/L	1.82E-03	1.81E-04	1.81E-04	7.54E-04	1.81E-04	1.81E-04
N	115322	Dicofol	mg/L		6.72E-05	6.72E-05		6.72E-05	6.72E-05
N	77736	Dicyclopentadiene	mg/L	9.26E-05		9.26E-05	1.92E-05		1.92E-05
N	60571	Dieldrin	mg/L	1.72E-04	3.12E-06	3.12E-06	7.23E-05	3.12E-06	3.12E-06
N	84662	Diethyl Phthalate	mg/L	2.89E+00		2.89E+00	1.20E+00		1.20E+00
N	311455	Diethyl-p-nitrophenylphosphate	mg/L						
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/L						
N	112345	Diethylene Glycol Monobutyl Ether	mg/L	2.09E-02		2.09E-02	8.64E-03		8.64E-03
N	111900	Diethylene Glycol Monoethyl Ether	mg/L	7.29E+00		7.29E+00	3.02E+00		3.02E+00
N	617845	Diethylformamide	mg/L	4.01E-02		4.01E-02	1.66E-02		1.66E-02
N	56531	Diethylstilbesterol	mg/L		5.12E-09	5.12E-09		5.12E-09	5.12E-09
N	43222486	Difenzoquat	mg/L	2.92E-01		2.92E-01	1.21E-01		1.21E-01
N	35367385	Diflubenzuron	mg/L	6.95E-02		6.95E-02	2.91E-02		2.91E-02

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	75376	Difluoroethane, 1,1-	mg/L	1.28E+01		1.28E+01	3.14E+00		3.14E+00
N	1445756	Diisopropyl Methylphosphonate	mg/L	2.91E-01		2.91E-01	1.21E-01		1.21E-01
N	55290647	Dimethipin	mg/L	7.30E-02		7.30E-02	3.02E-02		3.02E-02
N	60515	Dimethoate	mg/L	7.14E-04		7.14E-04	2.97E-04		2.97E-04
N	119904	Dimethoxybenzidine, 3,3'-	mg/L		3.75E-03	3.75E-03		3.75E-03	3.75E-03
N	77781	Dimethyl Sulfate	mg/L						
N	124403	Dimethylamine	mg/L	6.40E-06		6.40E-06	1.57E-06		1.57E-06
N	21436964	Dimethylaniline HCl, 2,4-	mg/L		9.09E-05	9.09E-05		9.09E-05	9.09E-05
N	95681	Dimethylaniline, 2,4-	mg/L		6.75E-05	6.75E-05		6.75E-05	6.75E-05
N	121697	Dimethylaniline, N,N-	mg/L	6.71E-03		6.71E-03	2.83E-03		2.83E-03
N	119937	Dimethylbenzidine, 3,3'-	mg/L		5.64E-06	5.64E-06		5.64E-06	5.64E-06
N	107584407	Dimethylethyl Lead	mg/L						
N	68122	Dimethylformamide	mg/L	3.65E-01		3.65E-01	1.51E-01		1.51E-01
N	57147	Dimethylhydrazine, 1,1-	mg/L		1.74E-05	1.74E-05		1.74E-05	1.74E-05
N	540738	Dimethylhydrazine, 1,2-	mg/L		1.42E-06	1.42E-06		1.42E-06	1.42E-06
N	105679	Dimethylphenol, 2,4-	mg/L	5.22E-02		5.22E-02	2.30E-02		2.30E-02
N	576261	Dimethylphenol, 2,6-	mg/L	2.07E-03		2.07E-03	8.67E-04		8.67E-04
N	95658	Dimethylphenol, 3,4-	mg/L	3.19E-03		3.19E-03	1.36E-03		1.36E-03
N	131113	Dimethylphthalate	mg/L	3.64E+01		3.64E+01	1.51E+01		1.51E+01
N	120616	Dimethylterephthalate	mg/L	3.44E-01		3.44E-01	1.44E-01		1.44E-01
N	534521	Dinitro-o-cresol, 4,6-	mg/L						
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/L	7.30E-03		7.30E-03	3.02E-03		3.02E-03
N	528290	Dinitrobenzene, 1,2-	mg/L	1.45E-03		1.45E-03	6.03E-04		6.03E-04
N	99650	Dinitrobenzene, 1,3-	mg/L	3.63E-04		3.63E-04	1.50E-04		1.50E-04
N	100254	Dinitrobenzene, 1,4-	mg/L	1.45E-03		1.45E-03	6.01E-04		6.01E-04
N	51285	Dinitrophenol, 2,4-	mg/L	7.26E-03		7.26E-03	3.01E-03		3.01E-03
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/L		7.69E-05	7.69E-05		7.69E-05	7.69E-05
N	121142	Dinitrotoluene, 2,4-	mg/L	7.24E-03	7.69E-05	7.69E-05	3.00E-03	7.69E-05	7.69E-05
N	606202	Dinitrotoluene, 2,6-	mg/L	3.63E-03	7.71E-05	7.71E-05	1.51E-03	7.71E-05	7.71E-05
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/L						
N	88857	Dinoseb	mg/L	3.31E-03		3.31E-03	1.40E-03		1.40E-03
N	123911	Dioxane, 1,4-	mg/L		4.79E-03	4.79E-03		4.79E-03	4.79E-03
Y	1746016	Dioxins/Furans (Total)	mg/L		6.09E-11	6.09E-11		6.09E-11	6.09E-11
N	957517	Diphenamid	mg/L	1.09E-01		1.09E-01	4.51E-02		4.51E-02
N	127639	Diphenyl sulfone	mg/L	3.29E-02		3.29E-02	1.36E-02		1.36E-02
N	122394	Diphenylamine	mg/L	7.63E-02		7.63E-02	3.27E-02		3.27E-02
N	122667	Diphenylhydrazine, 1,2-	mg/L		6.21E-05	6.21E-05		6.21E-05	6.21E-05
N	85007	Diquat	mg/L	8.03E-03		8.03E-03	3.33E-03		3.33E-03
N	1937377	Direct Black 38	mg/L		6.13E-06	6.13E-06		6.13E-06	6.13E-06
N	2602462	Direct Blue 6	mg/L		6.51E-06	6.51E-06		6.51E-06	6.51E-06
N	16071866	Direct Brown 95	mg/L		5.67E-06	5.67E-06		5.67E-06	5.67E-06
N	2610051	Direct Sky Blue	mg/L						
N	298044	Disulfoton	mg/L	1.33E-04		1.33E-04	5.60E-05		5.60E-05
N	330541	Diuron	mg/L	7.14E-03		7.14E-03	2.97E-03		2.97E-03
N	2439103	Dodine	mg/L	1.45E-02		1.45E-02	6.01E-03		6.01E-03
N	759944	EPTC	mg/L	8.37E-02		8.37E-02	3.53E-02		3.53E-02
N	115297	Endosulfan	mg/L	2.17E-02		2.17E-02	9.02E-03		9.02E-03
N	145733	Endothall	mg/L	7.22E-02		7.22E-02	3.00E-02		3.00E-02
N	72208	Endrin	mg/L	4.47E-04		4.47E-04	2.11E-04		2.11E-04
N	106898	Epichlorohydrin	mg/L	4.36E-04	2.38E-03	4.36E-04	9.30E-05	2.38E-03	9.30E-05
N	106887	Epoxybutane, 1,2-	mg/L	2.03E-02		2.03E-02	8.46E-03		8.46E-03
N	16672870	Ethephon	mg/L	1.82E-02		1.82E-02	7.55E-03		7.55E-03
N	563122	Ethion	mg/L	1.62E-03		1.62E-03	6.89E-04		6.89E-04
N	111159	Ethoxyethanol Acetate, 2-	mg/L	1.09E+00		1.09E+00	4.53E-01		4.53E-01
N	110805	Ethoxyethanol, 2-	mg/L	1.46E+00		1.46E+00	6.04E-01		6.04E-01
N	141786	Ethyl Acetate	mg/L	1.01E+00		1.01E+00	2.47E-01		2.47E-01
N	140885	Ethyl Acrylate	mg/L		2.79E-04	2.79E-04		2.79E-04	2.79E-04
N	75003	Ethyl Chloride	mg/L	1.10E+00	4.61E-03	4.61E-03	3.68E-01	4.61E-03	4.61E-03
N	60297	Ethyl Ether	mg/L	2.22E-01		2.22E-01	5.47E-02		5.47E-02
N	97632	Ethyl Methacrylate	mg/L	1.00E-01		1.00E-01	2.47E-02		2.47E-02
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/L	3.52E-05		3.52E-05	1.47E-05		1.47E-05
Y	100414	Ethylbenzene	mg/L	1.89E-01	4.68E-03	4.68E-03	5.63E-02	4.68E-03	4.68E-03
N	109784	Ethylene Cyanohydrin	mg/L	1.09E+00		1.09E+00	4.54E-01		4.54E-01
N	107153	Ethylene Diamine	mg/L	7.28E-02		7.28E-02	3.02E-02		3.02E-02
N	107211	Ethylene Glycol	mg/L	7.30E+00		7.30E+00	3.02E+00		3.02E+00
N	111762	Ethylene Glycol Monobutyl Ether	mg/L	1.75E+00		1.75E+00	7.31E-01		7.31E-01
N	75218	Ethylene Oxide	mg/L		2.58E-05	2.58E-05		2.58E-05	2.58E-05
N	96457	Ethylene Thiourea	mg/L	2.92E-04	4.79E-04	2.92E-04	1.21E-04	4.79E-04	1.21E-04
N	84720	Ethylphthalyl Ethyl Glycolate	mg/L	1.09E+01		1.09E+01	4.52E+00		4.52E+00
N	101200480	Express	mg/L	2.92E-02		2.92E-02	1.21E-02		1.21E-02
N	22224926	Fenamiphos	mg/L	8.92E-04		8.92E-04	3.71E-04		3.71E-04
N	39515418	Fenpropathrin	mg/L	5.77E-02		5.77E-02	2.59E-02		2.59E-02
N	2164172	Fluometuron	mg/L	4.68E-02		4.68E-02	1.95E-02		1.95E-02
Y	206440	Fluoranthene	mg/L	4.70E-02		4.70E-02	2.26E-02		2.26E-02
Y	86737	Fluorene	mg/L	3.51E-02		3.51E-02	9.72E-03		9.72E-03
N	59756604	Fluridone	mg/L	2.89E-01		2.89E-01	1.20E-01		1.20E-01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	56425913	Flurprimidol	mg/L	7.15E-02		7.15E-02	2.98E-02		2.98E-02
N	66332965	Flutolanil	mg/L	2.19E-01		2.19E-01	9.07E-02		9.07E-02
N	69409945	Fluvalinate	mg/L	2.61E-02		2.61E-02	1.15E-02		1.15E-02
N	133073	Folpet	mg/L	3.59E-01	1.48E-02	1.48E-02	1.49E-01	1.48E-02	1.48E-02
N	72178020	Fomesafen	mg/L		2.77E-04	2.77E-04		2.77E-04	2.77E-04
N	944229	Fonofos	mg/L	6.42E-03		6.42E-03	2.73E-03		2.73E-03
N	50000	Formaldehyde	mg/L	5.45E-01		5.45E-01	2.26E-01		2.26E-01
N	64186	Formic Acid	mg/L	7.29E+00		7.29E+00	3.02E+00		3.02E+00
N	39148248	Fosetyl-AL	mg/L	1.10E+01		1.10E+01	4.54E+00		4.54E+00
N	110009	Furan	mg/L	1.12E-03		1.12E-03	2.74E-04		2.74E-04
N	67458	Furazolidone	mg/L		1.39E-05	1.39E-05		1.39E-05	1.39E-05
N	98011	Furfural	mg/L	7.83E-03		7.83E-03	3.45E-03		3.45E-03
N	531828	Furium	mg/L		1.05E-06	1.05E-06		1.05E-06	1.05E-06
N	60568050	Furmecyclox	mg/L		1.76E-03	1.76E-03		1.76E-03	1.76E-03
N	77182822	Glufosinate, Ammonium	mg/L	1.46E-03		1.46E-03	6.05E-04		6.05E-04
N	765344	Glycidyl	mg/L	1.46E-03		1.46E-03	6.04E-04		6.04E-04
N	1071836	Glyphosate	mg/L	3.65E-01		3.65E-01	1.51E-01		1.51E-01
N	42874033	Goal	mg/L	9.97E-03		9.97E-03	4.21E-03		4.21E-03
N	69806402	Haloxyfop, Methyl	mg/L	1.80E-04		1.80E-04	7.49E-05		7.49E-05
N	79277273	Harmony	mg/L	4.74E-02		4.74E-02	1.97E-02		1.97E-02
N	76448	Heptachlor	mg/L	1.78E-03	1.14E-05	1.14E-05	7.40E-04	1.14E-05	1.14E-05
N	1024573	Heptachlor Epoxide	mg/L	4.17E-05	5.12E-06	5.12E-06	1.77E-05	5.12E-06	5.12E-06
N	142825	Heptane, N-	mg/L						
N	87821	Hexabromobenzene	mg/L	7.03E-03		7.03E-03	2.93E-03		2.93E-03
N	118741	Hexachlorobenzene	mg/L	1.66E-03	1.92E-05	1.92E-05	7.54E-04	1.92E-05	1.92E-05
N	87683	Hexachlorobutadiene	mg/L	5.08E-04	4.80E-04	4.80E-04	2.25E-04	4.80E-04	2.25E-04
N	319846	Hexachlorocyclohexane, Alpha-	mg/L		8.09E-06	8.09E-06		8.09E-06	8.09E-06
N	319857	Hexachlorocyclohexane, Beta-	mg/L		2.81E-05	2.81E-05		2.81E-05	2.81E-05
N	319868	Hexachlorocyclohexane, Delta-	mg/L						
N	6108107	Hexachlorocyclohexane, Epsilon	mg/L						
N	58899	Hexachlorocyclohexane, Gamma-	mg/L	1.07E-03	3.96E-05	3.96E-05	4.44E-04	3.96E-05	3.96E-05
N	608731	Hexachlorocyclohexane, Technical	mg/L		2.76E-05	2.76E-05		2.76E-05	2.76E-05
N	77474	Hexachlorocyclopentadiene	mg/L	1.98E-02		1.98E-02	8.37E-03		8.37E-03
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/L		3.36E-09	3.36E-09		3.36E-09	3.36E-09
N	67721	Hexachloroethane	mg/L	3.17E-03	3.29E-03	3.17E-03	1.35E-03	3.29E-03	1.35E-03
N	70304	Hexachlorophene	mg/L	1.91E-04		1.91E-04	9.56E-05		9.56E-05
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/L	1.06E-02	4.64E-04	4.64E-04	4.42E-03	4.64E-04	4.64E-04
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/L	1.04E-05		1.04E-05	4.30E-06		4.30E-06
N	110543	Hexane, N-	mg/L	5.33E-02		5.33E-02	1.44E-02		1.44E-02
N	591786	Hexanone, 2-	mg/L						
N	51235042	Hexazinone	mg/L	1.20E-01		1.20E-01	4.99E-02		4.99E-02
Y	37871004	HpCDD, 2,3,7,8-	mg/L		5.45E-09	5.45E-09		5.45E-09	5.45E-09
Y	38998753	HpCDF, 2,3,7,8-	mg/L		3.51E-08	3.51E-08		3.51E-08	3.51E-08
Y	34465468	HxCDD, 2,3,7,8-	mg/L		3.51E-09	3.51E-09		3.51E-09	3.51E-09
Y	55684941	HxCDF, 2,3,7,8-	mg/L		3.51E-09	3.51E-09		3.51E-09	3.51E-09
N	302012	Hydrazine	mg/L		1.76E-05	1.76E-05		1.76E-05	1.76E-05
N	10034932	Hydrazine Sulfate	mg/L		1.76E-05	1.76E-05		1.76E-05	1.76E-05
N	123319	Hydroquinone	mg/L	1.45E-01		1.45E-01	6.03E-02		6.03E-02
N	35554440	Imazalil	mg/L	4.50E-02		4.50E-02	1.88E-02		1.88E-02
N	81335377	Imazaquin	mg/L	9.11E-01		9.11E-01	3.77E-01		3.77E-01
Y	193395	Indeno[1,2,3-cd]pyrene	mg/L		6.31E-06	6.31E-06		6.31E-06	6.31E-06
N	36734197	Iprodione	mg/L	1.45E-01		1.45E-01	6.01E-02		6.01E-02
N	78831	Isobutyl Alcohol	mg/L	3.36E-01		3.36E-01	8.24E-02		8.24E-02
N	78591	Isophorone	mg/L	7.19E-01	5.47E-02	5.47E-02	2.99E-01	5.47E-02	5.47E-02
N	33820530	Isopropalin	mg/L	2.53E-02		2.53E-02	1.18E-02		1.18E-02
N	67630	Isopropanol	mg/L						
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/L	3.64E-01		3.64E-01	1.51E-01		1.51E-01
N	82558507	Isoxaben	mg/L	1.83E-01		1.83E-01	7.56E-02		7.56E-02
N	143500	Kepone	mg/L	6.57E+01		6.57E+01	2.72E+01		2.72E+01
N	23950585	Kerb	mg/L	2.61E-01		2.61E-01	1.09E-01		1.09E-01
N	77501634	Lactofen	mg/L	7.10E-03		7.10E-03	2.96E-03		2.96E-03
N		Lead Alkyls	mg/L						
N	330552	Linuron	mg/L	7.02E-03		7.02E-03	2.93E-03		2.93E-03
N	83055996	Londax	mg/L	7.30E-01		7.30E-01	3.02E-01		3.02E-01
N	94746	MCPA	mg/L	1.79E-03		1.79E-03	7.46E-04		7.46E-04
N	94815	MCPB	mg/L	3.37E-02		3.37E-02	1.42E-02		1.42E-02
N	93652	MCPP	mg/L	3.56E-03		3.56E-03	1.48E-03		1.48E-03
N	121755	Malathion	mg/L	7.24E-02		7.24E-02	3.01E-02		3.01E-02
N	108316	Maleic Anhydride	mg/L	3.64E-01		3.64E-01	1.51E-01		1.51E-01
N	123331	Maleic Hydrazide	mg/L	5.61E-01		5.61E-01	1.37E-01		1.37E-01
N	109773	Malononitrile	mg/L	7.29E-05		7.29E-05	3.02E-05		3.02E-05
N	8018017	Mancozeb	mg/L	1.10E-01		1.10E-01	4.54E-02		4.54E-02
N	12427382	Maneb	mg/L	1.82E-02	8.78E-04	8.78E-04	7.56E-03	8.78E-04	8.78E-04
N	950107	Mephosfolan	mg/L	3.28E-04		3.28E-04	1.36E-04		1.36E-04
N	24307264	Mepiquat Chloride	mg/L	1.10E-01		1.10E-01	4.54E-02		4.54E-02
N	149304	Mercaptobenzothiazole, 2-	mg/L	3.65E-01	1.82E-03	1.82E-03	1.51E-01	1.82E-03	1.82E-03

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	150505	Merphos	mg/L	3.65E-06		3.65E-06	1.89E-06		1.89E-06
N	78488	Merphos Oxide	mg/L	5.63E-05		5.63E-05	2.59E-05		2.59E-05
N	57837191	Metalaxyl	mg/L	2.19E-01		2.19E-01	9.06E-02		9.06E-02
N	126987	Methacrylonitrile	mg/L	1.71E-04		1.71E-04	4.65E-05		4.65E-05
N	10265926	Methamidophos	mg/L	1.82E-04		1.82E-04	7.56E-05		7.56E-05
N	67561	Methanol	mg/L	1.82E+00		1.82E+00	7.54E-01		7.54E-01
N	950378	Methidathion	mg/L	3.63E-03		3.63E-03	1.51E-03		1.51E-03
N	16752775	Methomyl	mg/L	2.81E-02		2.81E-02	6.87E-03		6.87E-03
N	99592	Methoxy-5-nitroaniline, 2-	mg/L		1.14E-03	1.14E-03		1.14E-03	1.14E-03
N	72435	Methoxychlor	mg/L	1.70E-02		1.70E-02	7.15E-03		7.15E-03
N	110496	Methoxyethanol Acetate, 2-	mg/L	7.29E-03		7.29E-03	3.02E-03		3.02E-03
N	109864	Methoxyethanol, 2-	mg/L	3.65E-03		3.65E-03	1.51E-03		1.51E-03
N	79209	Methyl Acetate	mg/L	1.12E+00		1.12E+00	2.75E-01		2.75E-01
N	96333	Methyl Acrylate	mg/L	3.36E-02		3.36E-02	8.24E-03		8.24E-03
N	78933	Methyl Ethyl Ketone	mg/L	3.82E-01		3.82E-01	8.68E-02		8.68E-02
N	60344	Methyl Hydrazine	mg/L		4.79E-05	4.79E-05		4.79E-05	4.79E-05
N	108101	Methyl Isobutyl Ketone	mg/L	3.29E-02		3.29E-02	7.22E-03		7.22E-03
N	74931	Methyl Mercaptan	mg/L	2.08E-03		2.08E-03	8.62E-04		8.62E-04
N	80626	Methyl Methacrylate	mg/L	3.05E-01		3.05E-01	6.51E-02		6.51E-02
N	298000	Methyl Parathion	mg/L	9.09E-04		9.09E-04	3.77E-04		3.77E-04
N	993135	Methyl Phosphonic Acid	mg/L	7.30E-02		7.30E-02	3.02E-02		3.02E-02
N	25013154	Methyl Styrene (Mixed Isomers)	mg/L	9.21E-03		9.21E-03	2.58E-03		2.58E-03
N	79221	Methyl chlorocarbonate	mg/L	3.65E+00		3.65E+00	1.51E+00		1.51E+00
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/L	1.39E+00		1.39E+00	2.88E-01		2.88E-01
N	99558	Methyl-5-Nitroaniline, 2-	mg/L		1.57E-03	1.57E-03		1.57E-03	1.57E-03
N	636215	Methylaniline Hydrochloride, 2-	mg/L		2.91E-04	2.91E-04		2.91E-04	2.91E-04
N	108872	Methylcyclohexane	mg/L	9.29E-01		9.29E-01	2.32E-01		2.32E-01
N	75092	Methylene Chloride	mg/L	1.88E-01	4.26E-03	4.26E-03	6.86E-02	4.26E-03	4.26E-03
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/L	2.32E-03	3.70E-04	3.70E-04	9.80E-04	3.70E-04	3.70E-04
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/L		7.94E-04	7.94E-04		7.94E-04	7.94E-04
N	101779	Methylenebisbenzenamine, 4,4'-	mg/L		2.10E-04	2.10E-04		2.10E-04	2.10E-04
N	101688	Methylenediphenyl Diisocyanate	mg/L	6.08E-04		6.08E-04	2.53E-04		2.53E-04
N	98839	Methylstyrene, Alpha-	mg/L	7.41E-02		7.41E-02	1.87E-02		1.87E-02
N	1762283	Methyltriethyl Lead	mg/L						
N	51218452	Metolachlor	mg/L	5.36E-01		5.36E-01	2.23E-01		2.23E-01
N	21087649	Metribuzin	mg/L	9.08E-02		9.08E-02	3.76E-02		3.76E-02
N	2385855	Mirex	mg/L	7.17E-04	2.88E-05	2.88E-05	2.98E-04	2.88E-05	2.88E-05
N	2212671	Molinate	mg/L	6.29E-03		6.29E-03	2.68E-03		2.68E-03
N	10599903	Monochloramine	mg/L	3.65E-01		3.65E-01	1.51E-01		1.51E-01
N	25154421	Monochlorobutanes	mg/L	1.46E+00		1.46E+00	6.05E-01		6.05E-01
N	300765	Naled	mg/L	7.28E-03		7.28E-03	3.02E-03		3.02E-03
Y	91203	Naphthalene	mg/L	1.36E-03		1.36E-03	2.85E-04		2.85E-04
N	90120	Naphthalene, 1-Methyl	mg/L						
N	91576	Naphthalene, 2-Methyl	mg/L						
N	15299997	Napropamide	mg/L	3.65E-01		3.65E-01	1.51E-01		1.51E-01
N	2429745	Niagara Blue 4B	mg/L						
N	13463393	Nickel Carbonyl	mg/L						
N	1929824	Nitrapyrin	mg/L	5.28E-03		5.28E-03	2.20E-03		2.20E-03
N	88744	Nitroaniline, 2-	mg/L	2.05E-04		2.05E-04	8.51E-05		8.51E-05
N	98953	Nitrobenzene	mg/L	6.12E-04		6.12E-04	1.53E-04		1.53E-04
N	67209	Nitrofurantoin	mg/L	2.55E-01		2.55E-01	1.06E-01		1.06E-01
N	59870	Nitrofurazone	mg/L		3.51E-05	3.51E-05		3.51E-05	3.51E-05
N	55630	Nitroglycerin	mg/L	5.11E-02		5.11E-02	2.12E-02		2.12E-02
N	556887	Nitroguanidine	mg/L	3.65E-01		3.65E-01	1.51E-01		1.51E-01
N	100027	Nitrophenol, 4-	mg/L	2.89E-02		2.89E-02	1.20E-02		1.20E-02
N	79469	Nitropropane, 2-	mg/L	6.41E-03	1.43E-06	1.43E-06	1.57E-03	1.43E-06	1.43E-06
N	759739	Nitroso-N-ethylurea, N-	mg/L		3.76E-07	3.76E-07		3.76E-07	3.76E-07
N	684935	Nitroso-N-methylurea, N-	mg/L						
N	924163	Nitroso-di-N-butylamine, N-	mg/L		2.41E-06	2.41E-06		2.41E-06	2.41E-06
N	621647	Nitroso-di-N-propylamine, N-	mg/L		7.39E-06	7.39E-06		7.39E-06	7.39E-06
N	1116547	Nitrosodiethanolamine, N-	mg/L		1.88E-05	1.88E-05		1.88E-05	1.88E-05
N	55185	Nitrosodiethylamine, N-	mg/L		3.50E-07	3.50E-07		3.50E-07	3.50E-07
N	62759	Nitrosodimethylamine, N-	mg/L		1.03E-06	1.03E-06		1.03E-06	1.03E-06
N	86306	Nitrosodiphenylamine, N-	mg/L		9.47E-03	9.47E-03		9.47E-03	9.47E-03
N	10595956	Nitrosomethylethylamine, N-	mg/L		2.39E-06	2.39E-06		2.39E-06	2.39E-06
N	4549400	Nitrosomethylvinylamine, N-	mg/L						
N	930552	Nitrosopyrrolidine, N-	mg/L		2.51E-05	2.51E-05		2.51E-05	2.51E-05
N	119324	Nitrotoluene, 4-Amino-2-	mg/L						
N	99081	Nitrotoluene, m-	mg/L	1.11E-02		1.11E-02	2.74E-03		2.74E-03
N	88722	Nitrotoluene, o-	mg/L	1.11E-02		1.11E-02	2.74E-03		2.74E-03
N	99990	Nitrotoluene, p-	mg/L	1.11E-02		1.11E-02	2.74E-03		2.74E-03
N	27314132	Norflurazon	mg/L	1.45E-01		1.45E-01	6.03E-02		6.03E-02
N	85509199	Nustar	mg/L	2.56E-03		2.56E-03	1.06E-03		1.06E-03
Y	3268879	OCDD	mg/L		1.91E-08	1.91E-08		1.91E-08	1.91E-08
Y	39001020	OCDF	mg/L		2.03E-08	2.03E-08		2.03E-08	2.03E-08
N	32536520	Octabromodiphenyl Ether	mg/L	1.10E-02		1.10E-02	4.54E-03		4.54E-03

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/L	1.82E-01		1.82E-01	7.56E-02		7.56E-02
N	152169	Octamethylpyrophosphoramide	mg/L	7.30E-03		7.30E-03	3.02E-03		3.02E-03
N	117840	Octyl Phthalate, di-N-	mg/L	1.32E-03		1.32E-03	6.84E-04		6.84E-04
N	19044883	Oryzalin	mg/L	1.82E-01		1.82E-01	7.53E-02		7.53E-02
N	19666309	Oxadiazon	mg/L	1.60E-02		1.60E-02	6.81E-03		6.81E-03
N	23135220	Oxamyl	mg/L	9.12E-02		9.12E-02	3.78E-02		3.78E-02
N	76738620	Paclobutrazol	mg/L	4.65E-02		4.65E-02	1.93E-02		1.93E-02
N	1910425	Paraquat	mg/L	1.64E-02		1.64E-02	6.80E-03		6.80E-03
N	56382	Parathion	mg/L	2.06E-02		2.06E-02	8.65E-03		8.65E-03
Y	36088229	PeCDD, 2,3,7,8-	mg/L		2.50E-10	2.50E-10		2.50E-10	2.50E-10
Y	57117416	PeCDF, 1,2,3,7,8-	mg/L		1.48E-10	1.48E-10		1.48E-10	1.48E-10
Y	57117314	PeCDF, 2,3,4,7,8-	mg/L		1.29E-09	1.29E-09		1.29E-09	1.29E-09
N	1114712	Pebulate	mg/L	1.51E-01		1.51E-01	6.49E-02		6.49E-02
N	40487421	Pendimethalin	mg/L	9.03E-02		9.03E-02	4.06E-02		4.06E-02
N	32534819	Pentabromodiphenyl Ether	mg/L	7.30E-03		7.30E-03	3.02E-03		3.02E-03
N	608935	Pentachlorobenzene	mg/L	1.79E-03		1.79E-03	8.04E-04		8.04E-04
N	25329355	Pentachlorocyclopentadiene	mg/L						
N	82688	Pentachloronitrobenzene	mg/L	9.66E-03	1.80E-04	1.80E-04	4.10E-03	1.80E-04	1.80E-04
N	87865	Pentachlorophenol	mg/L	5.02E-02	2.08E-04	2.08E-04	2.34E-02	2.08E-04	2.08E-04
N	71410	Pentyl Alcohol, N-	mg/L						
N	7601903	Perchlorate	mg/L	1.83E-03		1.83E-03	7.56E-04		7.56E-04
N	52645531	Permethrin	mg/L	1.81E-01		1.81E-01	7.51E-02		7.51E-02
Y	85018	Phenanthrene	mg/L						
N	13684634	Phenmedipham	mg/L	9.12E-01		9.12E-01	3.78E-01		3.78E-01
N	108952	Phenol	mg/L	2.17E+00		2.17E+00	8.99E-01		8.99E-01
N	92842	Phenothiazine	mg/L	7.30E-03		7.30E-03	3.02E-03		3.02E-03
N	108452	Phenylenediamine, m-	mg/L	2.19E-02		2.19E-02	9.07E-03		9.07E-03
N	95545	Phenylenediamine, o-	mg/L		1.12E-03	1.12E-03		1.12E-03	1.12E-03
N	106503	Phenylenediamine, p-	mg/L	6.93E-01		6.93E-01	2.87E-01		2.87E-01
N	62384	Phenylmercuric Acetate	mg/L	2.92E-04		2.92E-04	1.21E-04		1.21E-04
N	90437	Phenylphenol, 2-	mg/L		2.48E-02	2.48E-02		2.48E-02	2.48E-02
N	298022	Phorate	mg/L	7.28E-04		7.28E-04	3.02E-04		3.02E-04
N	732116	Phosmet	mg/L	7.24E-02		7.24E-02	3.01E-02		3.01E-02
N	100210	Phthalic Acid, P-	mg/L	3.61E+00		3.61E+00	1.50E+00		1.50E+00
N	85449	Phthalic Anhydride	mg/L	7.30E+00		7.30E+00	3.02E+00		3.02E+00
N	1918021	Picloram	mg/L	2.54E-01		2.54E-01	1.05E-01		1.05E-01
N	29232937	Pirimiphos, Methyl	mg/L	3.35E-02		3.35E-02	1.41E-02		1.41E-02
N	59536651	Polybrominated Biphenyls	mg/L	2.56E-05	5.92E-06	5.92E-06	1.06E-05	5.92E-06	5.92E-06
Y	1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		7.93E-05	7.93E-05		7.93E-05	7.93E-05
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		4.53E-04	4.53E-04		4.53E-04	4.53E-04
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/L	6.26E-04		6.26E-04	2.59E-04		2.59E-04
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		9.51E-07	9.51E-07		9.51E-07	9.51E-07
N	67747095	Prochloraz	mg/L	3.19E-02	3.42E-04	3.42E-04	1.33E-02	3.42E-04	3.42E-04
N	26399360	Profluralin	mg/L	1.49E-02		1.49E-02	6.60E-03		6.60E-03
N	1610180	Prometon	mg/L	5.41E-02		5.41E-02	2.25E-02		2.25E-02
N	7287196	Prometryn	mg/L	1.44E-02		1.44E-02	5.98E-03		5.98E-03
N	1918167	Propachlor	mg/L	4.69E-02		4.69E-02	1.95E-02		1.95E-02
N	709988	Propanil	mg/L	1.73E-02		1.73E-02	7.25E-03		7.25E-03
N	2312358	Propargite	mg/L	6.20E-02		6.20E-02	2.65E-02		2.65E-02
N	107197	Propargyl Alcohol	mg/L	7.29E-03		7.29E-03	3.02E-03		3.02E-03
N	139402	Propazine	mg/L	7.20E-02		7.20E-02	2.99E-02		2.99E-02
N	122429	Propham	mg/L	6.60E-02		6.60E-02	2.79E-02		2.79E-02
N	60207901	Propiconazole	mg/L	4.66E-02		4.66E-02	1.94E-02		1.94E-02
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/L	3.65E-03		3.65E-03	1.51E-03		1.51E-03
N	103651	Propylbenzene, n-	mg/L	1.12E-02		1.12E-02	2.75E-03		2.75E-03
N	57556	Propylene Glycol	mg/L	7.30E+01		7.30E+01	3.02E+01		3.02E+01
N	1569024	Propylene Glycol Monoethyl Ether	mg/L	2.56E+00		2.56E+00	1.06E+00		1.06E+00
N	107982	Propylene Glycol Monomethyl Ether	mg/L	2.55E+00		2.55E+00	1.06E+00		1.06E+00
N	75569	Propylene Oxide	mg/L	9.62E-03	1.89E-04	1.89E-04	2.36E-03	1.89E-04	1.89E-04
N	81335775	Pursuit	mg/L	9.13E-01		9.13E-01	3.78E-01		3.78E-01
N	51630581	Pydrin	mg/L	8.89E-02		8.89E-02	3.70E-02		3.70E-02
Y	129000	Pyrene	mg/L	3.81E-02		3.81E-02	1.82E-02		1.82E-02
N	110861	Pyridine	mg/L	3.58E-03		3.58E-03	1.49E-03		1.49E-03
N	13593038	Quinalphos	mg/L	1.80E-03		1.80E-03	7.47E-04		7.47E-04
N	91225	Quinoline	mg/L		4.25E-06	4.25E-06		4.25E-06	4.25E-06
N		Refractory Ceramic Fibers	mg/L						
N	10453868	Resmethrin	mg/L	1.45E-02		1.45E-02	7.34E-03		7.34E-03
N	299843	Ronnel	mg/L	1.39E-01		1.39E-01	6.05E-02		6.05E-02
N	83794	Rotenone	mg/L	1.43E-02		1.43E-02	5.94E-03		5.94E-03
N	78587050	Savey	mg/L	9.13E-02		9.13E-02	3.78E-02		3.78E-02
N	7783008	Selenious Acid	mg/L	1.83E-02		1.83E-02	7.56E-03		7.56E-03
N	14124675	Selenite	mg/L						
N	630104	Selenourea	mg/L	1.83E-02		1.83E-02	7.56E-03		7.56E-03
N	74051802	Sethoxydim	mg/L	3.01E-01		3.01E-01	1.27E-01		1.27E-01
N	122349	Simazine	mg/L	1.80E-02	4.33E-04	4.33E-04	7.47E-03	4.33E-04	4.33E-04
N	62476599	Sodium Acifluorfen	mg/L	4.75E-02		4.75E-02	1.97E-02		1.97E-02

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	148185	Sodium Diethyldithiocarbamate	mg/L	1.09E-01	1.95E-04	1.95E-04	4.53E-02	1.95E-04	1.95E-04
N	62748	Sodium Fluoroacetate	mg/L	7.30E-05		7.30E-05	3.02E-05		3.02E-05
N	961115	Stirofos (Tetrachlorovinphos)	mg/L	1.08E-01	2.17E-03	2.17E-03	4.49E-02	2.17E-03	2.17E-03
N	57249	Strychnine	mg/L	1.09E-03		1.09E-03	4.53E-04		4.53E-04
N	100425	Styrene	mg/L	1.78E-01		1.78E-01	5.65E-02		5.65E-02
N	88671890	Systhane	mg/L	9.13E-02		9.13E-02	3.78E-02		3.78E-02
Y	1746016	TCDD, 2,3,7,8-	mg/L		6.09E-11	6.09E-11		6.09E-11	6.09E-11
Y	51207319	TCDF, 2,3,7,8-	mg/L		1.60E-09	1.60E-09		1.60E-09	1.60E-09
N	21564170	TCMTB	mg/L	1.04E-01		1.04E-01	4.35E-02		4.35E-02
N	34014181	Tebuthiuron	mg/L	2.55E-01		2.55E-01	1.06E-01		1.06E-01
N	3383968	Temephos	mg/L	6.26E-02		6.26E-02	2.67E-02		2.67E-02
N	5902512	Terbacil	mg/L	4.71E-02		4.71E-02	1.95E-02		1.95E-02
N	13071799	Terbufos	mg/L	8.68E-05		8.68E-05	3.63E-05		3.63E-05
N	886500	Terbutryn	mg/L	3.30E-03		3.30E-03	1.40E-03		1.40E-03
N	1920907	Tetrabutyl Lead	mg/L						
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/L	7.90E-04		7.90E-04	3.47E-04		3.47E-04
N	630206	Tetrachloroethane, 1,1,1,2-	mg/L	3.31E-02	5.10E-04	5.10E-04	8.18E-03	5.10E-04	5.10E-04
N	79345	Tetrachloroethane, 1,1,2,2-	mg/L	6.69E-02	6.61E-05	6.61E-05	1.64E-02	6.61E-05	6.61E-05
Y	127184	Tetrachloroethylene	mg/L	2.02E-02	5.82E-04	5.82E-04	8.42E-03	5.82E-04	5.82E-04
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/L	8.99E-02		8.99E-02	3.87E-02		3.87E-02
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/L		2.06E-06	2.06E-06		2.06E-06	2.06E-06
N	3689245	Tetraethyl Dithiopyrophosphate	mg/L	1.81E-03		1.81E-03	7.50E-04		7.50E-04
N	78002	Tetraethyl Lead	mg/L	3.64E-07		3.64E-07	1.51E-07		1.51E-07
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/L	2.56E+01		2.56E+01	6.27E+00		6.27E+00
N	109999	Tetrahydrofuran	mg/L	7.67E-01	6.93E-03	6.93E-03	3.18E-01	6.93E-03	6.93E-03
N	75741	Tetramethyl Lead	mg/L						
N	3440753	Tetrapropyl Lead	mg/L						
N	1314325	Thallic Oxide	mg/L	2.56E-04		2.56E-04	1.06E-04		1.06E-04
N	563688	Thallium Acetate	mg/L	3.29E-04		3.29E-04	1.36E-04		1.36E-04
N	6533739	Thallium Carbonate	mg/L	2.92E-04		2.92E-04	1.21E-04		1.21E-04
N	28249776	Thiobencarb	mg/L	3.49E-02		3.49E-02	1.46E-02		1.46E-02
N	39196184	Thiofanox	mg/L	1.09E-03		1.09E-03	4.54E-04		4.54E-04
N	23564058	Thiophanate, Methyl	mg/L	2.92E-01		2.92E-01	1.21E-01		1.21E-01
N	137268	Thiram	mg/L	1.82E-02		1.82E-02	7.54E-03		7.54E-03
N	108883	Toluene	mg/L	1.45E-01		1.45E-01	3.38E-02		3.38E-02
N	26471625	Toluene diisocyanate mixture (TDI)	mg/L	5.98E-05		5.98E-05	2.57E-05		2.57E-05
N	95807	Toluene-2,4-diamine	mg/L		1.64E-05	1.64E-05		1.64E-05	1.64E-05
N	95705	Toluene-2,5-diamine	mg/L	2.19E+00		2.19E+00	9.06E-01		9.06E-01
N	823405	Toluene-2,6-diamine	mg/L	7.20E-01		7.20E-01	2.99E-01		2.99E-01
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/L		2.17E-04	2.17E-04		2.17E-04	2.17E-04
N	106490	Toluidine, p-	mg/L		6.65E-05	6.65E-05		6.65E-05	6.65E-05
N	8001352	Toxaphene	mg/L		4.56E-05	4.56E-05		4.56E-05	4.56E-05
N	66841256	Tralomethrin	mg/L	2.74E-02		2.74E-02	1.13E-02		1.13E-02
N	2303175	Triallate	mg/L	4.45E-02		4.45E-02	1.87E-02		1.87E-02
N	82097505	Triasulfuron	mg/L	3.65E-02		3.65E-02	1.51E-02		1.51E-02
N	615543	Tribromobenzene, 1,2,4-	mg/L	1.65E-02		1.65E-02	6.97E-03		6.97E-03
N	594150	Tribromochloromethane	mg/L						
N	49690940	Tribromodiphenyl Ether	mg/L						
N	56359	Tributyltin Oxide	mg/L	1.10E-03		1.10E-03	4.54E-04		4.54E-04
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/L	1.23E+01		1.23E+01	2.70E+00		2.70E+00
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/L						
N	76039	Trichloroacetic Acid	mg/L						
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/L		1.82E-03	1.82E-03		1.82E-03	1.82E-03
N	634935	Trichloroaniline, 2,4,6-	mg/L		1.37E-03	1.37E-03		1.37E-03	1.37E-03
N	120821	Trichlorobenzene, 1,2,4-	mg/L	2.31E-02		2.31E-02	7.81E-03		7.81E-03
N	71556	Trichloroethane, 1,1,1-	mg/L	9.75E-02		9.75E-02	3.35E-02		3.35E-02
N	79005	Trichloroethane, 1,1,2-	mg/L	4.47E-03	2.38E-04	2.38E-04	1.10E-03	2.38E-04	2.38E-04
Y	79016	Trichloroethylene	mg/L	6.34E-03	1.73E-03	1.73E-03	1.60E-03	1.73E-03	1.60E-03
N	75694	Trichlorofluoromethane	mg/L	2.43E-01		2.43E-01	5.77E-02		5.77E-02
N	95954	Trichlorophenol, 2,4,5-	mg/L	3.01E-01		3.01E-01	1.29E-01		1.29E-01
N	88062	Trichlorophenol, 2,4,6-	mg/L		3.99E-03	3.99E-03		3.99E-03	3.99E-03
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/L	2.68E-02		2.68E-02	1.13E-02		1.13E-02
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/L	3.23E-02		3.23E-02	1.37E-02		1.37E-02
N	598776	Trichloropropane, 1,1,2-	mg/L	5.60E-03		5.60E-03	1.37E-03		1.37E-03
N	96184	Trichloropropane, 1,2,3-	mg/L	4.66E-03	1.55E-06	1.55E-06	1.26E-03	1.55E-06	1.55E-06
N	96195	Trichloropropene, 1,2,3-	mg/L	5.53E-03		5.53E-03	1.36E-03		1.36E-03
N	2077465	Trichlorotoluene, 2,3,6-	mg/L						
N	2014837	Trichlorotoluene, alpha 2,6-	mg/L						
N	58138082	Tridiphane	mg/L	1.10E-02		1.10E-02	4.54E-03		4.54E-03
N	5224237	Triethyl Lead	mg/L						
N	121448	Triethylamine	mg/L	2.24E-03		2.24E-03	5.49E-04		5.49E-04
N	1582098	Trifluralin	mg/L	2.01E-02	5.12E-03	5.12E-03	8.82E-03	5.12E-03	5.12E-03
N	7442139	Trimethyl Lead	mg/L						
N	512561	Trimethyl Phosphate	mg/L		1.42E-03	1.42E-03		1.42E-03	1.42E-03
N	95636	Trimethylbenzene, 1,2,4-	mg/L	2.72E-03		2.72E-03	5.67E-04		5.67E-04
N	108678	Trimethylbenzene, 1,3,5-	mg/L	2.72E-03		2.72E-03	5.67E-04		5.67E-04

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.18. Groundwater No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Adult Resident			Child Resident		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	1762261	Trimethylethyl Lead	mg/L						
N	99354	Trinitrobenzene, 1,3,5-	mg/L	1.09E-01		1.09E-01	4.53E-02		4.53E-02
N	479458	Trinitrophenylmethylnitramine	mg/L	3.64E-02		3.64E-02	1.51E-02		1.51E-02
N	118967	Trinitrotoluene, 2,4,6-	mg/L	1.81E-03	1.74E-03	1.74E-03	7.50E-04	1.74E-03	7.50E-04
N	6618037	Tripropyl Lead	mg/L						
N	1929777	Vernolate	mg/L	3.02E-03		3.02E-03	1.30E-03		1.30E-03
N	50471448	Vinclozolin	mg/L	8.95E-02		8.95E-02	3.72E-02		3.72E-02
N	108054	Vinyl Acetate	mg/L	9.03E-02		9.03E-02	1.89E-02		1.89E-02
N	593602	Vinyl Bromide	mg/L	9.59E-04	1.22E-04	1.22E-04	2.35E-04	1.22E-04	1.22E-04
Y	75014	Vinyl Chloride	mg/L	8.76E-03	3.50E-05	3.50E-05	3.06E-03	3.50E-05	3.50E-05
N	81812	Warfarin	mg/L	1.08E-03		1.08E-03	4.48E-04		4.48E-04
Y	1330207	Xylene, Mixture	mg/L	3.07E-01		3.07E-01	6.53E-02		6.53E-02
Y	108383	Xylene, m-	mg/L	1.80E+00		1.80E+00	4.39E-01		4.39E-01
Y	95476	Xylene, o-	mg/L	1.80E+00		1.80E+00	4.39E-01		4.39E-01
Y	106423	Xylene, p-	mg/L						
N	12122677	Zineb	mg/L	1.82E-01		1.82E-01	7.55E-02		7.55E-02
Y	14596102	Am-241	pCi/L		3.71E-01	3.71E-01		3.71E-01	3.71E-01
Y	10198400	Co-60	pCi/L		2.46E+00	2.46E+00		2.46E+00	2.46E+00
Y	10045973	Cs-137+D	pCi/L		1.27E+00	1.27E+00		1.27E+00	1.27E+00
Y	13994202	Np-237+D	pCi/L		5.73E-01	5.73E-01		5.73E-01	5.73E-01
Y	13981163	Pu-238	pCi/L		2.95E-01	2.95E-01		2.95E-01	2.95E-01
Y	15117483	Pu-239	pCi/L		2.86E-01	2.86E-01		2.86E-01	2.86E-01
Y	14119336	Pu-240	pCi/L		2.86E-01	2.86E-01		2.86E-01	2.86E-01
Y	13982633	Ra-226+D	pCi/L		1.00E-01	1.00E-01		1.00E-01	1.00E-01
Y	14859677	Rn-222+D	pCi/L		8.66E-01	8.66E-01		8.66E-01	8.66E-01
Y	10098972	Sr-90+D	pCi/L		5.22E-01	5.22E-01		5.22E-01	5.22E-01
Y	14133767	Tc-99	pCi/L		1.40E+01	1.40E+01		1.40E+01	1.40E+01
Y	14274829	Th-228+D	pCi/L		1.29E-01	1.29E-01		1.29E-01	1.29E-01
Y	14269637	Th-230	pCi/L		4.24E-01	4.24E-01		4.24E-01	4.24E-01
Y	N2608	Th-232	pCi/L		3.82E-01	3.82E-01		3.82E-01	3.82E-01
Y	13966295	U-234	pCi/L		5.46E-01	5.46E-01		5.46E-01	5.46E-01
Y	15117961	U-235+D	pCi/L		5.38E-01	5.38E-01		5.38E-01	5.38E-01
Y	24678828	U-238+D	pCi/L		4.43E-01	4.43E-01		4.43E-01	4.43E-01

Hazard-based values calculated using a target HI of 0.1.
Cancer-based values calculated using a target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7429905	Aluminum	mg/L	4.01E+01		4.01E+01	9.14E+01		9.14E+01	9.43E+01		9.43E+01	2.03E+02		2.03E+02
N	20859738	Aluminum Phosphide	mg/L	3.21E-02		3.21E-02	7.31E-02		7.31E-02	6.21E-02		6.21E-02	1.63E-01		1.63E-01
N	7664417	Ammonia	mg/L												
N	7773060	Ammonium Sulfamate	mg/L	1.61E+01		1.61E+01	3.66E+01		3.66E+01	3.10E+01		3.10E+01	8.13E+01		8.13E+01
Y	7440360	Antimony (metallic)	mg/L	3.21E-03		3.21E-03	7.31E-03		7.31E-03	9.12E-03		9.12E-03	1.63E-02		1.63E-02
N	1314609	Antimony Pentoxide	mg/L	4.01E-02		4.01E-02	9.14E-02		9.14E-02	7.76E-02		7.76E-02	2.03E-01		2.03E-01
N	304610	Antimony Potassium Tartrate	mg/L	7.23E-02		7.23E-02	1.65E-01		1.65E-01	1.40E-01		1.40E-01	3.66E-01		3.66E-01
N	1332816	Antimony Tetroxide	mg/L	3.21E-02		3.21E-02	7.31E-02		7.31E-02	6.21E-02		6.21E-02	1.63E-01		1.63E-01
N	1309644	Antimony Trioxide	mg/L	3.21E-02		3.21E-02	7.31E-02		7.31E-02	6.21E-02		6.21E-02	1.63E-01		1.63E-01
N		Arsenic Salts	mg/L												
Y	7440382	Arsenic, Inorganic	mg/L	4.94E-02	3.07E-03	3.07E-03	1.12E-01	7.00E-03	7.00E-03	6.95E-02	1.80E-03	1.80E-03	2.50E-01	4.09E-03	4.09E-03
N	7784421	Arsine	mg/L		1.50E-03	1.50E-03		3.41E-03	3.41E-03		1.29E-03	1.29E-03		1.99E-03	1.99E-03
N	1332214	Asbestos	mg/L												
N	7440393	Barium	mg/L	1.97E+00		1.97E+00	4.48E+00		4.48E+00	4.94E+00		4.94E+00	9.96E+00		9.96E+00
N	542621	Barium Cyanide	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	1.55E+01		1.55E+01	4.06E+01		4.06E+01
Y	7440417	Beryllium and compounds	mg/L	8.03E-03		8.03E-03	1.83E-02		1.83E-02	2.34E-02		2.34E-02	4.06E-02		4.06E-02
N	7440428	Boron And Borates Only	mg/L	3.25E+01		3.25E+01	7.40E+01		7.40E+01	2.80E+01		2.80E+01	1.65E+02		1.65E+02
N	7637072	Boron Trifluoride	mg/L												
Y	7440439	Cadmium (Water)	mg/L	2.01E-03		2.01E-03	4.57E-03		4.57E-03	5.85E-03		5.85E-03	1.02E-02		1.02E-02
N	592018	Calcium Cyanide	mg/L	3.21E+00		3.21E+00	7.31E+00		7.31E+00	6.21E+00		6.21E+00	1.63E+01		1.63E+01
N	16887006	Chloride	mg/L												
N	7782505	Chlorine	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	1.55E+01		1.55E+01	4.06E+01		4.06E+01
N	7758192	Chlorite (Sodium Salt)	mg/L	2.41E+00		2.41E+00	5.48E+00		5.48E+00	4.65E+00		4.65E+00	1.22E+01		1.22E+01
Y	16065831	Chromium (III) (Insoluble Salts)	mg/L	3.01E+00		3.01E+00	6.86E+00		6.86E+00	8.90E+00		8.90E+00	1.52E+01		1.52E+01
Y	7440473	Chromium (Total)	mg/L	3.01E+00		3.01E+00	6.86E+00		6.86E+00	8.90E+00		8.90E+00	1.52E+01		1.52E+01
N		Chromium Salts	mg/L												
Y	18540299	Chromium VI (chromic acid mists)	mg/L	2.41E-02		2.41E-02	5.48E-02		5.48E-02	6.84E-02		6.84E-02	1.22E-01		1.22E-01
N	7440484	Cobalt	mg/L	1.93E+01		1.93E+01	4.39E+01		4.39E+01	1.80E+01		1.80E+01	9.75E+01		9.75E+01
Y	7440508	Copper	mg/L	4.46E+00		4.46E+00	1.01E+01		1.01E+01	7.31E+00		7.31E+00	2.26E+01		2.26E+01
N	544923	Copper Cyanide	mg/L	4.01E-01		4.01E-01	9.14E-01		9.14E-01	7.76E-01		7.76E-01	2.03E+00		2.03E+00
N	57125	Cyanide (CN-)	mg/L	1.82E-01		1.82E-01	4.14E-01		4.14E-01	5.13E-01		5.13E-01	9.21E-01		9.21E-01
N	7782414	Fluorine (Soluble Fluoride)	mg/L	2.34E+01		2.34E+01	5.32E+01		5.32E+01	1.91E+01		1.91E+01	1.18E+02		1.18E+02
N	7647010	Hydrogen Chloride	mg/L												
N	74908	Hydrogen Cyanide	mg/L	5.69E-01		5.69E-01	1.30E+00		1.30E+00	1.43E+00		1.43E+00	2.88E+00		2.88E+00
N	7783064	Hydrogen Sulfide	mg/L	4.30E-02		4.30E-02	9.79E-02		9.79E-02	1.17E-01		1.17E-01	2.18E-01		2.18E-01
Y	7439896	Iron	mg/L	1.81E+01		1.81E+01	4.11E+01		4.11E+01	3.83E+01		3.83E+01	9.14E+01		9.14E+01
Y	7439921	Lead And Compounds	mg/L			1.50E-02			1.50E-02			1.50E-02			1.50E-02
N	7439932	Lithium	mg/L	6.42E+00		6.42E+00	1.46E+01		1.46E+01	6.01E+00		6.01E+00	3.25E+01		3.25E+01
N	7439954	Magnesium	mg/L												
Y	7439965	Manganese	mg/L	3.85E-01		3.85E-01	8.78E-01		8.78E-01	1.04E+00		1.04E+00	1.95E+00		1.95E+00
N	7487947	Mercuric Chloride	mg/L	8.43E-03		8.43E-03	1.92E-02		1.92E-02	2.12E-02		2.12E-02	4.27E-02		4.27E-02
N	1344485	Mercuric Sulfide	mg/L												
N	7439976	Mercury (elemental)	mg/L												
Y	7439976	Mercury, Inorganic Salts	mg/L	8.43E-03		8.43E-03	1.92E-02		1.92E-02	2.12E-02		2.12E-02	4.27E-02		4.27E-02
N	22967926	Methyl Mercury	mg/L	3.61E-02		3.61E-02	8.23E-02		8.23E-02	3.11E-02		3.11E-02	1.83E-01		1.83E-01
Y	7439987	Molybdenum	mg/L	7.63E-01		7.63E-01	1.74E+00		1.74E+00	1.12E+00		1.12E+00	3.86E+00		3.86E+00
N		Nickel Refinery Dust	mg/L												
Y	7440020	Nickel Soluble Salts	mg/L	2.17E+00		2.17E+00	4.94E+00		4.94E+00	3.73E+00		3.73E+00	1.10E+01		1.10E+01
N	12035722	Nickel Subsulfide	mg/L												
N	14797558	Nitrate	mg/L	3.21E+02		3.21E+02	7.31E+02		7.31E+02	4.05E+02		4.05E+02	1.63E+03		1.63E+03
N	10102439	Nitric Oxide	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	1.55E+01		1.55E+01	4.06E+01		4.06E+01
N	14797650	Nitrite	mg/L	2.01E+01		2.01E+01	4.57E+01		4.57E+01	2.53E+01		2.53E+01	1.02E+02		1.02E+02
N	10102440	Nitrogen Dioxide	mg/L	8.03E+01		8.03E+01	1.83E+02		1.83E+02	1.55E+02		1.55E+02	4.06E+02		4.06E+02
N	7803512	Phosphine	mg/L	2.41E-02		2.41E-02	5.48E-02		5.48E-02	4.65E-02		4.65E-02	1.22E-01		1.22E-01

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7429905	Aluminum	mg/L	3.71E+01		3.71E+01	3.90E+01		3.90E+01	7.25E+01		7.25E+01	5.83E+01		5.83E+01
N	20859738	Aluminum Phosphide	mg/L	2.10E-02		2.10E-02	3.12E-02		3.12E-02	4.57E-02		4.57E-02	4.66E-02		4.66E-02
N	7664417	Ammonia	mg/L												
N	7773060	Ammonium Sulfamate	mg/L	1.05E+01		1.05E+01	1.56E+01		1.56E+01	2.28E+01		2.28E+01	2.33E+01		2.33E+01
Y	7440360	Antimony (metallic)	mg/L	4.41E-03		4.41E-03	3.12E-03		3.12E-03	7.40E-03		7.40E-03	4.66E-03		4.66E-03
N	1314609	Antimony Pentoxide	mg/L	2.63E-02		2.63E-02	3.90E-02		3.90E-02	5.71E-02		5.71E-02	5.83E-02		5.83E-02
N	304610	Antimony Potassium Tartrate	mg/L	4.73E-02		4.73E-02	7.02E-02		7.02E-02	1.03E-01		1.03E-01	1.05E-01		1.05E-01
N	1332816	Antimony Tetroxide	mg/L	2.10E-02		2.10E-02	3.12E-02		3.12E-02	4.57E-02		4.57E-02	4.66E-02		4.66E-02
N	1309644	Antimony Trioxide	mg/L	2.10E-02		2.10E-02	3.12E-02		3.12E-02	4.57E-02		4.57E-02	4.66E-02		4.66E-02
N		Arsenic Salts	mg/L												
Y	7440382	Arsenic, Inorganic	mg/L	2.01E-02	1.80E-03	1.80E-03	4.79E-02	4.09E-03	4.09E-03	4.85E-02	1.80E-03	1.80E-03	7.17E-02	4.09E-03	4.09E-03
N	7784421	Arsine	mg/L		1.29E-03	1.29E-03		1.99E-03	1.99E-03		1.29E-03	1.29E-03		1.99E-03	1.99E-03
N	1332214	Asbestos	mg/L												
N	7440393	Barium	mg/L	2.07E+00		2.07E+00	1.91E+00		1.91E+00	3.87E+00		3.87E+00	2.86E+00		2.86E+00
N	542621	Barium Cyanide	mg/L	5.26E+00		5.26E+00	7.80E+00		7.80E+00	1.14E+01		1.14E+01	1.17E+01		1.17E+01
Y	7440417	Beryllium and compounds	mg/L	1.17E-02		1.17E-02	7.80E-03		7.80E-03	1.92E-02		1.92E-02	1.17E-02		1.17E-02
N	7440428	Boron And Borates Only	mg/L	7.02E+00		7.02E+00	3.16E+01		3.16E+01	1.86E+01		1.86E+01	4.72E+01		4.72E+01
N	7637072	Boron Trifluoride	mg/L												
Y	7440439	Cadmium (Water)	mg/L	2.94E-03		2.94E-03	1.95E-03		1.95E-03	4.79E-03		4.79E-03	2.91E-03		2.91E-03
N	592018	Calcium Cyanide	mg/L	2.10E+00		2.10E+00	3.12E+00		3.12E+00	4.57E+00		4.57E+00	4.66E+00		4.66E+00
N	16887006	Chloride	mg/L												
N	7782505	Chlorine	mg/L	5.26E+00		5.26E+00	7.80E+00		7.80E+00	1.14E+01		1.14E+01	1.17E+01		1.17E+01
N	7758192	Chlorite (Sodium Salt)	mg/L	1.58E+00		1.58E+00	2.34E+00		2.34E+00	3.42E+00		3.42E+00	3.50E+00		3.50E+00
Y	16065831	Chromium (III) (Insoluble Salts)	mg/L	4.55E+00		4.55E+00	2.92E+00		2.92E+00	7.32E+00		7.32E+00	4.37E+00		4.37E+00
Y	7440473	Chromium (Total)	mg/L	4.55E+00		4.55E+00	2.92E+00		2.92E+00	7.32E+00		7.32E+00	4.37E+00		4.37E+00
N		Chromium Salts	mg/L												
Y	18540299	Chromium VI (chromic acid mists)	mg/L	3.31E-02		3.31E-02	2.34E-02		2.34E-02	5.55E-02		5.55E-02	3.50E-02		3.50E-02
N	7440484	Cobalt	mg/L	4.60E+00		4.60E+00	1.87E+01		1.87E+01	1.20E+01		1.20E+01	2.80E+01		2.80E+01
Y	7440508	Copper	mg/L	2.26E+00		2.26E+00	4.33E+00		4.33E+00	5.22E+00		5.22E+00	6.47E+00		6.47E+00
N	544923	Copper Cyanide	mg/L	2.63E-01		2.63E-01	3.90E-01		3.90E-01	5.71E-01		5.71E-01	5.83E-01		5.83E-01
N	57125	Cyanide (CN-)	mg/L	2.46E-01		2.46E-01	1.77E-01		1.77E-01	4.16E-01		4.16E-01	2.64E-01		2.64E-01
N	7782414	Fluorine (Soluble Fluoride)	mg/L	4.73E+00		4.73E+00	2.27E+01		2.27E+01	1.26E+01		1.26E+01	3.39E+01		3.39E+01
N	7647010	Hydrogen Chloride	mg/L												
N	74908	Hydrogen Cyanide	mg/L	5.97E-01		5.97E-01	5.52E-01		5.52E-01	1.12E+00		1.12E+00	8.25E-01		8.25E-01
N	7783064	Hydrogen Sulfide	mg/L	5.39E-02		5.39E-02	4.18E-02		4.18E-02	9.40E-02		9.40E-02	6.24E-02		6.24E-02
Y	7439896	Iron	mg/L	1.38E+01		1.38E+01	1.75E+01		1.75E+01	2.87E+01		2.87E+01	2.62E+01		2.62E+01
Y	7439921	Lead And Compounds	mg/L			1.50E-02			1.50E-02			1.50E-02			1.50E-02
N	7439932	Lithium	mg/L	1.53E+00		1.53E+00	6.24E+00		6.24E+00	4.01E+00		4.01E+00	9.32E+00		9.32E+00
N	7439954	Magnesium	mg/L												
Y	7439965	Manganese	mg/L	4.72E-01		4.72E-01	3.74E-01		3.74E-01	8.31E-01		8.31E-01	5.59E-01		5.59E-01
N	7487947	Mercuric Chloride	mg/L	8.88E-03		8.88E-03	8.19E-03		8.19E-03	1.66E-02		1.66E-02	1.22E-02		1.22E-02
N	1344485	Mercuric Sulfide	mg/L												
N	7439976	Mercury (elemental)	mg/L												
Y	7439976	Mercury, Inorganic Salts	mg/L	8.88E-03		8.88E-03	8.19E-03		8.19E-03	1.66E-02		1.66E-02	1.22E-02		1.22E-02
N	22967926	Methyl Mercury	mg/L	7.80E-03		7.80E-03	3.51E-02		3.51E-02	2.06E-02		2.06E-02	5.24E-02		5.24E-02
Y	7439987	Molybdenum	mg/L	3.28E-01		3.28E-01	7.41E-01		7.41E-01	7.84E-01		7.84E-01	1.11E+00		1.11E+00
N		Nickel Refinery Dust	mg/L												
Y	7440020	Nickel Soluble Salts	mg/L	1.18E+00		1.18E+00	2.10E+00		2.10E+00	2.68E+00		2.68E+00	3.15E+00		3.15E+00
N	12035722	Nickel Subsulfide	mg/L												
N	14797558	Nitrate	mg/L	1.12E+02		1.12E+02	3.12E+02		3.12E+02	2.79E+02		2.79E+02	4.66E+02		4.66E+02
N	10102439	Nitric Oxide	mg/L	5.26E+00		5.26E+00	7.80E+00		7.80E+00	1.14E+01		1.14E+01	1.17E+01		1.17E+01
N	14797650	Nitrite	mg/L	7.02E+00		7.02E+00	1.95E+01		1.95E+01	1.74E+01		1.74E+01	2.91E+01		2.91E+01
N	10102440	Nitrogen Dioxide	mg/L	5.26E+01		5.26E+01	7.80E+01		7.80E+01	1.14E+02		1.14E+02	1.17E+02		1.17E+02
N	7803512	Phosphine	mg/L	1.58E-02		1.58E-02	2.34E-02		2.34E-02	3.42E-02		3.42E-02	3.50E-02		3.50E-02

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action v less of hazard- and cancer-based value.

Table A.19. Surface Water No[illegible]ction Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7664382	Phosphoric Acid	mg/L												
N	151508	Potassium Cyanide	mg/L	7.87E+00		7.87E+00	1.79E+01		1.79E+01	1.13E+01		1.13E+01	3.98E+01		3.98E+01
N	506616	Potassium Silver Cyanide	mg/L	1.61E+01		1.61E+01	3.66E+01		3.66E+01	3.10E+01		3.10E+01	8.13E+01		8.13E+01
Y	7782492	Selenium	mg/L	8.83E-01		8.83E-01	2.01E+00		2.01E+00	1.20E+00		1.20E+00	4.47E+00		4.47E+00
N	7446346	Selenium Sulfide	mg/L												
Y	7440224	Silver	mg/L	3.61E-01		3.61E-01	8.23E-01		8.23E-01	7.24E-01		7.24E-01	1.83E+00		1.83E+00
N	506649	Silver Cyanide	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	1.55E+01		1.55E+01	4.06E+01		4.06E+01
N	7440235	Sodium	mg/L												
N	26628228	Sodium Azide	mg/L	3.21E-01		3.21E-01	7.31E-01		7.31E-01	6.21E-01		6.21E-01	1.63E+00		1.63E+00
N	143339	Sodium Cyanide	mg/L	1.28E+01		1.28E+01	2.93E+01		2.93E+01	1.20E+01		1.20E+01	6.50E+01		6.50E+01
N	13718268	Sodium Metavanadate	mg/L	8.03E-02		8.03E-02	1.83E-01		1.83E-01	1.55E-01		1.55E-01	4.06E-01		4.06E-01
N	7440246	Strontium, Stable	mg/L	4.82E+01		4.82E+01	1.10E+02		1.10E+02	9.31E+01		9.31E+01	2.44E+02		2.44E+02
N	14808798	Sulfate	mg/L												
N	10102451	Thallium (I) Nitrate	mg/L	7.23E-03		7.23E-03	1.65E-02		1.65E-02	1.40E-02		1.40E-02	3.66E-02		3.66E-02
N	7440280	Thallium (Soluble Salts)	mg/L												
Y	7791120	Thallium Chloride	mg/L	6.42E-03		6.42E-03	1.46E-02		1.46E-02	1.24E-02		1.24E-02	3.25E-02		3.25E-02
N	12039520	Thallium Selenite	mg/L	7.23E-03		7.23E-03	1.65E-02		1.65E-02	1.40E-02		1.40E-02	3.66E-02		3.66E-02
N	7446186	Thallium Sulfate	mg/L	6.42E-03		6.42E-03	1.46E-02		1.46E-02	1.24E-02		1.24E-02	3.25E-02		3.25E-02
N	7440291	Thorium	mg/L												
N	7440315	Tin	mg/L	2.41E+01		2.41E+01	5.48E+01		5.48E+01	5.66E+01		5.66E+01	1.22E+02		1.22E+02
N	7440326	Titanium	mg/L												
Y	7440611	Uranium (Soluble Salts)	mg/L	2.05E-01		2.05E-01	4.66E-01		4.66E-01	1.84E-01		1.84E-01	1.04E+00		1.04E+00
N	1314621	Vanadium Pentoxide	mg/L	7.23E-01		7.23E-01	1.65E+00		1.65E+00	1.40E+00		1.40E+00	3.66E+00		3.66E+00
N	36907423	Vanadium Sulfate	mg/L	1.61E+00		1.61E+00	3.66E+00		3.66E+00	3.10E+00		3.10E+00	8.13E+00		8.13E+00
Y	7440622	Vanadium, Metallic	mg/L	2.81E-02		2.81E-02	6.40E-02		6.40E-02	8.20E-02		8.20E-02	1.42E-01		1.42E-01
N	27774136	Vanadyl Sulfate	mg/L	1.61E+00		1.61E+00	3.66E+00		3.66E+00	3.10E+00		3.10E+00	8.13E+00		8.13E+00
N	7723140	White Phosphorus	mg/L	1.61E-03		1.61E-03	3.66E-03		3.66E-03	3.10E-03		3.10E-03	8.13E-03		8.13E-03
Y	7440666	Zinc (Metallic)	mg/L	2.41E+01		2.41E+01	5.48E+01		5.48E+01	4.65E+01		4.65E+01	1.22E+02		1.22E+02
N	557211	Zinc Cyanide	mg/L	4.01E+00		4.01E+00	9.14E+00		9.14E+00	7.76E+00		7.76E+00	2.03E+01		2.03E+01
N	1314847	Zinc Phosphide	mg/L	2.41E-02		2.41E-02	5.48E-02		5.48E-02	4.65E-02		4.65E-02	1.22E-01		1.22E-01
N	7440677	Zirconium	mg/L												
N	1596845	ALAR	mg/L	1.77E+03		1.77E+03	4.03E+03		4.03E+03	6.47E+01		6.47E+01	8.96E+03		8.96E+03
Y	83329	Acenaphthene	mg/L	2.99E-02		2.99E-02	6.80E-02		6.80E-02	8.92E-02		8.92E-02	1.51E-01		1.51E-01
Y	208968	Acenaphthylene	mg/L												
N	30560191	Acephate	mg/L	2.23E+01	1.79E+01	1.79E+01	5.08E+01	4.09E+01	4.09E+01	1.70E+00	4.90E-01	4.90E-01	1.13E+02	2.39E+01	2.39E+01
N	75070	Acetaldehyde	mg/L												
N	34256821	Acetochlor	mg/L	6.58E-01		6.58E-01	1.50E+00		1.50E+00	1.61E+00		1.61E+00	3.33E+00		3.33E+00
N	67641	Acetone	mg/L	5.85E+01		5.85E+01	1.33E+02		1.33E+02	3.50E+01		3.50E+01	2.96E+02		2.96E+02
N	75865	Acetone Cyanohydrin	mg/L	2.92E-01		2.92E-01	6.65E-01		6.65E-01	2.50E-01		2.50E-01	1.48E+00		1.48E+00
N	75058	Acetonitrile	mg/L	3.16E+00		3.16E+00	7.19E+00		7.19E+00	2.05E+00		2.05E+00	1.60E+01		1.60E+01
N	98862	Acetophenone	mg/L	5.63E+00		5.63E+00	1.28E+01		1.28E+01	1.22E+01		1.22E+01	2.85E+01		2.85E+01
N	107028	Acrolein	mg/L	8.68E+00		8.68E+00	1.98E+01		1.98E+01	6.54E+00		6.54E+00	4.39E+01		4.39E+01
N	79061	Acrylamide	mg/L	1.67E-01	5.20E-03	5.20E-03	3.81E-01	1.18E-02	1.18E-02	7.44E-02	8.61E-04	8.61E-04	8.47E-01	6.92E-03	6.92E-03
N	79107	Acrylic Acid	mg/L	1.12E+02		1.12E+02	2.54E+02		2.54E+02	1.32E+02		1.32E+02	5.64E+02		5.64E+02
Y	107131	Acrylonitrile	mg/L	2.29E-01	1.19E-02	1.19E-02	5.22E-01	2.71E-02	2.71E-02	2.67E-01	5.61E-03	5.61E-03	1.16E+00	1.58E-02	1.58E-02
N	15972608	Alachlor	mg/L	4.10E-01	1.43E-02	1.43E-02	9.33E-01	3.26E-02	3.26E-02	9.58E-01	1.58E-02	1.58E-02	2.07E+00	1.91E-02	1.91E-02
N	116063	Aldicarb	mg/L	2.39E-01		2.39E-01	5.44E-01		5.44E-01	2.71E-01		2.71E-01	1.21E+00		1.21E+00
N	1646884	Aldicarb Sulfone	mg/L	6.08E+00		6.08E+00	1.39E+01		1.39E+01	4.27E-01		4.27E-01	3.08E+01		3.08E+01
N	309002	Aldrin	mg/L	3.76E-03	2.07E-04	2.07E-04	8.57E-03	4.71E-04	4.71E-04	6.06E-03	1.42E-04	1.42E-04	1.91E-02	2.75E-04	2.75E-04
N	74223646	Ally	mg/L	5.45E+03		5.45E+03	1.24E+04		1.24E+04	1.08E+02		1.08E+02	2.76E+04		2.76E+04
N	107186	Allyl Alcohol	mg/L	1.70E+00		1.70E+00	3.87E+00		3.87E+00	1.53E+00		1.53E+00	8.61E+00		8.61E+00
N	107051	Allyl Chloride	mg/L	2.29E+00		2.29E+00	5.22E+00		5.22E+00	5.23E+00		5.23E+00	1.16E+01		1.16E+01
N	67485294	Amdro	mg/L							1.31E-01		1.31E-01			
N	834128	Ametryn	mg/L	2.47E+00		2.47E+00	5.64E+00		5.64E+00	2.57E+00		2.57E+00	1.25E+01		1.25E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	7664382	Phosphoric Acid	mg/L												
N	151508	Potassium Cyanide	mg/L	3.31E+00		3.31E+00	7.64E+00		7.64E+00	7.94E+00		7.94E+00	1.14E+01		1.14E+01
N	506616	Potassium Silver Cyanide	mg/L	1.05E+01		1.05E+01	1.56E+01		1.56E+01	2.28E+01		2.28E+01	2.33E+01		2.33E+01
Y	7782492	Selenium	mg/L	3.41E-01		3.41E-01	8.58E-01		8.58E-01	8.31E-01		8.31E-01	1.28E+00		1.28E+00
N	7446346	Selenium Sulfide	mg/L												
Y	7440224	Silver	mg/L	2.51E-01		2.51E-01	3.51E-01		3.51E-01	5.37E-01		5.37E-01	5.24E-01		5.24E-01
N	506649	Silver Cyanide	mg/L	5.26E+00		5.26E+00	7.80E+00		7.80E+00	1.14E+01		1.14E+01	1.17E+01		1.17E+01
N	7440235	Sodium	mg/L												
N	26628228	Sodium Azide	mg/L	2.10E-01		2.10E-01	3.12E-01		3.12E-01	4.57E-01		4.57E-01	4.66E-01		4.66E-01
N	143339	Sodium Cyanide	mg/L	3.07E+00		3.07E+00	1.25E+01		1.25E+01	8.02E+00		8.02E+00	1.86E+01		1.86E+01
N	13718268	Sodium Metavanadate	mg/L	5.26E-02		5.26E-02	7.80E-02		7.80E-02	1.14E-01		1.14E-01	1.17E-01		1.17E-01
N	7440246	Strontium, Stable	mg/L	3.16E+01		3.16E+01	4.68E+01		4.68E+01	6.85E+01		6.85E+01	6.99E+01		6.99E+01
N	14808798	Sulfate	mg/L												
N	10102451	Thallium (I) Nitrate	mg/L	4.73E-03		4.73E-03	7.02E-03		7.02E-03	1.03E-02		1.03E-02	1.05E-02		1.05E-02
N	7440280	Thallium (Soluble Salts)	mg/L												
Y	7791120	Thallium Chloride	mg/L	4.21E-03		4.21E-03	6.24E-03		6.24E-03	9.13E-03		9.13E-03	9.32E-03		9.32E-03
N	12039520	Thallium Selenite	mg/L	4.73E-03		4.73E-03	7.02E-03		7.02E-03	1.03E-02		1.03E-02	1.05E-02		1.05E-02
N	7446186	Thallium Sulfate	mg/L	4.21E-03		4.21E-03	6.24E-03		6.24E-03	9.13E-03		9.13E-03	9.32E-03		9.32E-03
N	7440291	Thorium	mg/L												
N	7440315	Tin	mg/L	2.22E+01		2.22E+01	2.34E+01		2.34E+01	4.35E+01		4.35E+01	3.50E+01		3.50E+01
N	7440326	Titanium	mg/L												
Y	7440611	Uranium (Soluble Salts)	mg/L	4.64E-02		4.64E-02	1.99E-01		1.99E-01	1.22E-01		1.22E-01	2.97E-01		2.97E-01
N	1314621	Vanadium Pentoxide	mg/L	4.73E-01		4.73E-01	7.02E-01		7.02E-01	1.03E+00		1.03E+00	1.05E+00		1.05E+00
N	36907423	Vanadium Sulfate	mg/L	1.05E+00		1.05E+00	1.56E+00		1.56E+00	2.28E+00		2.28E+00	2.33E+00		2.33E+00
Y	7440622	Vanadium, Metallic	mg/L	4.11E-02		4.11E-02	2.73E-02		2.73E-02	6.71E-02		6.71E-02	4.08E-02		4.08E-02
N	27774136	Vanadyl Sulfate	mg/L	1.05E+00		1.05E+00	1.56E+00		1.56E+00	2.28E+00		2.28E+00	2.33E+00		2.33E+00
N	7723140	White Phosphorus	mg/L	1.05E-03		1.05E-03	1.56E-03		1.56E-03	2.28E-03		2.28E-03	2.33E-03		2.33E-03
Y	7440666	Zinc (Metallic)	mg/L	1.58E+01		1.58E+01	2.34E+01		2.34E+01	3.42E+01		3.42E+01	3.50E+01		3.50E+01
N	557211	Zinc Cyanide	mg/L	2.63E+00		2.63E+00	3.90E+00		3.90E+00	5.71E+00		5.71E+00	5.83E+00		5.83E+00
N	1314847	Zinc Phosphide	mg/L	1.58E-02		1.58E-02	2.34E-02		2.34E-02	3.42E-02		3.42E-02	3.50E-02		3.50E-02
N	7440677	Zirconium	mg/L												
N	1596845	ALAR	mg/L	1.35E+01		1.35E+01	1.72E+03		1.72E+03	3.99E+01		3.99E+01	2.57E+03		2.57E+03
Y	83329	Acenaphthene	mg/L	4.63E-02		4.63E-02	2.90E-02		2.90E-02	7.36E-02		7.36E-02	4.34E-02		4.34E-02
Y	208968	Acenaphthylene	mg/L												
N	30560191	Acephate	mg/L	3.58E-01	4.90E-01	3.58E-01	2.17E+01	2.39E+01	2.17E+01	1.05E+00	4.90E-01	4.90E-01	3.24E+01	2.39E+01	2.39E+01
N	75070	Acetaldehyde	mg/L												
N	34256821	Acetochlor	mg/L	6.56E-01		6.56E-01	6.39E-01		6.39E-01	1.25E+00		1.25E+00	9.55E-01		9.55E-01
N	67641	Acetone	mg/L	8.23E+00		8.23E+00	5.68E+01		5.68E+01	2.26E+01		2.26E+01	8.48E+01		8.48E+01
N	75865	Acetone Cyanohydrin	mg/L	6.25E-02		6.25E-02	2.83E-01		2.83E-01	1.65E-01		1.65E-01	4.24E-01		4.24E-01
N	75058	Acetonitrile	mg/L	4.89E-01		4.89E-01	3.07E+00		3.07E+00	1.33E+00		1.33E+00	4.59E+00		4.59E+00
N	98862	Acetophenone	mg/L	4.47E+00		4.47E+00	5.47E+00		5.47E+00	9.18E+00		9.18E+00	8.18E+00		8.18E+00
N	107028	Acrolein	mg/L	1.60E+00		1.60E+00	8.43E+00		8.43E+00	4.29E+00		4.29E+00	1.26E+01		1.26E+01
N	79061	Acrylamide	mg/L	1.69E-02	8.61E-04	8.61E-04	1.62E-01	6.92E-03	6.92E-03	4.75E-02	8.61E-04	8.61E-04	2.43E-01	6.92E-03	6.92E-03
N	79107	Acrylic Acid	mg/L	3.59E+01		3.59E+01	1.08E+02		1.08E+02	9.03E+01		9.03E+01	1.62E+02		1.62E+02
Y	107131	Acrylonitrile	mg/L	7.23E-02	5.61E-03	5.61E-03	2.23E-01	1.58E-02	1.58E-02	1.82E-01	5.61E-03	5.61E-03	3.33E-01	1.58E-02	1.58E-02
N	15972608	Alachlor	mg/L	3.75E-01	1.58E-02	1.58E-02	3.98E-01	1.91E-02	1.91E-02	7.36E-01	1.58E-02	1.58E-02	5.95E-01	1.91E-02	1.91E-02
N	116063	Aldicarb	mg/L	7.28E-02		7.28E-02	2.32E-01		2.32E-01	1.85E-01		1.85E-01	3.47E-01		3.47E-01
N	1646884	Aldicarb Sulfone	mg/L	8.96E-02		8.96E-02	5.91E+00		5.91E+00	2.64E-01		2.64E-01	8.83E+00		8.83E+00
N	309002	Aldrin	mg/L	1.86E-03	1.42E-04	1.42E-04	3.65E-03	2.75E-04	2.75E-04	4.32E-03	1.42E-04	1.42E-04	5.46E-03	2.75E-04	2.75E-04
N	74223646	Ally	mg/L	2.26E+01		2.26E+01	5.30E+03		5.30E+03	6.67E+01		6.67E+01	7.92E+03		7.92E+03
N	107186	Allyl Alcohol	mg/L	3.87E-01		3.87E-01	1.65E+00		1.65E+00	1.02E+00		1.02E+00	2.47E+00		2.47E+00
N	107051	Allyl Chloride	mg/L	2.00E+00		2.00E+00	2.23E+00		2.23E+00	3.99E+00		3.99E+00	3.33E+00		3.33E+00
N	67485294	Amdro	mg/L	2.71E-02		2.71E-02				8.05E-02		8.05E-02			
N	834128	Ametryn	mg/L	6.73E-01		6.73E-01	2.40E+00		2.40E+00	1.73E+00		1.73E+00	3.59E+00		3.59E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action v ess of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	591275	Aminophenol, m-	mg/L	2.42E+01		2.42E+01	5.52E+01		5.52E+01	2.15E+01		2.15E+01	1.23E+02		1.23E+02
N	504245	Aminopyridine, 4-	mg/L	5.02E-03		5.02E-03	1.14E-02		1.14E-02	5.53E-03		5.53E-03	2.54E-02		2.54E-02
N	33089611	Amitraz	mg/L	2.01E-03		2.01E-03	4.57E-03		4.57E-03	5.98E-03		5.98E-03	1.02E-02		1.02E-02
N	62533	Aniline	mg/L	3.43E-02	2.41E-02	2.41E-02	7.80E-02	5.48E-02	5.48E-02	9.94E-02	3.58E-02	3.58E-02	1.73E-01	3.20E-02	3.20E-02
Y	120127	Anthracene	mg/L	4.16E-01		4.16E-01	9.47E-01		9.47E-01	1.24E+00		1.24E+00	2.11E+00		2.11E+00
N	74115245	Apollo	mg/L	6.07E-01		6.07E-01	1.38E+00		1.38E+00	1.38E+00		1.38E+00	3.07E+00		3.07E+00
N	140578	Aramite	mg/L	2.18E-01	4.89E-03	4.89E-03	4.97E-01	1.11E-02	1.11E-02	6.35E-01	7.30E-03	7.30E-03	1.10E+00	6.50E-03	6.50E-03
Y	12674112	Aroclor 1016	mg/L	3.20E-05	3.20E-05		7.29E-05	7.29E-05		9.56E-05	4.97E-05	4.97E-05	1.62E-04	4.26E-05	4.26E-05
Y	11104282	Aroclor 1221	mg/L		2.75E-04	2.75E-04		6.26E-04	6.26E-04		4.13E-04	4.13E-04		3.66E-04	3.66E-04
Y	11141165	Aroclor 1232	mg/L		1.81E-03	1.81E-03		4.11E-03	4.11E-03		2.24E-03	2.24E-03		2.40E-03	2.40E-03
Y	53469219	Aroclor 1242	mg/L		6.84E-04	6.84E-04		1.56E-03	1.56E-03		9.71E-04	9.71E-04		9.09E-04	9.09E-04
Y	12672296	Aroclor 1248	mg/L		6.84E-05	6.84E-05		1.56E-04	1.56E-04		1.06E-04	1.06E-04		9.09E-05	9.09E-05
Y	11097691	Aroclor 1254	mg/L	2.06E-05	7.23E-05	2.06E-05	4.70E-05	1.65E-04	4.70E-05	6.14E-05	1.12E-04	6.14E-05	1.05E-04	9.61E-05	9.61E-05
Y	11096825	Aroclor 1260	mg/L		2.30E-05	2.30E-05		5.24E-05	5.24E-05		3.58E-05	3.58E-05		3.06E-05	3.06E-05
N	76578148	Assure	mg/L	1.64E-01		1.64E-01	3.74E-01		3.74E-01	4.37E-01		4.37E-01	8.31E-01		8.31E-01
N	3337711	Asulam	mg/L	2.09E+02		2.09E+02	4.76E+02		4.76E+02	2.11E+01		2.11E+01	1.06E+03		1.06E+03
N	1912249	Atrazine	mg/L	9.24E-01	3.33E-03	3.33E-03	2.10E+00	7.59E-03	7.59E-03	2.35E+00	4.11E-03	4.11E-03	4.68E+00	4.43E-03	4.43E-03
N	65195553	Avermectin B1	mg/L							1.75E-01		1.75E-01			
N	103333	Azobenzene	mg/L		6.91E-04	6.91E-04		1.57E-03	1.57E-03		1.05E-03	1.05E-03		9.18E-04	9.18E-04
N	114261	Baygon	mg/L	5.74E-01		5.74E-01	1.31E+00		1.31E+00	8.66E-01		8.66E-01	2.90E+00		2.90E+00
N	43121433	Bayleton	mg/L	4.63E+00		4.63E+00	1.05E+01		1.05E+01	6.74E+00		6.74E+00	2.34E+01		2.34E+01
N	68359375	Baythroid	mg/L	6.97E-02		6.97E-02	1.59E-01		1.59E-01	2.05E-01		2.05E-01	3.53E-01		3.53E-01
N	1861401	Benefin	mg/L	2.08E+00		2.08E+00	4.73E+00		4.73E+00	5.94E+00		5.94E+00	1.05E+01		1.05E+01
N	17804352	Benomyl	mg/L	7.17E+00		7.17E+00	1.63E+01		1.63E+01	1.08E+01		1.08E+01	3.63E+01		3.63E+01
N	25057890	Bentazon	mg/L	1.54E+01		1.54E+01	3.52E+01		3.52E+01	1.02E+01		1.02E+01	7.82E+01		7.82E+01
Y	56553	Benz[a]anthracene	mg/L		5.89E-06	5.89E-06		1.34E-05	1.34E-05		9.18E-06	9.18E-06		7.84E-06	7.84E-06
N	100527	Benzaldehyde	mg/L	1.78E+00		1.78E+00	4.06E+00		4.06E+00	4.76E+00		4.76E+00	9.03E+00		9.03E+00
Y	71432	Benzene	mg/L	5.56E-02	9.44E-03	9.44E-03	1.27E-01	2.15E-02	2.15E-02	1.48E-01	1.24E-02	1.24E-02	2.82E-01	1.26E-02	1.26E-02
N	29224553	Benzene, Ethyldimethyl	mg/L												
N	25550145	Benzene, Ethylmethyl	mg/L												
N	768003	Benzene, Methylpropenyl	mg/L												
N	28729546	Benzene, Methylpropyl	mg/L												
N	25551137	Benzene, Trimethyl	mg/L												
N	108985	Benzenethiol	mg/L	8.36E-05		8.36E-05	1.90E-04		1.90E-04	2.37E-04		2.37E-04	4.23E-04		4.23E-04
N	92875	Benzidine	mg/L	7.41E-01	3.01E-05	3.01E-05	1.69E+00	6.85E-05	6.85E-05	8.24E-01	1.35E-05	1.35E-05	3.75E+00	4.00E-05	4.00E-05
Y	50328	Benzo[a]pyrene	mg/L		3.98E-07	3.98E-07		9.06E-07	9.06E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
Y	205992	Benzo[b]fluoranthene	mg/L		3.98E-06	3.98E-06		9.06E-06	9.06E-06		6.20E-06	6.20E-06		5.29E-06	5.29E-06
N	191242	Benzo[g,h,i]perylene	mg/L												
Y	207089	Benzo[k]fluoranthene	mg/L		7.96E-05	7.96E-05		1.81E-04	1.81E-04		1.24E-04	1.24E-04		1.06E-04	1.06E-04
N	65850	Benzoic Acid	mg/L	2.20E+02		2.20E+02	5.01E+02		5.01E+02	4.79E+02		4.79E+02	1.11E+03		1.11E+03
N	98077	Benzotrichloride	mg/L		2.88E-05	2.88E-05		6.56E-05	6.56E-05		3.96E-05	3.96E-05		3.83E-05	3.83E-05
N	100516	Benzyl Alcohol	mg/L	1.32E+01		1.32E+01	3.02E+01		3.02E+01	3.05E+01		3.05E+01	6.71E+01		6.71E+01
N	100447	Benzyl Chloride	mg/L		3.78E-03	3.78E-03		8.60E-03	8.60E-03		4.79E-03	4.79E-03		5.03E-03	5.03E-03
N	141662	Bidrin	mg/L	9.12E-01		9.12E-01	2.08E+00		2.08E+00	4.30E-02		4.30E-02	4.62E+00		4.62E+00
N	82657043	Biphenthrin	mg/L							6.55E+00		6.55E+00			
N	92524	Biphenyl, 1,1'-	mg/L	5.58E-02		5.58E-02	1.27E-01		1.27E-01	1.66E-01		1.66E-01	2.82E-01		2.82E-01
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/L		6.69E-03	6.69E-03		1.52E-02	1.52E-02		8.93E-03	8.93E-03		8.90E-03	8.90E-03
N	111911	Bis(2-chloroethoxy)methane	mg/L												
N	111444	Bis(2-chloroethyl)ether	mg/L		2.43E-03	2.43E-03		5.54E-03	5.54E-03		1.93E-03	1.93E-03		3.24E-03	3.24E-03
N	39638329	Bis(2-chloroisopropyl)ether	mg/L	1.52E+00	1.52E-02	1.52E-02	3.45E+00	3.45E-02	3.45E-02	3.60E+00	1.71E-02	1.71E-02	7.67E+00	2.02E-02	2.02E-02
N	117817	Bis(2-ethylhexyl)phthalate	mg/L	6.63E-02	6.63E-03	6.63E-03	1.51E-01	1.51E-02	1.51E-02	1.94E-01	1.00E-02	1.00E-02	3.36E-01	8.82E-03	8.82E-03
N	542881	Bis(chloromethyl)ether	mg/L		5.76E-05	5.76E-05		1.31E-04	1.31E-04		1.62E-05	1.62E-05		7.66E-05	7.66E-05
N	80057	Bisphenol A	mg/L	3.58E-01		3.58E-01	8.16E-01		8.16E-01	1.02E+00		1.02E+00	1.81E+00		1.81E+00
N	108861	Bromobenzene	mg/L							8.74E+00		8.74E+00			

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	591275	Aminophenol, m-	mg/L	5.43E+00		5.43E+00	2.35E+01		2.35E+01	1.43E+01		1.43E+01	3.52E+01		3.52E+01
N	504245	Aminopyridine, 4-	mg/L	1.47E-03		1.47E-03	4.87E-03		4.87E-03	3.75E-03		3.75E-03	7.28E-03		7.28E-03
N	33089611	Amitraz	mg/L	3.10E-03		3.10E-03	1.95E-03		1.95E-03	4.93E-03		4.93E-03	2.91E-03		2.91E-03
N	62533	Aniline	mg/L	4.94E-02	3.58E-02	3.58E-02	3.33E-02	3.20E-02	3.20E-02	8.12E-02	3.58E-02	3.58E-02	4.97E-02	3.20E-02	3.20E-02
Y	120127	Anthracene	mg/L	6.36E-01		6.36E-01	4.04E-01		4.04E-01	1.02E+00		1.02E+00	6.04E-01		6.04E-01
N	74115245	Apollo	mg/L	5.25E-01		5.25E-01	5.89E-01		5.89E-01	1.05E+00		1.05E+00	8.81E-01		8.81E-01
N	140578	Aramite	mg/L	3.17E-01	7.30E-03	7.30E-03	2.12E-01	6.50E-03	6.50E-03	5.19E-01	7.30E-03	7.30E-03	3.17E-01	6.50E-03	6.50E-03
Y	12674112	Aroclor 1016	mg/L	4.97E-05	4.97E-05	4.97E-05	3.11E-05	4.26E-05	3.11E-05	7.89E-05	4.97E-05	4.97E-05	4.65E-05	4.26E-05	4.26E-05
Y	11104282	Aroclor 1221	mg/L		4.13E-04	4.13E-04		3.66E-04	3.66E-04		4.13E-04	4.13E-04		3.66E-04	3.66E-04
Y	11141165	Aroclor 1232	mg/L		2.24E-03	2.24E-03		2.40E-03	2.40E-03		2.24E-03	2.24E-03		2.40E-03	2.40E-03
Y	53469219	Aroclor 1242	mg/L		9.71E-04	9.71E-04		9.09E-04	9.09E-04		9.71E-04	9.71E-04		9.09E-04	9.09E-04
Y	12672296	Aroclor 1248	mg/L		1.06E-04	1.06E-04		9.09E-05	9.09E-05		1.06E-04	1.06E-04		9.09E-05	9.09E-05
Y	11097691	Aroclor 1254	mg/L	3.17E-05	1.12E-04	3.17E-05	2.00E-05	9.61E-05	2.00E-05	5.06E-05	1.12E-04	5.06E-05	3.00E-05	9.61E-05	3.00E-05
Y	11096825	Aroclor 1260	mg/L		3.58E-05	3.58E-05		3.06E-05	3.06E-05		3.58E-05	3.58E-05		3.06E-05	3.06E-05
N	76578148	Assure	mg/L	1.95E-01		1.95E-01	1.59E-01		1.59E-01	3.48E-01		3.48E-01	2.38E-01		2.38E-01
N	3337711	Asulam	mg/L	4.46E+00		4.46E+00	2.03E+02		2.03E+02	1.31E+01		1.31E+01	3.03E+02		3.03E+02
N	1912249	Atrazine	mg/L	9.93E-01	4.11E-03	4.11E-03	8.98E-01	4.43E-03	4.43E-03	1.84E+00	4.11E-03	4.11E-03	1.34E+00	4.43E-03	4.43E-03
N	65195553	Avermectin B1	mg/L	3.62E-02		3.62E-02				1.07E-01		1.07E-01			
N	103333	Azobenzene	mg/L		1.05E-03	1.05E-03		9.18E-04	9.18E-04		1.05E-03	1.05E-03		9.18E-04	9.18E-04
N	114261	Baygon	mg/L	2.58E-01		2.58E-01	5.57E-01		5.57E-01	6.11E-01		6.11E-01	8.32E-01		8.32E-01
N	43121433	Bayleton	mg/L	1.97E+00		1.97E+00	4.50E+00		4.50E+00	4.73E+00		4.73E+00	6.72E+00		6.72E+00
N	68359375	Baythroid	mg/L	1.04E-01		1.04E-01	6.77E-02		6.77E-02	1.68E-01		1.68E-01	1.01E-01		1.01E-01
N	1861401	Benefin	mg/L	2.90E+00		2.90E+00	2.02E+00		2.02E+00	4.83E+00		4.83E+00	3.01E+00		3.01E+00
N	17804352	Benomyl	mg/L	3.22E+00		3.22E+00	6.96E+00		6.96E+00	7.64E+00		7.64E+00	1.04E+01		1.04E+01
N	25057890	Bentazon	mg/L	2.44E+00		2.44E+00	1.50E+01		1.50E+01	6.65E+00		6.65E+00	2.24E+01		2.24E+01
Y	56553	Benz[a]anthracene	mg/L		9.18E-06	9.18E-06		7.84E-06	7.84E-06		9.18E-06	9.18E-06		7.84E-06	7.84E-06
N	100527	Benzaldehyde	mg/L	2.13E+00		2.13E+00	1.73E+00		1.73E+00	3.79E+00		3.79E+00	2.59E+00		2.59E+00
Y	71432	Benzene	mg/L	6.59E-02	1.24E-02	1.24E-02	5.40E-02	1.26E-02	1.26E-02	1.18E-01	1.24E-02	1.24E-02	8.07E-02	1.26E-02	1.26E-02
N	29224553	Benzene, Ethyldimethyl	mg/L												
N	25550145	Benzene, Ethylmethyl	mg/L												
N	768003	Benzene, Methylpropenyl	mg/L												
N	28729546	Benzene, Methylpropyl	mg/L												
N	25551137	Benzene, Trimethyl	mg/L												
N	108985	Benzenethiol	mg/L	1.14E-04		1.14E-04	8.12E-05		8.12E-05	1.92E-04		1.92E-04	1.21E-04		1.21E-04
N	92875	Benzidine	mg/L	2.20E-01	1.35E-05	1.35E-05	7.20E-01	4.00E-05	4.00E-05	5.59E-01	1.35E-05	1.35E-05	1.08E+00	4.00E-05	4.00E-05
Y	50328	Benzo[a]pyrene	mg/L		6.20E-07	6.20E-07		5.29E-07	5.29E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
Y	205992	Benzo[b]fluoranthene	mg/L		6.20E-06	6.20E-06		5.29E-06	5.29E-06		6.20E-06	6.20E-06		5.29E-06	5.29E-06
N	191242	Benzo[g,h,i]perylene	mg/L												
Y	207089	Benzo[k]fluoranthene	mg/L		1.24E-04	1.24E-04		1.06E-04	1.06E-04		1.24E-04	1.24E-04		1.06E-04	1.06E-04
N	65850	Benzoic Acid	mg/L	1.76E+02		1.76E+02	2.14E+02		2.14E+02	3.61E+02		3.61E+02	3.19E+02		3.19E+02
N	98077	Benzotrichloride	mg/L		3.96E-05	3.96E-05		3.83E-05	3.83E-05		3.96E-05	3.96E-05		3.83E-05	3.83E-05
N	100516	Benzyl Alcohol	mg/L	1.18E+01		1.18E+01	1.29E+01		1.29E+01	2.33E+01		2.33E+01	1.92E+01		1.92E+01
N	100447	Benzyl Chloride	mg/L		4.79E-03	4.79E-03		5.03E-03	5.03E-03		4.79E-03	4.79E-03		5.03E-03	5.03E-03
N	141662	Bidrin	mg/L	8.99E-03		8.99E-03	8.86E-01		8.86E-01	2.65E-02		2.65E-02	1.32E+00		1.32E+00
N	82657043	Biphenthrin	mg/L	1.36E+00		1.36E+00				4.02E+00		4.02E+00			
N	92524	Biphenyl, 1,1'-	mg/L	8.56E-02		8.56E-02	5.41E-02		5.41E-02	1.37E-01		1.37E-01	8.09E-02		8.09E-02
N	108601	Bis(2-chloro-1-methylethyl)ether (Technical)	mg/L		8.93E-03	8.93E-03		8.90E-03	8.90E-03		8.93E-03	8.93E-03		8.90E-03	8.90E-03
N	111911	Bis(2-chloroethoxy)methane	mg/L												
N	111444	Bis(2-chloroethyl)ether	mg/L		1.93E-03	1.93E-03		3.24E-03	3.24E-03		1.93E-03	1.93E-03		3.24E-03	3.24E-03
N	39638329	Bis(2-chloroisopropyl)ether	mg/L	1.43E+00	1.71E-02	1.71E-02	1.47E+00	2.02E-02	2.02E-02	2.78E+00	1.71E-02	1.71E-02	2.20E+00	2.02E-02	2.02E-02
N	117817	Bis(2-ethylhexyl)phthalate	mg/L	9.82E-02	1.00E-02	1.00E-02	6.44E-02	8.82E-03	8.82E-03	1.59E-01	1.00E-02	1.00E-02	9.63E-02	8.82E-03	8.82E-03
N	542881	Bis(chloromethyl)ether	mg/L		1.62E-05	1.62E-05		7.66E-05	7.66E-05		1.62E-05	1.62E-05		7.66E-05	7.66E-05
N	80057	Bisphenol A	mg/L	4.99E-01		4.99E-01	3.48E-01		3.48E-01	8.32E-01		8.32E-01	5.20E-01		5.20E-01
N	108861	Bromobenzene	mg/L	1.81E+00		1.81E+00				5.37E+00		5.37E+00			

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action ... less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	74975	Bromochloromethane	mg/L												
N	75274	Bromodichloromethane	mg/L	1.36E+00	3.06E-02	3.06E-02	3.09E+00	6.98E-02	6.98E-02	2.77E+00	2.84E-02	2.84E-02	6.87E+00	4.08E-02	4.08E-02
N	101553	Bromodiphenyl Ether, p-	mg/L												
N	75252	Bromoform	mg/L	1.85E+00	3.28E-01	3.28E-01	4.22E+00	7.48E-01	7.48E-01	3.39E+00	2.65E-01	2.65E-01	9.38E+00	4.37E-01	4.37E-01
N	74839	Bromomethane	mg/L	1.28E-01		1.28E-01	2.93E-01		2.93E-01	2.36E-01		2.36E-01	6.50E-01		6.50E-01
N	2104963	Bromophos	mg/L	1.79E-02		1.79E-02	4.08E-02		4.08E-02	5.24E-02		5.24E-02	9.07E-02		9.07E-02
N	75627	Bromotrichloromethane	mg/L												
N	1689845	Bromoxynil	mg/L	4.61E+01		4.61E+01	1.05E+02		1.05E+02	8.22E+00		8.22E+00	2.34E+02		2.34E+02
N	1689992	Bromoxynil Octanoate	mg/L	2.87E-02		2.87E-02	6.53E-02		6.53E-02	8.51E-02		8.51E-02	1.45E-01		1.45E-01
N	106990	Butadiene, 1,3-	mg/L		2.17E-04	2.17E-04		4.95E-04	4.95E-04		2.97E-04	2.97E-04		2.89E-04	2.89E-04
N	71363	Butanol, N-	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	1.55E+01		1.55E+01	4.06E+01		4.06E+01
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/L												
N	85687	Butyl Benzyl Phthlate	mg/L	6.90E-01		6.90E-01	1.57E+00		1.57E+00	2.02E+00		2.02E+00	3.49E+00		3.49E+00
N	2008415	Butylate	mg/L	1.27E-01		1.27E-01	2.89E-01		2.89E-01	3.74E-01		3.74E-01	6.43E-01		6.43E-01
N	104518	Butylbenzene, N-	mg/L							4.37E+00		4.37E+00			
N	135988	Butylbenzene, sec-	mg/L							4.37E+00		4.37E+00			
N	98066	Butylbenzene-tert	mg/L							4.37E+00		4.37E+00			
N	507200	Butylchloride, t-	mg/L												
N	85701	Butylphthalyl Butylglycolate	mg/L	1.34E+01		1.34E+01	3.05E+01		3.05E+01	3.67E+01		3.67E+01	6.77E+01		6.77E+01
N	75605	Cacodylic Acid	mg/L	2.23E+00		2.23E+00	5.08E+00		5.08E+00	1.10E+00		1.10E+00	1.13E+01		1.13E+01
N	105602	Caprolactam	mg/L	3.58E+02		3.58E+02	8.16E+02		8.16E+02	1.81E+02		1.81E+02	1.81E+03		1.81E+03
N	2425061	Captafol	mg/L	4.67E-01	7.60E-01	4.67E-01	1.06E+00	1.73E+00	1.06E+00	5.38E-01	3.54E-01	3.54E-01	2.36E+00	1.01E+00	1.01E+00
N	133062	Captan	mg/L	2.01E+01	1.24E+00	1.24E+00	4.57E+01	2.81E+00	2.81E+00	2.92E+01	7.54E-01	7.54E-01	1.02E+02	1.64E+00	1.64E+00
N	63252	Carbaryl	mg/L	4.18E+00		4.18E+00	9.52E+00		9.52E+00	9.74E+00		9.74E+00	2.12E+01		2.12E+01
N	86748	Carbazole	mg/L		4.32E-03	4.32E-03		9.84E-03	9.84E-03		6.54E-03	6.54E-03		5.75E-03	5.75E-03
N	1563662	Carbofuran	mg/L	8.36E-01		8.36E-01	1.90E+00		1.90E+00	1.17E+00		1.17E+00	4.23E+00		4.23E+00
N	75150	Carbon Disulfide	mg/L	1.05E+00		1.05E+00	2.40E+00		2.40E+00	2.95E+00		2.95E+00	5.33E+00		5.33E+00
Y	56235	Carbon Tetrachloride	mg/L	8.30E-03	2.55E-03	2.55E-03	1.89E-02	5.82E-03	5.82E-03	2.30E-02	3.56E-03	3.56E-03	4.20E-02	3.40E-03	3.40E-03
N	55285148	Carbosulfan	mg/L							4.37E+00		4.37E+00			
N	5234684	Carboxin	mg/L	9.12E+00		9.12E+00	2.08E+01		2.08E+01	1.68E+01		1.68E+01	4.62E+01		4.62E+01
N	75876	Chloral	mg/L	1.67E+01		1.67E+01	3.81E+01		3.81E+01	2.33E+01		2.33E+01	8.47E+01		8.47E+01
N	133904	Chloramben	mg/L	1.31E+00		1.31E+00	2.98E+00		2.98E+00	2.45E+00		2.45E+00	6.63E+00		6.63E+00
N	118752	Chloranil	mg/L		6.06E-03	6.06E-03		1.38E-02	1.38E-02		5.03E-03	5.03E-03		8.07E-03	8.07E-03
N	57749	Chlordane	mg/L	1.93E-03	3.09E-04	3.09E-04	4.39E-03	7.03E-04	7.03E-04	5.64E-03	4.64E-04	4.64E-04	9.77E-03	4.11E-04	4.11E-04
N	90982324	Chlorimuron, Ethyl-	mg/L	1.22E+01		1.22E+01	2.77E+01		2.77E+01	7.05E+00		7.05E+00	6.16E+01		6.16E+01
N	10049044	Chlorine Dioxide	mg/L							1.31E+01		1.31E+01			
N	75683	Chloro-1,1-difluoroethane, 1-	mg/L	7.17E+02		7.17E+02	1.63E+03		1.63E+03	1.60E+03		1.60E+03	3.63E+03		3.63E+03
N	126998	Chloro-1,3-butadiene, 2-	mg/L	6.42E-01		6.42E-01	1.46E+00		1.46E+00	1.58E+00		1.58E+00	3.25E+00		3.25E+00
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/L		1.91E-03	1.91E-03		4.35E-03	4.35E-03		2.26E-03	2.26E-03		2.54E-03	2.54E-03
N	95692	Chloro-2-methylaniline, 4-	mg/L		8.81E-04	8.81E-04		2.01E-03	2.01E-03		1.16E-03	1.16E-03		1.17E-03	1.17E-03
N	79118	Chloroacetic Acid	mg/L	1.12E-01		1.12E-01	2.54E-01		2.54E-01	2.42E-01		2.42E-01	5.64E-01		5.64E-01
N	532274	Chloroacetophenone, 2-	mg/L	2.61E-04		2.61E-04	5.94E-04		5.94E-04	6.46E-04		6.46E-04	1.32E-03		1.32E-03
N	106478	Chloroaniline, p-	mg/L	2.59E-02		2.59E-02	5.90E-02		5.90E-02	7.43E-02		7.43E-02	1.31E-01		1.31E-01
N	108907	Chlorobenzene	mg/L	6.07E-02		6.07E-02	1.38E-01		1.38E-01	1.78E-01		1.78E-01	3.07E-01		3.07E-01
N	510156	Chlorobenzilate	mg/L	1.30E-01	6.72E-04	6.72E-04	2.95E-01	1.53E-03	1.53E-03	3.72E-01	9.84E-04	9.84E-04	6.55E-01	8.93E-04	8.93E-04
N	74113	Chlorobenzoic Acid, p-	mg/L	2.36E+00		2.36E+00	5.38E+00		5.38E+00	6.55E+00		6.55E+00	1.20E+01		1.20E+01
N	98566	Chlorobenzotrifluoride, 4-	mg/L	5.90E-02		5.90E-02	1.34E-01		1.34E-01	1.73E-01		1.73E-01	2.99E-01		2.99E-01
N	109693	Chlorobutane, 1-	mg/L	3.57E+00		3.57E+00	8.13E+00		8.13E+00	1.01E+01		1.01E+01	1.81E+01		1.81E+01
N	78864	Chlorobutane, 2-	mg/L												
N	41851507	Chlorocyclopentadiene	mg/L												
N	73506942	Chlorodibromoethane	mg/L								5.16E-02	5.16E-02			
N	75456	Chlorodifluoromethane	mg/L	1.39E+03		1.39E+03	3.17E+03		3.17E+03	2.50E+03		2.50E+03	7.04E+03		7.04E+03
Y	67663	Chloroform	mg/L	9.02E-02	4.14E-02	4.14E-02	2.05E-01	9.43E-02	9.43E-02	2.55E-01	5.92E-02	5.92E-02	4.57E-01	5.51E-02	5.51E-02
N	74873	Chloromethane	mg/L		1.65E-01	1.65E-01		3.75E-01	3.75E-01		1.45E-01	1.45E-01		2.19E-01	2.19E-01

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	74975	Bromochloromethane	mg/L												
N	75274	Bromodichloromethane	mg/L	9.77E-01	2.84E-02	2.84E-02	1.32E+00	4.08E-02	4.08E-02	2.07E+00	2.84E-02	2.84E-02	1.97E+00	4.08E-02	4.08E-02
N	101553	Bromodiphenyl Ether, p-	mg/L												
N	75252	Bromoform	mg/L	1.11E+00	2.65E-01	2.65E-01	1.80E+00	4.37E-01	4.37E-01	2.47E+00	2.65E-01	2.65E-01	2.69E+00	4.37E-01	4.37E-01
N	74839	Bromomethane	mg/L	7.77E-02		7.77E-02	1.25E-01		1.25E-01	1.72E-01		1.72E-01	1.86E-01		1.86E-01
N	2104963	Bromophos	mg/L	2.64E-02		2.64E-02	1.74E-02		1.74E-02	4.29E-02		4.29E-02	2.60E-02		2.60E-02
N	75627	Bromotrichloromethane	mg/L												
N	1689845	Bromoxynil	mg/L	1.77E+00		1.77E+00	4.48E+01		4.48E+01	5.13E+00		5.13E+00	6.70E+01		6.70E+01
N	1689992	Bromoxynil Octanoate	mg/L	4.38E-02		4.38E-02	2.78E-02		2.78E-02	7.00E-02		7.00E-02	4.16E-02		4.16E-02
N	106990	Butadiene, 1,3-	mg/L		2.97E-04	2.97E-04		2.89E-04	2.89E-04		2.97E-04	2.97E-04		2.89E-04	2.89E-04
N	71363	Butanol, N-	mg/L	5.26E+00		5.26E+00	7.80E+00		7.80E+00	1.14E+01		1.14E+01	1.17E+01		1.17E+01
N	1515168	Butanone-2, 4-chloro-4,4-difluoro	mg/L												
N	85687	Butyl Benzyl Phthlate	mg/L	1.02E+00		1.02E+00	6.70E-01		6.70E-01	1.65E+00		1.65E+00	1.00E+00		1.00E+00
N	2008415	Butylate	mg/L	1.90E-01		1.90E-01	1.23E-01		1.23E-01	3.07E-01		3.07E-01	1.84E-01		1.84E-01
N	104518	Butylbenzene, N-	mg/L	9.05E-01		9.05E-01				2.68E+00		2.68E+00			
N	135988	Butylbenzene, sec-	mg/L	9.05E-01		9.05E-01				2.68E+00		2.68E+00			
N	98066	Butylbenzene-tert	mg/L	9.05E-01		9.05E-01				2.68E+00		2.68E+00			
N	507200	Butylchloride, t-	mg/L												
N	85701	Butylphthalyl Butylglycolate	mg/L	1.70E+01		1.70E+01	1.30E+01		1.30E+01	2.95E+01		2.95E+01	1.94E+01		1.94E+01
N	75605	Cacodylic Acid	mg/L	2.52E-01		2.52E-01	2.17E+00		2.17E+00	7.02E-01		7.02E-01	3.24E+00		3.24E+00
N	105602	Caprolactam	mg/L	4.19E+01		4.19E+01	3.48E+02		3.48E+02	1.17E+02		1.17E+02	5.20E+02		5.20E+02
N	2425061	Captafol	mg/L	1.45E-01	3.54E-01	1.45E-01	4.53E-01	1.01E+00	4.53E-01	3.66E-01	3.54E-01	3.54E-01	6.78E-01	1.01E+00	6.78E-01
N	133062	Captan	mg/L	8.56E+00	7.54E-01	7.54E-01	1.95E+01	1.64E+00	1.64E+00	2.05E+01	7.54E-01	7.54E-01	2.91E+01	1.64E+00	1.64E+00
N	63252	Carbaryl	mg/L	3.80E+00		3.80E+00	4.06E+00		4.06E+00	7.47E+00		7.47E+00	6.07E+00		6.07E+00
N	86748	Carbazole	mg/L		6.54E-03	6.54E-03		5.75E-03	5.75E-03		6.54E-03	6.54E-03		5.75E-03	5.75E-03
N	1563662	Carbofuran	mg/L	3.36E-01		3.36E-01	8.12E-01		8.12E-01	8.14E-01		8.14E-01	1.21E+00		1.21E+00
N	75150	Carbon Disulfide	mg/L	1.39E+00		1.39E+00	1.02E+00		1.02E+00	2.38E+00		2.38E+00	1.53E+00		1.53E+00
Y	56235	Carbon Tetrachloride	mg/L	1.08E-02	3.56E-03	3.56E-03	8.06E-03	3.40E-03	3.40E-03	1.85E-02	3.56E-03	3.56E-03	1.21E-02	3.40E-03	3.40E-03
N	55285148	Carbosulfan	mg/L	9.05E-01		9.05E-01				2.68E+00		2.68E+00			
N	5234684	Carboxin	mg/L	5.54E+00		5.54E+00	8.86E+00		8.86E+00	1.23E+01		1.23E+01	1.32E+01		1.32E+01
N	75876	Chloral	mg/L	6.72E+00		6.72E+00	1.62E+01		1.62E+01	1.63E+01		1.63E+01	2.43E+01		2.43E+01
N	133904	Chloramben	mg/L	8.16E-01		8.16E-01	1.27E+00		1.27E+00	1.79E+00		1.79E+00	1.90E+00		1.90E+00
N	118752	Chloranil	mg/L		5.03E-03	5.03E-03		8.07E-03	8.07E-03		5.03E-03	5.03E-03		8.07E-03	8.07E-03
N	57749	Chlordane	mg/L	2.83E-03	4.64E-04	4.64E-04	1.87E-03	4.11E-04	4.11E-04	4.61E-03	4.64E-04	4.64E-04	2.80E-03	4.11E-04	4.11E-04
N	90982324	Chlorimuron, Ethyl-	mg/L	1.65E+00		1.65E+00	1.18E+01		1.18E+01	4.55E+00		4.55E+00	1.77E+01		1.77E+01
N	10049044	Chlorine Dioxide	mg/L	2.71E+00		2.71E+00				8.05E+00		8.05E+00			
N	75683	Chloro-1,1-difluoroethane, 1-	mg/L	6.01E+02		6.01E+02	6.96E+02		6.96E+02	1.21E+03		1.21E+03	1.04E+03		1.04E+03
N	126998	Chloro-1,3-butadiene, 2-	mg/L	6.46E-01		6.46E-01	6.24E-01		6.24E-01	1.23E+00		1.23E+00	9.32E-01		9.32E-01
N	3165933	Chloro-2-methylaniline HCl, 4-	mg/L		2.26E-03	2.26E-03		2.54E-03	2.54E-03		2.26E-03	2.26E-03		2.54E-03	2.54E-03
N	95692	Chloro-2-methylaniline, 4-	mg/L		1.16E-03	1.16E-03		1.17E-03	1.17E-03		1.16E-03	1.16E-03		1.17E-03	1.17E-03
N	79118	Chloroacetic Acid	mg/L	8.88E-02		8.88E-02	1.08E-01		1.08E-01	1.82E-01		1.82E-01	1.62E-01		1.62E-01
N	532274	Chloroacetophenone, 2-	mg/L	2.67E-04		2.67E-04	2.53E-04		2.53E-04	5.04E-04		5.04E-04	3.78E-04		3.78E-04
N	106478	Chloroaniline, p-	mg/L	3.65E-02		3.65E-02	2.51E-02		2.51E-02	6.05E-02		6.05E-02	3.76E-02		3.76E-02
N	108907	Chlorobenzene	mg/L	9.03E-02		9.03E-02	5.89E-02		5.89E-02	1.46E-01		1.46E-01	8.81E-02		8.81E-02
N	510156	Chlorobenzilate	mg/L	1.82E-01	9.84E-04	9.84E-04	1.26E-01	8.93E-04	8.93E-04	3.02E-01	9.84E-04	9.84E-04	1.88E-01	8.93E-04	8.93E-04
N	74113	Chlorobenzoic Acid, p-	mg/L	3.07E+00		3.07E+00	2.29E+00		2.29E+00	5.27E+00		5.27E+00	3.43E+00		3.43E+00
N	98566	Chlorobenzotrifluoride, 4-	mg/L	8.79E-02		8.79E-02	5.73E-02		5.73E-02	1.42E-01		1.42E-01	8.57E-02		8.57E-02
N	109693	Chlorobutane, 1-	mg/L	4.84E+00		4.84E+00	3.46E+00		3.46E+00	8.16E+00		8.16E+00	5.18E+00		5.18E+00
N	78864	Chlorobutane, 2-	mg/L												
N	41851507	Chlorocyclopentadiene	mg/L												
N	73506942	Chlorodibromoethane	mg/L		5.16E-02	5.16E-02					5.16E-02	5.16E-02			
N	75456	Chlorodifluoromethane	mg/L	8.11E+02		8.11E+02	1.35E+03		1.35E+03	1.81E+03		1.81E+03	2.02E+03		2.02E+03
Y	67663	Chloroform	mg/L	1.22E-01	5.92E-02	5.92E-02	8.76E-02	5.51E-02	5.51E-02	2.06E-01	5.92E-02	5.92E-02	1.31E-01	5.51E-02	5.51E-02
N	74873	Chloromethane	mg/L		1.45E-01	1.45E-01		2.19E-01	2.19E-01		1.45E-01	1.45E-01		2.19E-01	2.19E-01

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action v[illegible]less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	107302	Chloromethyl Methyl Ether	mg/L												
N	91587	Chloronaphthalene, Beta-	mg/L	1.00E-01		1.00E-01	2.29E-01		2.29E-01	2.98E-01		2.98E-01	5.08E-01		5.08E-01
N	88733	Chloronitrobenzene, o-	mg/L		4.73E-02	4.73E-02		1.08E-01	1.08E-01		5.18E-02	5.18E-02		6.30E-02	6.30E-02
N	121733	Chloronitrobenzene, p-	mg/L		4.54E-02	4.54E-02		1.03E-01	1.03E-01		5.48E-02	5.48E-02		6.04E-02	6.04E-02
N	95578	Chlorophenol, 2-	mg/L	3.04E-02		3.04E-02	6.93E-02		6.93E-02	8.75E-02		8.75E-02	1.54E-01		1.54E-01
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/L												
N	934736	Chlorophenyl Methyl Sulfoxide	mg/L												
N	75296	Chloropropane, 2-	mg/L	6.55E-01		6.55E-01	1.49E+00		1.49E+00	1.70E+00		1.70E+00	3.32E+00		3.32E+00
N	1897456	Chlorothalonil	mg/L	1.20E-01	2.04E-02	2.04E-02	2.74E-01	4.65E-02	4.65E-02	3.42E-01	2.95E-02	2.95E-02	6.10E-01	2.72E-02	2.72E-02
N	95498	Chlorotoluene, o-	mg/L	7.65E-02		7.65E-02	1.74E-01		1.74E-01	2.23E-01		2.23E-01	3.87E-01		3.87E-01
N	101213	Chlorpropham	mg/L	3.65E+00		3.65E+00	8.31E+00		8.31E+00	9.72E+00		9.72E+00	1.85E+01		1.85E+01
N	2921882	Chlorpyrifos	mg/L	7.53E-03		7.53E-03	1.71E-02		1.71E-02	2.22E-02		2.22E-02	3.81E-02		3.81E-02
N	5598130	Chlorpyrifos Methyl	mg/L	1.54E-01		1.54E-01	3.52E-01		3.52E-01	4.18E-01		4.18E-01	7.82E-01		7.82E-01
N	64902723	Chlorsulfuron	mg/L	7.17E+03		7.17E+03	1.63E+04		1.63E+04	2.18E+01		2.18E+01	3.63E+04		3.63E+04
N	60238564	Chlorthiophos	mg/L							3.49E-01		3.49E-01			
Y	218019	Chrysene	mg/L		5.89E-04	5.89E-04		1.34E-03	1.34E-03		9.18E-04	9.18E-04		7.84E-04	7.84E-04
N	8007452	Coke Oven Emissions	mg/L												
N	8001589	Creosote	mg/L												
N	108394	Cresol, m-	mg/L	6.69E-01		6.69E-01	1.52E+00		1.52E+00	1.84E+00		1.84E+00	3.39E+00		3.39E+00
N	95487	Cresol, o-	mg/L	6.27E-01		6.27E-01	1.43E+00		1.43E+00	1.73E+00		1.73E+00	3.18E+00		3.18E+00
N	106445	Cresol, p-	mg/L	7.25E-02		7.25E-02	1.65E-01		1.65E-01	1.98E-01		1.98E-01	3.67E-01		3.67E-01
N	123739	Crotonaldehyde, trans-	mg/L		2.11E-04	2.11E-04		4.81E-04	4.81E-04		2.88E-04	2.88E-04		2.81E-04	2.81E-04
N	98828	Cumene	mg/L	2.92E-01		2.92E-01	6.65E-01		6.65E-01	8.58E-01		8.58E-01	1.48E+00		1.48E+00
N	21725462	Cyanazine	mg/L	1.67E-01	2.79E-03	2.79E-03	3.81E-01	6.35E-03	6.35E-03	3.19E-01	2.36E-03	2.36E-03	8.47E-01	3.71E-03	3.71E-03
N	460195	Cyanogen	mg/L	1.28E+01		1.28E+01	2.93E+01		2.93E+01	1.20E+01		1.20E+01	6.50E+01		6.50E+01
N	506683	Cyanogen Bromide	mg/L							3.93E+01		3.93E+01			
N	506774	Cyanogen Chloride	mg/L	1.46E+01		1.46E+01	3.32E+01		3.32E+01	1.46E+01		1.46E+01	7.39E+01		7.39E+01
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/L		7.64E-02	7.64E-02		1.74E-01	1.74E-01		7.30E-02	7.30E-02		1.02E-01	1.02E-01
N	108941	Cyclohexanone	mg/L	8.92E+02		8.92E+02	2.03E+03		2.03E+03	1.20E+03		1.20E+03	4.52E+03		4.52E+03
N	108918	Cyclohexylamine	mg/L	7.30E+00		7.30E+00	1.66E+01		1.66E+01	1.75E+01		1.75E+01	3.69E+01		3.69E+01
N	542927	Cyclopentadiene	mg/L												
N	68085858	Cyhalothrin/karate	mg/L	3.72E-03		3.72E-03	8.46E-03		8.46E-03	1.11E-02		1.11E-02	1.88E-02		1.88E-02
N	52315078	Cypermethrin	mg/L	2.01E-02		2.01E-02	4.57E-02		4.57E-02	5.93E-02		5.93E-02	1.02E-01		1.02E-01
N	66215278	Cyromazine	mg/L							3.28E+00		3.28E+00			
N	72548	DDD	mg/L		1.17E-04	1.17E-04		2.67E-04	2.67E-04		1.81E-04	1.81E-04		1.56E-04	1.56E-04
N	72559	DDE	mg/L		9.64E-05	9.64E-05		2.20E-04	2.20E-04		1.49E-04	1.49E-04		1.28E-04	1.28E-04
N	50293	DDT	mg/L	3.27E-04	5.38E-05	5.38E-05	7.44E-04	1.23E-04	1.23E-04	9.75E-04	8.34E-05	8.34E-05	1.65E-03	7.16E-05	7.16E-05
N	1861321	Dacthal	mg/L	8.36E-02		8.36E-02	1.90E-01		1.90E-01	2.37E-01		2.37E-01	4.23E-01		4.23E-01
N	75990	Dalapon	mg/L	6.62E+00		6.62E+00	1.51E+01		1.51E+01	7.89E+00		7.89E+00	3.35E+01		3.35E+01
N	1163195	Decabromodiphenyl Ether	mg/L	2.29E+02		2.29E+02	5.22E+02		5.22E+02	4.34E+00		4.34E+00	1.16E+03		1.16E+03
N	8065483	Demeton	mg/L							1.75E-02		1.75E-02			
N	103231	Di(2-ethylhexyl)adipate	mg/L	3.35E-02	1.30E-03	1.30E-03	7.62E-02	2.96E-03	2.96E-03	1.00E-01	2.03E-03	2.03E-03	1.69E-01	1.73E-03	1.73E-03
N	2303164	Diallate	mg/L		1.05E+00	1.05E+00		2.40E+00	2.40E+00		6.81E-02	6.81E-02		1.40E+00	1.40E+00
N	505293	Diathane, 1,4-	mg/L	5.90E-01		5.90E-01	1.34E+00		1.34E+00	1.26E+00		1.26E+00	2.99E+00		2.99E+00
N	333415	Diazinon	mg/L	1.39E-02		1.39E-02	3.16E-02		3.16E-02	3.77E-02		3.77E-02	7.03E-02		7.03E-02
Y	53703	Dibenz[a,h]anthracene	mg/L		1.77E-07	1.77E-07		4.03E-07	4.03E-07		2.76E-07	2.76E-07		2.35E-07	2.35E-07
N	132649	Dibenzofuran	mg/L							1.75E+00		1.75E+00			
N	96128	Dibromo-3-chloropropane, 1,2-	mg/L	3.81E-03	1.34E-03	1.34E-03	8.68E-03	3.05E-03	3.05E-03	7.83E-03	1.25E-03	1.25E-03	1.93E-02	1.78E-03	1.78E-03
N	106376	Dibromobenzene, 1,4-	mg/L	9.18E-02		9.18E-02	2.09E-01		2.09E-01	2.59E-01		2.59E-01	4.64E-01		4.64E-01
N	124481	Dibromochloromethane	mg/L	1.24E+00	2.06E-02	2.06E-02	2.81E+00	4.69E-02	4.69E-02	2.60E+00	1.98E-02	1.98E-02	6.25E+00	2.74E-02	2.74E-02
N	594183	Dibromodichloromethane	mg/L												
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/L												
N	106934	Dibromoethane, 1,2-	mg/L	5.55E-03	3.21E-05	3.21E-05	1.26E-02	7.30E-05	7.30E-05	9.97E-03	2.53E-05	2.53E-05	2.81E-02	4.26E-05	4.26E-05
N	74953	Dibromomethane (Methylene Bromide)	mg/L	2.68E+00		2.68E+00	6.09E+00		6.09E+00	2.83E+00		2.83E+00	1.35E+01		1.35E+01

Hazard-based values calculated using target *HI of 0.1*.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	107302	Chloromethyl Methyl Ether	mg/L												
N	91587	Chloronaphthalene, Beta-	mg/L	1.54E-01		1.54E-01	9.75E-02		9.75E-02	2.46E-01		2.46E-01	1.46E-01		1.46E-01
N	88733	Chloronitrobenzene, o-	mg/L		5.18E-02	5.18E-02		6.30E-02	6.30E-02		5.18E-02	5.18E-02		6.30E-02	6.30E-02
N	121733	Chloronitrobenzene, p-	mg/L		5.48E-02	5.48E-02		6.04E-02	6.04E-02		5.48E-02	5.48E-02		6.04E-02	6.04E-02
N	95578	Chlorophenol, 2-	mg/L	4.31E-02		4.31E-02	2.95E-02		2.95E-02	7.13E-02		7.13E-02	4.41E-02		4.41E-02
N	123091	Chlorophenyl Methyl Sulfide, p-	mg/L												
N	934736	Chlorophenyl Methyl Sulfoxide	mg/L												
N	75296	Chloropropane, 2-	mg/L	7.34E-01		7.34E-01	6.36E-01		6.36E-01	1.34E+00		1.34E+00	9.51E-01		9.51E-01
N	1897456	Chlorothalonil	mg/L	1.65E-01	2.95E-02	2.95E-02	1.17E-01	2.72E-02	2.72E-02	2.78E-01	2.95E-02	2.95E-02	1.75E-01	2.72E-02	2.72E-02
N	95498	Chlorotoluene, o-	mg/L	1.12E-01		1.12E-01	7.42E-02		7.42E-02	1.83E-01		1.83E-01	1.11E-01		1.11E-01
N	101213	Chlorpropham	mg/L	4.34E+00		4.34E+00	3.54E+00		3.54E+00	7.73E+00		7.73E+00	5.30E+00		5.30E+00
N	2921882	Chlorpyrifos	mg/L	1.13E-02		1.13E-02	7.31E-03		7.31E-03	1.82E-02		1.82E-02	1.09E-02		1.09E-02
N	5598130	Chlorpyrifos Methyl	mg/L	1.91E-01		1.91E-01	1.50E-01		1.50E-01	3.35E-01		3.35E-01	2.24E-01		2.24E-01
N	64902723	Chlorsulfuron	mg/L	4.52E+00		4.52E+00	6.96E+03		6.96E+03	1.34E+01		1.34E+01	1.04E+04		1.04E+04
N	60238564	Chlorthiophos	mg/L	7.24E-02		7.24E-02				2.15E-01		2.15E-01			
Y	218019	Chrysene	mg/L		9.18E-04	9.18E-04		7.84E-04	7.84E-04		9.18E-04	9.18E-04		7.84E-04	7.84E-04
N	8007452	Coke Oven Emissions	mg/L												
N	8001589	Creosote	mg/L												
N	108394	Cresol, m-	mg/L	8.50E-01		8.50E-01	6.50E-01		6.50E-01	1.47E+00		1.47E+00	9.71E-01		9.71E-01
N	95487	Cresol, o-	mg/L	8.07E-01		8.07E-01	6.09E-01		6.09E-01	1.39E+00		1.39E+00	9.10E-01		9.10E-01
N	106445	Cresol, p-	mg/L	9.07E-02		9.07E-02	7.04E-02		7.04E-02	1.58E-01		1.58E-01	1.05E-01		1.05E-01
N	123739	Crotonaldehyde, trans-	mg/L		2.88E-04	2.88E-04		2.81E-04	2.81E-04		2.88E-04	2.88E-04		2.81E-04	2.81E-04
N	98828	Cumene	mg/L	4.35E-01		4.35E-01	2.83E-01		2.83E-01	7.04E-01		7.04E-01	4.24E-01		4.24E-01
N	21725462	Cyanazine	mg/L	1.07E-01	2.36E-03	2.36E-03	1.62E-01	3.71E-03	3.71E-03	2.34E-01	2.36E-03	2.36E-03	2.43E-01	3.71E-03	3.71E-03
N	460195	Cyanogen	mg/L	3.07E+00		3.07E+00	1.25E+01		1.25E+01	8.02E+00		8.02E+00	1.86E+01		1.86E+01
N	506683	Cyanogen Bromide	mg/L	8.14E+00		8.14E+00				2.41E+01		2.41E+01			
N	506774	Cyanogen Chloride	mg/L	3.78E+00		3.78E+00	1.42E+01		1.42E+01	9.78E+00		9.78E+00	2.12E+01		2.12E+01
N	87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	mg/L		7.30E-02	7.30E-02		1.02E-01	1.02E-01		7.30E-02	7.30E-02		1.02E-01	1.02E-01
N	108941	Cyclohexanone	mg/L	3.42E+02		3.42E+02	8.66E+02		8.66E+02	8.34E+02		8.34E+02	1.29E+03		1.29E+03
N	108918	Cyclohexylamine	mg/L	7.00E+00		7.00E+00	7.09E+00		7.09E+00	1.35E+01		1.35E+01	1.06E+01		1.06E+01
N	542927	Cyclopentadiene	mg/L												
N	68085858	Cyhalothrin/karate	mg/L	5.74E-03		5.74E-03	3.61E-03		3.61E-03	9.14E-03		9.14E-03	5.40E-03		5.40E-03
N	52315078	Cypermethrin	mg/L	3.04E-02		3.04E-02	1.95E-02		1.95E-02	4.88E-02		4.88E-02	2.91E-02		2.91E-02
N	66215278	Cyromazine	mg/L	6.79E-01		6.79E-01				2.01E+00		2.01E+00			
N	72548	DDD	mg/L		1.81E-04	1.81E-04		1.56E-04	1.56E-04		1.81E-04	1.81E-04		1.56E-04	1.56E-04
N	72559	DDE	mg/L		1.49E-04	1.49E-04		1.28E-04	1.28E-04		1.49E-04	1.49E-04		1.28E-04	1.28E-04
N	50293	DDT	mg/L	5.06E-04	8.34E-05	8.34E-05	3.17E-04	7.16E-05	7.16E-05	8.04E-04	8.34E-05	8.34E-05	4.74E-04	7.16E-05	7.16E-05
N	1861321	Dacthal	mg/L	1.14E-01		1.14E-01	8.12E-02		8.12E-02	1.92E-01		1.92E-01	1.21E-01		1.21E-01
N	75990	Dalapon	mg/L	2.15E+00		2.15E+00	6.43E+00		6.43E+00	5.40E+00		5.40E+00	9.60E+00		9.60E+00
N	1163195	Decabromodiphenyl Ether	mg/L	9.02E-01		9.02E-01	2.23E+02		2.23E+02	2.67E+00		2.67E+00	3.33E+02		3.33E+02
N	8065483	Demeton	mg/L	3.62E-03		3.62E-03				1.07E-02		1.07E-02			
N	103231	Di(2-ethylhexyl)adipate	mg/L	5.23E-02	2.03E-03	2.03E-03	3.25E-02	1.73E-03	1.73E-03	8.28E-02	2.03E-03	2.03E-03	4.86E-02	1.73E-03	1.73E-03
N	2303164	Diallate	mg/L		6.81E-02	6.81E-02		1.40E+00	1.40E+00		6.81E-02	6.81E-02		1.40E+00	1.40E+00
N	505293	Diathane, 1,4-	mg/L	4.57E-01		4.57E-01	5.73E-01		5.73E-01	9.46E-01		9.46E-01	8.57E-01		8.57E-01
N	333415	Diazinon	mg/L	1.72E-02		1.72E-02	1.35E-02		1.35E-02	3.01E-02		3.01E-02	2.02E-02		2.02E-02
Y	53703	Dibenz[a,h]anthracene	mg/L		2.76E-07	2.76E-07		2.35E-07	2.35E-07		2.76E-07	2.76E-07		2.35E-07	2.35E-07
N	132649	Dibenzofuran	mg/L	3.62E-01		3.62E-01				1.07E+00		1.07E+00			
N	96128	Dibromo-3-chloropropane, 1,2-	mg/L	2.77E-03	1.25E-03	1.25E-03	3.70E-03	1.78E-03	1.78E-03	5.84E-03	1.25E-03	1.25E-03	5.54E-03	1.78E-03	1.78E-03
N	106376	Dibromobenzene, 1,4-	mg/L	1.24E-01		1.24E-01	8.91E-02		8.91E-02	2.09E-01		2.09E-01	1.33E-01		1.33E-01
N	124481	Dibromochloromethane	mg/L	9.35E-01	1.98E-02	1.98E-02	1.20E+00	2.74E-02	2.74E-02	1.95E+00	1.98E-02	1.98E-02	1.79E+00	2.74E-02	2.74E-02
N	594183	Dibromodichloromethane	mg/L												
N	2050477	Dibromodiphenyl Ether, p,p'-	mg/L												
N	106934	Dibromoethane, 1,2-	mg/L	3.24E-03	2.53E-05	2.53E-05	5.39E-03	4.26E-05	4.26E-05	7.23E-03	2.53E-05	2.53E-05	8.05E-03	4.26E-05	4.26E-05
N	74953	Dibromomethane (Methylene Bromide)	mg/L	7.44E-01		7.44E-01	2.60E+00		2.60E+00	1.91E+00		1.91E+00	3.88E+00		3.88E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action val[illegible] less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	84742	Dibutyl Phthalate	mg/L	3.35E-01		3.35E-01	7.62E-01		7.62E-01	9.80E-01		9.80E-01	1.69E+00		1.69E+00
N	1918009	Dicamba	mg/L	5.02E-01		5.02E-01	1.14E+00		1.14E+00	1.35E+00		1.35E+00	2.54E+00		2.54E+00
N	764410	Dichloro-2-butene, 1,4-	mg/L		6.91E-04	6.91E-04		1.57E-03	1.57E-03		3.25E-04	3.25E-04		9.19E-04	9.19E-04
N	79436	Dichloroacetic Acid	mg/L												
N	95501	Dichlorobenzene, 1,2-	mg/L	4.74E-01		4.74E-01	1.08E+00		1.08E+00	1.37E+00		1.37E+00	2.40E+00		2.40E+00
N	541731	Dichlorobenzene, 1,3-	mg/L	3.32E-03		3.32E-03	7.57E-03		7.57E-03	9.71E-03		9.71E-03	1.68E-02		1.68E-02
N	106467	Dichlorobenzene, 1,4-	mg/L	1.75E-01	6.80E-03	6.80E-03	3.98E-01	1.55E-02	1.55E-02	5.04E-01	1.00E-02	1.00E-02	8.85E-01	9.04E-03	9.04E-03
N	91941	Dichlorobenzidine, 3,3'-	mg/L		7.35E-04	7.35E-04		1.67E-03	1.67E-03		1.02E-03	1.02E-03		9.77E-04	9.77E-04
N	75718	Dichlorodifluoromethane	mg/L	1.54E+00		1.54E+00	3.50E+00		3.50E+00	4.38E+00		4.38E+00	7.79E+00		7.79E+00
N	75343	Dichloroethane, 1,1-	mg/L	4.51E+00		4.51E+00	1.03E+01		1.03E+01	1.03E+01		1.03E+01	2.28E+01		2.28E+01
N	107062	Dichloroethane, 1,2-	mg/L	2.27E+00	2.33E-02	2.33E-02	5.17E+00	5.31E-02	5.31E-02	4.48E+00	2.06E-02	2.06E-02	1.15E+01	3.10E-02	3.10E-02
Y	75354	Dichloroethylene, 1,1-	mg/L	4.06E-01	2.11E-03	2.11E-03	9.24E-01	4.79E-03	4.79E-03	9.29E-01	2.26E-03	2.26E-03	2.05E+00	2.80E-03	2.80E-03
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	2.63E+00		2.63E+00	5.98E+00		5.98E+00	2.62E+00		2.62E+00	1.33E+01		1.33E+01
Y	156592	Dichloroethylene, 1,2-cis-	mg/L	4.01E-01		4.01E-01	9.14E-01		9.14E-01	9.43E-01		9.43E-01	2.03E+00		2.03E+00
Y	156605	Dichloroethylene, 1,2-trans-	mg/L	7.30E+00		7.30E+00	1.66E+01		1.66E+01	6.24E+00		6.24E+00	3.69E+01		3.69E+01
N	120832	Dichlorophenol, 2,4-	mg/L	1.65E-02		1.65E-02	3.75E-02		3.75E-02	4.75E-02		4.75E-02	8.33E-02		8.33E-02
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/L	6.30E-01		6.30E-01	1.43E+00		1.43E+00	1.32E+00		1.32E+00	3.19E+00		3.19E+00
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/L	3.57E-01		3.57E-01	8.13E-01		8.13E-01	8.19E-01		8.19E-01	1.81E+00		1.81E+00
N	78875	Dichloropropane, 1,2-	mg/L	3.40E-02	1.22E-02	1.22E-02	7.73E-02	2.79E-02	2.79E-02	8.45E-02	1.47E-02	1.47E-02	1.72E-01	1.63E-02	1.63E-02
N	616239	Dichloropropanol, 2,3-	mg/L	3.01E+00		3.01E+00	6.86E+00		6.86E+00	1.14E+00		1.14E+00	1.52E+01		1.52E+01
N	542756	Dichloropropene, 1,3-	mg/L	1.20E+00	1.12E-02	1.12E-02	2.74E+00	2.56E-02	2.56E-02	2.83E+00	1.25E-02	1.25E-02	6.10E+00	1.50E-02	1.50E-02
N	62737	Dichlorvos	mg/L	1.06E-01	2.04E-02	2.04E-02	2.41E-01	4.65E-02	4.65E-02	1.29E-01	1.02E-02	1.02E-02	5.35E-01	2.71E-02	2.71E-02
N	115322	Dicofol	mg/L		5.55E-05	5.55E-05		1.26E-04	1.26E-04		8.59E-05	8.59E-05		7.39E-05	7.39E-05
N	77736	Dicyclopentadiene	mg/L	2.83E-01		2.83E-01	6.45E-01		6.45E-01	7.98E-01		7.98E-01	1.43E+00		1.43E+00
N	60571	Dieldrin	mg/L	6.27E-04	2.20E-05	2.20E-05	1.43E-03	5.00E-05	5.00E-05	1.73E-03	3.04E-05	3.04E-05	3.18E-03	2.92E-05	2.92E-05
N	84662	Diethyl Phthalate	mg/L	6.02E+01		6.02E+01	1.37E+02		1.37E+02	1.19E+02		1.19E+02	3.05E+02		3.05E+02
N	311455	Diethyl-p-nitrophenylphosphate	mg/L												
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/L												
N	112345	Diethylene Glycol Monobutyl Ether	mg/L	2.61E+01		2.61E+01	5.94E+01		5.94E+01	2.42E+00		2.42E+00	1.32E+02		1.32E+02
N	111900	Diethylene Glycol Monoethyl Ether	mg/L	1.61E+03		1.61E+03	3.66E+03		3.66E+03	7.39E+02		7.39E+02	8.13E+03		8.13E+03
N	617845	Diethylformamide	mg/L	4.42E+00		4.42E+00	1.01E+01		1.01E+01	3.52E+00		3.52E+00	2.24E+01		2.24E+01
N	56531	Diethylstilbesterol	mg/L		3.42E-09	3.42E-09		7.78E-09	7.78E-09		5.30E-09	5.30E-09		4.54E-09	4.54E-09
N	43222486	Difenzoquat	mg/L							3.49E+01		3.49E+01			
N	35367385	Diflubenzuron	mg/L	2.87E-01		2.87E-01	6.53E-01		6.53E-01	7.82E-01		7.82E-01	1.45E+00		1.45E+00
N	75376	Difluoroethane, 1,1-	mg/L	1.41E+03		1.41E+03	3.21E+03		3.21E+03	2.29E+03		2.29E+03	7.15E+03		7.15E+03
N	1445756	Diisopropyl Methylphosphonate	mg/L	1.96E+01		1.96E+01	4.46E+01		4.46E+01	2.19E+01		2.19E+01	9.91E+01		9.91E+01
N	55290647	Dimethipin	mg/L	5.35E+01		5.35E+01	1.22E+02		1.22E+02	8.28E+00		8.28E+00	2.71E+02		2.71E+02
N	60515	Dimethoate	mg/L	6.37E-03		6.37E-03	1.45E-02		1.45E-02	1.57E-02		1.57E-02	3.23E-02		3.23E-02
N	119904	Dimethoxybenzidine, 3,3'-	mg/L		4.01E-01	4.01E-01		9.14E-01	9.14E-01		2.07E-01	2.07E-01		5.34E-01	5.34E-01
N	77781	Dimethyl Sulfate	mg/L												
N	124403	Dimethylamine	mg/L							2.49E-03		2.49E-03			
N	21436964	Dimethylaniline HCl, 2,4-	mg/L								7.48E-03	7.48E-03			
N	95681	Dimethylaniline, 2,4-	mg/L		6.25E-04	6.25E-04		1.42E-03	1.42E-03		8.34E-04	8.34E-04		8.31E-04	8.31E-04
N	121697	Dimethylaniline, N,N-	mg/L	1.67E-02		1.67E-02	3.81E-02		3.81E-02	4.74E-02		4.74E-02	8.47E-02		8.47E-02
N	119937	Dimethylbenzidine, 3,3'-	mg/L		1.39E-04	1.39E-04		3.16E-04	3.16E-04		1.48E-04	1.48E-04		1.85E-04	1.85E-04
N	107584407	Dimethylethyl Lead	mg/L												
N	68122	Dimethylformamide	mg/L	1.54E+02		1.54E+02	3.52E+02		3.52E+02	3.99E+01		3.99E+01	7.82E+02		7.82E+02
N	57147	Dimethylhydrazine, 1,1-	mg/L		8.52E-04	8.52E-04		1.94E-03	1.94E-03		6.92E-04	6.92E-04		1.13E-03	1.13E-03
N	540738	Dimethylhydrazine, 1,2-	mg/L								1.17E-04	1.17E-04			
N	105679	Dimethylphenol, 2,4-	mg/L	3.65E-02		3.65E-02	8.31E-02		8.31E-02	1.08E-01		1.08E-01	1.85E-01		1.85E-01
N	576261	Dimethylphenol, 2,6-	mg/L	7.53E-03		7.53E-03	1.71E-02		1.71E-02	2.08E-02		2.08E-02	3.81E-02		3.81E-02
N	95658	Dimethylphenol, 3,4-	mg/L	5.02E-03		5.02E-03	1.14E-02		1.14E-02	1.45E-02		1.45E-02	2.54E-02		2.54E-02
N	131113	Dimethylphthalate	mg/L	2.26E+03		2.26E+03	5.14E+03		5.14E+03	2.65E+03		2.65E+03	1.14E+04		1.14E+04
N	120616	Dimethylterephthalate	mg/L	1.18E+00		1.18E+00	2.69E+00		2.69E+00	3.27E+00		3.27E+00	5.98E+00		5.98E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	84742	Dibutyl Phthalate	mg/L	4.95E-01		4.95E-01	3.25E-01		3.25E-01	8.03E-01		8.03E-01	4.86E-01		4.86E-01
N	1918009	Dicamba	mg/L	6.09E-01		6.09E-01	4.87E-01		4.87E-01	1.08E+00		1.08E+00	7.28E-01		7.28E-01
N	764410	Dichloro-2-butene, 1,4-	mg/L		3.25E-04	3.25E-04		9.19E-04	9.19E-04		3.25E-04	3.25E-04		9.19E-04	9.19E-04
N	79436	Dichloroacetic Acid	mg/L												
N	95501	Dichlorobenzene, 1,2-	mg/L	6.80E-01		6.80E-01	4.60E-01		4.60E-01	1.12E+00		1.12E+00	6.88E-01		6.88E-01
N	541731	Dichlorobenzene, 1,3-	mg/L	4.89E-03		4.89E-03	3.23E-03		3.23E-03	7.95E-03		7.95E-03	4.82E-03		4.82E-03
N	106467	Dichlorobenzene, 1,4-	mg/L	2.49E-01	1.00E-02	1.00E-02	1.70E-01	9.04E-03	9.04E-03	4.11E-01	1.00E-02	1.00E-02	2.54E-01	9.04E-03	9.04E-03
N	91941	Dichlorobenzidine, 3,3'-	mg/L		1.02E-03	1.02E-03		9.77E-04	9.77E-04		1.02E-03	1.02E-03		9.77E-04	9.77E-04
N	75718	Dichlorodifluoromethane	mg/L	2.13E+00		2.13E+00	1.49E+00		1.49E+00	3.56E+00		3.56E+00	2.23E+00		2.23E+00
N	75343	Dichloroethane, 1,1-	mg/L	3.97E+00		3.97E+00	4.38E+00		4.38E+00	7.88E+00		7.88E+00	6.55E+00		6.55E+00
N	107062	Dichloroethane, 1,2-	mg/L	1.54E+00	2.06E-02	2.06E-02	2.21E+00	3.10E-02	3.10E-02	3.31E+00	2.06E-02	2.06E-02	3.30E+00	3.10E-02	3.10E-02
Y	75354	Dichloroethylene, 1,1-	mg/L	3.57E-01	2.26E-03	2.26E-03	3.94E-01	2.80E-03	2.80E-03	7.10E-01	2.26E-03	2.26E-03	5.89E-01	2.80E-03	2.80E-03
Y	540590	Dichloroethylene, 1,2- (Mixed Isomers)	mg/L	6.80E-01		6.80E-01	2.55E+00		2.55E+00	1.76E+00		1.76E+00	3.81E+00		3.81E+00
Y	156592	Dichloroethylene, 1,2-cis-	mg/L	3.71E-01		3.71E-01	3.90E-01		3.90E-01	7.25E-01		7.25E-01	5.83E-01		5.83E-01
Y	156605	Dichloroethylene, 1,2-trans-	mg/L	1.56E+00		1.56E+00	7.09E+00		7.09E+00	4.14E+00		4.14E+00	1.06E+01		1.06E+01
N	120832	Dichlorophenol, 2,4-	mg/L	2.35E-02		2.35E-02	1.60E-02		1.60E-02	3.88E-02		3.88E-02	2.39E-02		2.39E-02
N	94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/L	4.72E-01		4.72E-01	6.11E-01		6.11E-01	9.86E-01		9.86E-01	9.14E-01		9.14E-01
N	94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	mg/L	3.15E-01		3.15E-01	3.46E-01		3.46E-01	6.26E-01		6.26E-01	5.18E-01		5.18E-01
N	78875	Dichloropropane, 1,2-	mg/L	3.51E-02	1.47E-02	1.47E-02	3.30E-02	1.63E-02	1.63E-02	6.60E-02	1.47E-02	1.47E-02	4.93E-02	1.63E-02	1.63E-02
N	616239	Dichloropropanol, 2,3-	mg/L	2.57E-01		2.57E-01	2.92E+00		2.92E+00	7.26E-01		7.26E-01	4.37E+00		4.37E+00
N	542756	Dichloropropene, 1,3-	mg/L	1.11E+00	1.25E-02	1.25E-02	1.17E+00	1.50E-02	1.50E-02	2.18E+00	1.25E-02	1.25E-02	1.75E+00	1.50E-02	1.50E-02
N	62737	Dichlorvos	mg/L	3.55E-02	1.02E-02	1.02E-02	1.03E-01	2.71E-02	2.71E-02	8.87E-02	1.02E-02	1.02E-02	1.53E-01	2.71E-02	2.71E-02
N	115322	Dicofol	mg/L		8.59E-05	8.59E-05		7.39E-05	7.39E-05		8.59E-05	8.59E-05		7.39E-05	7.39E-05
N	77736	Dicyclopentadiene	mg/L	3.81E-01		3.81E-01	2.75E-01		2.75E-01	6.45E-01		6.45E-01	4.11E-01		4.11E-01
N	60571	Dieldrin	mg/L	8.07E-04	3.04E-05	3.04E-05	6.09E-04	2.92E-05	2.92E-05	1.39E-03	3.04E-05	3.04E-05	9.10E-04	2.92E-05	2.92E-05
N	84662	Diethyl Phthalate	mg/L	4.09E+01		4.09E+01	5.85E+01		5.85E+01	8.80E+01		8.80E+01	8.74E+01		8.74E+01
N	311455	Diethyl-p-nitrophenylphosphate	mg/L												
N	693210	Diethylene Glycol Dinitrate (DEGDN)	mg/L												
N	112345	Diethylene Glycol Monobutyl Ether	mg/L	5.11E-01		5.11E-01	2.53E+01		2.53E+01	1.50E+00		1.50E+00	3.78E+01		3.78E+01
N	111900	Diethylene Glycol Monoethyl Ether	mg/L	1.69E+02		1.69E+02	1.56E+03		1.56E+03	4.73E+02		4.73E+02	2.33E+03		2.33E+03
N	617845	Diethylformamide	mg/L	8.70E-01		8.70E-01	4.29E+00		4.29E+00	2.32E+00		2.32E+00	6.41E+00		6.41E+00
N	56531	Diethylstilbesterol	mg/L		5.30E-09	5.30E-09		4.54E-09	4.54E-09		5.30E-09	5.30E-09		4.54E-09	4.54E-09
N	43222486	Difenzoquat	mg/L	7.24E+00		7.24E+00				2.15E+01		2.15E+01			
N	35367385	Diflubenzuron	mg/L	3.60E-01		3.60E-01	2.78E-01		2.78E-01	6.27E-01		6.27E-01	4.16E-01		4.16E-01
N	75376	Difluoroethane, 1,1-	mg/L	7.04E+02		7.04E+02	1.37E+03		1.37E+03	1.63E+03		1.63E+03	2.05E+03		2.05E+03
N	1445756	Diisopropyl Methylphosphonate	mg/L	5.85E+00		5.85E+00	1.90E+01		1.90E+01	1.49E+01		1.49E+01	2.84E+01		2.84E+01
N	55290647	Dimethipin	mg/L	1.77E+00		1.77E+00	5.20E+01		5.20E+01	5.16E+00		5.16E+00	7.77E+01		7.77E+01
N	60515	Dimethoate	mg/L	6.43E-03		6.43E-03	6.19E-03		6.19E-03	1.22E-02		1.22E-02	9.25E-03		9.25E-03
N	119904	Dimethoxybenzidine, 3,3'-	mg/L		2.07E-01	2.07E-01		5.34E-01	5.34E-01		2.07E-01	2.07E-01		5.34E-01	5.34E-01
N	77781	Dimethyl Sulfate	mg/L												
N	124403	Dimethylamine	mg/L	5.16E-04		5.16E-04				1.53E-03		1.53E-03			
N	21436964	Dimethylaniline HCl, 2,4-	mg/L		7.48E-03	7.48E-03					7.48E-03	7.48E-03			
N	95681	Dimethylaniline, 2,4-	mg/L		8.34E-04	8.34E-04		8.31E-04	8.31E-04		8.34E-04	8.34E-04		8.31E-04	8.31E-04
N	121697	Dimethylaniline, N,N-	mg/L	2.29E-02		2.29E-02	1.62E-02		1.62E-02	3.84E-02		3.84E-02	2.43E-02		2.43E-02
N	119937	Dimethylbenzidine, 3,3'-	mg/L		1.48E-04	1.48E-04		1.85E-04	1.85E-04		1.48E-04	1.48E-04		1.85E-04	1.85E-04
N	107584407	Dimethylethyl Lead	mg/L												
N	68122	Dimethylformamide	mg/L	8.72E+00		8.72E+00	1.50E+02		1.50E+02	2.51E+01		2.51E+01	2.24E+02		2.24E+02
N	57147	Dimethylhydrazine, 1,1-	mg/L		6.92E-04	6.92E-04		1.13E-03	1.13E-03		6.92E-04	6.92E-04		1.13E-03	1.13E-03
N	540738	Dimethylhydrazine, 1,2-	mg/L		1.17E-04	1.17E-04					1.17E-04	1.17E-04			
N	105679	Dimethylphenol, 2,4-	mg/L	5.54E-02		5.54E-02	3.54E-02		3.54E-02	8.88E-02		8.88E-02	5.30E-02		5.30E-02
N	576261	Dimethylphenol, 2,6-	mg/L	9.68E-03		9.68E-03	7.31E-03		7.31E-03	1.67E-02		1.67E-02	1.09E-02		1.09E-02
N	95658	Dimethylphenol, 3,4-	mg/L	7.23E-03		7.23E-03	4.87E-03		4.87E-03	1.19E-02		1.19E-02	7.28E-03		7.28E-03
N	131113	Dimethylphthalate	mg/L	7.20E+02		7.20E+02	2.19E+03		2.19E+03	1.81E+03		1.81E+03	3.28E+03		3.28E+03
N	120616	Dimethylterephthalate	mg/L	1.53E+00		1.53E+00	1.15E+00		1.15E+00	2.64E+00		2.64E+00	1.71E+00		1.71E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value = less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	534521	Dinitro-o-cresol, 4,6-	mg/L												
N	131895	*Dinitro-o-cyclohexyl Phenol, 4,6-*	mg/L	7.30E+02		7.30E+02	1.66E+03		1.66E+03	8.73E-01		8.73E-01	3.69E+03		3.69E+03
N	528290	Dinitrobenzene, 1,2-	mg/L	5.97E-02		5.97E-02	1.36E-01		1.36E-01	8.84E-02		8.84E-02	3.02E-01		3.02E-01
N	99650	Dinitrobenzene, 1,3-	mg/L	1.09E-02		1.09E-02	2.48E-02		2.48E-02	1.87E-02		1.87E-02	5.50E-02		5.50E-02
N	100254	Dinitrobenzene, 1,4-	mg/L	3.82E-02		3.82E-02	8.71E-02		8.71E-02	6.92E-02		6.92E-02	1.94E-01		1.94E-01
N	51285	*Dinitrophenol, 2,4-*	mg/L	2.51E-01		2.51E-01	5.71E-01		5.71E-01	4.04E-01		4.04E-01	1.27E+00		1.27E+00
N	25321146	Dinitrotoluene Mixture, 2,4/2,6-	mg/L		3.70E-03	3.70E-03		8.42E-03	8.42E-03		3.03E-03	3.03E-03		4.92E-03	4.92E-03
N	121142	Dinitrotoluene, 2,4-	mg/L	1.80E-01	3.70E-03	3.70E-03	4.09E-01	8.42E-03	8.42E-03	3.33E-01	3.03E-03	3.03E-03	9.09E-01	4.92E-03	4.92E-03
N	606202	Dinitrotoluene, 2,6-	mg/L	1.37E-01	5.62E-03	5.62E-03	3.11E-01	1.28E-02	1.28E-02	2.11E-01	3.69E-03	3.69E-03	6.91E-01	7.48E-03	7.48E-03
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/L												
N	88857	Dinoseb	mg/L	7.17E-03		7.17E-03	1.63E-02		1.63E-02	2.05E-02		2.05E-02	3.63E-02		3.63E-02
N	123911	Dioxane, 1,4-	mg/L		2.04E+00	2.04E+00		4.65E+00	4.65E+00		3.51E-01	3.51E-01		2.72E+00	2.72E+00
Y	1746016	Dioxins/Furans (Total)	mg/L		2.68E-11	2.68E-11		6.09E-11	6.09E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
N	957517	Diphenamid	mg/L	2.62E+00		2.62E+00	5.96E+00		5.96E+00	4.91E+00		4.91E+00	1.33E+01		1.33E+01
N	127639	Diphenyl sulfone	mg/L							3.93E+00		3.93E+00			
N	122394	Diphenylamine	mg/L	9.29E-02		9.29E-02	2.12E-01		2.12E-01	2.72E-01		2.72E-01	4.70E-01		4.70E-01
N	122667	Diphenylhydrazine, 1,2-	mg/L		3.90E-04	3.90E-04		8.89E-04	8.89E-04		5.47E-04	5.47E-04		5.19E-04	5.19E-04
N	85007	Diquat	mg/L	4.42E+03		4.42E+03	1.01E+04		1.01E+04	9.61E-01		9.61E-01	2.24E+04		2.24E+04
N	1937377	Direct Black 38	mg/L		6.95E-01	6.95E-01		1.58E+00	1.58E+00		5.04E-04	5.04E-04		9.25E-01	9.25E-01
N	2602462	Direct Blue 6	mg/L								5.35E-04	5.35E-04			
N	16071866	Direct Brown 95	mg/L								4.66E-04	4.66E-04			
N	2610051	Direct Sky Blue	mg/L												
N	298044	Disulfoton	mg/L	2.87E-04		2.87E-04	6.53E-04		6.53E-04	8.19E-04		8.19E-04	1.45E-03		1.45E-03
N	330541	Diuron	mg/L	6.69E-02		6.69E-02	1.52E-01		1.52E-01	1.63E-01		1.63E-01	3.39E-01		3.39E-01
N	2439103	Dodine	mg/L	3.21E-01		3.21E-01	7.31E-01		7.31E-01	6.21E-01		6.21E-01	1.63E+00		1.63E+00
N	759944	EPTC	mg/L	2.01E-01		2.01E-01	4.57E-01		4.57E-01	5.70E-01		5.70E-01	1.02E+00		1.02E+00
N	115297	Endosulfan	mg/L	5.74E-01		5.74E-01	1.31E+00		1.31E+00	1.04E+00		1.04E+00	2.90E+00		2.90E+00
N	145733	Endothall	mg/L	1.25E+00		1.25E+00	2.86E+00		2.86E+00	2.63E+00		2.63E+00	6.35E+00		6.35E+00
N	72208	Endrin	mg/L	1.51E-04		1.51E-04	3.43E-04		3.43E-04	4.50E-04		4.50E-04	7.62E-04		7.62E-04
N	106898	Epichlorohydrin	mg/L	1.74E+00	2.46E+00	1.74E+00	3.95E+00	5.59E+00	3.95E+00	7.48E-01	3.93E-01	3.93E-01	8.79E+00	3.27E+00	3.27E+00
N	106887	Epoxybutane, 1,2-	mg/L	1.57E-01		1.57E-01	3.58E-01		3.58E-01	3.96E-01		3.96E-01	7.95E-01		7.95E-01
N	16672870	Ethephon	mg/L	3.72E+00		3.72E+00	8.46E+00		8.46E+00	1.83E+00		1.83E+00	1.88E+01		1.88E+01
N	563122	Ethion	mg/L	2.95E-03		2.95E-03	6.72E-03		6.72E-03	8.50E-03		8.50E-03	1.49E-02		1.49E-02
N	111159	Ethoxyethanol Acetate, 2-	mg/L	7.00E+01		7.00E+01	1.59E+02		1.59E+02	8.07E+01		8.07E+01	3.54E+02		3.54E+02
N	110805	Ethoxyethanol, 2-	mg/L	2.68E+02		2.68E+02	6.09E+02		6.09E+02	1.43E+02		1.43E+02	1.35E+03		1.35E+03
N	141786	Ethyl Acetate	mg/L	1.38E+02		1.38E+02	3.13E+02		3.13E+02	2.01E+02		2.01E+02	6.97E+02		6.97E+02
N	140885	Ethyl Acrylate	mg/L		2.93E-02	2.93E-02		6.67E-02	6.67E-02		3.03E-02	3.03E-02		3.89E-02	3.89E-02
N	75003	Ethyl Chloride	mg/L	1.61E+01	3.88E-01	3.88E-01	3.66E+01	8.83E-01	8.83E-01	3.77E+01	4.31E-01	4.31E-01	8.13E+01	5.16E-01	5.16E-01
N	60297	Ethyl Ether	mg/L	3.78E+00		3.78E+00	8.60E+00		8.60E+00	1.00E+01		1.00E+01	1.91E+01		1.91E+01
N	97632	Ethyl Methacrylate	mg/L	3.36E+00		3.36E+00	7.65E+00		7.65E+00	8.02E+00		8.02E+00	1.70E+01		1.70E+01
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/L	2.01E-04		2.01E-04	4.57E-04		4.57E-04	5.29E-04		5.29E-04	1.02E-03		1.02E-03
Y	100414	Ethylbenzene	mg/L	5.26E-01		5.26E-01	1.20E+00		1.20E+00	1.52E+00		1.52E+00	2.66E+00		2.66E+00
N	109784	Ethylene Cyanohydrin	mg/L	1.00E+03		1.00E+03	2.29E+03		2.29E+03	1.26E+02		1.26E+02	5.08E+03		5.08E+03
N	107153	Ethylene Diamine	mg/L	4.51E+00		4.51E+00	1.03E+01		1.03E+01	5.31E+00		5.31E+00	2.28E+01		2.28E+01
N	107211	Ethylene Glycol	mg/L	1.12E+04		1.12E+04	2.54E+04		2.54E+04	8.51E+02		8.51E+02	5.64E+04		5.64E+04
N	111762	Ethylene Glycol Monobutyl Ether	mg/L	8.36E+00		8.36E+00	1.90E+01		1.90E+01	2.25E+01		2.25E+01	4.23E+01		4.23E+01
N	75218	Ethylene Oxide	mg/L		1.40E-02	1.40E-02		3.19E-02	3.19E-02		3.56E-03	3.56E-03		1.86E-02	1.86E-02
N	96457	Ethylene Thiourea	mg/L	9.45E-02	3.01E-01	9.45E-02	2.15E-01	6.84E-01	2.15E-01	3.11E-02	3.64E-02	3.11E-02	4.78E-01	4.00E-01	4.00E-01
N	84720	Ethylphthalyl Ethyl Glycolate	mg/L	4.63E+02		4.63E+02	1.05E+03		1.05E+03	6.74E+02		6.74E+02	2.34E+03		2.34E+03
N	101200480	Express	mg/L							3.49E+00		3.49E+00			
N	22224926	*Fenamiphos*	mg/L	7.84E-03		7.84E-03	1.79E-02		1.79E-02	1.93E-02		1.93E-02	3.97E-02		3.97E-02
N	39515418	Fenpropathrin	mg/L	3.14E-02		3.14E-02	7.14E-02		7.14E-02	9.32E-02		9.32E-02	1.59E-01		1.59E-01
N	2164172	Fluometuron	mg/L	7.05E-01		7.05E-01	1.61E+00		1.61E+00	1.54E+00		1.54E+00	3.57E+00		3.57E+00
Y	206440	Fluoranthene	mg/L	1.38E-02		1.38E-02	3.15E-02		3.15E-02	4.13E-02		4.13E-02	7.00E-02		7.00E-02

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	534521	Dinitro-o-cresol, 4,6-	mg/L												
N	131895	Dinitro-o-cyclohexyl Phenol, 4,6-	mg/L	1.81E-01		1.81E-01	7.09E+02		7.09E+02	5.36E-01		5.36E-01	1.06E+03		1.06E+03
N	528290	Dinitrobenzene, 1,2-	mg/L	2.61E-02		2.61E-02	5.80E-02		5.80E-02	6.22E-02		6.22E-02	8.67E-02		8.67E-02
N	99650	Dinitrobenzene, 1,3-	mg/L	5.91E-03		5.91E-03	1.06E-02		1.06E-02	1.34E-02		1.34E-02	1.58E-02		1.58E-02
N	100254	Dinitrobenzene, 1,4-	mg/L	2.25E-02		2.25E-02	3.71E-02		3.71E-02	5.03E-02		5.03E-02	5.55E-02		5.55E-02
N	51285	Dinitrophenol, 2,4-	mg/L	1.24E-01		1.24E-01	2.44E-01		2.44E-01	2.88E-01		2.88E-01	3.64E-01		3.64E-01
N	25321146	*Dinitrotoluene Mixture, 2,4/2,6-*	mg/L		3.03E-03	3.03E-03		4.92E-03	4.92E-03		3.03E-03	3.03E-03		4.92E-03	4.92E-03
N	121142	Dinitrotoluene, 2,4-	mg/L	1.10E-01	3.03E-03	3.03E-03	1.74E-01	4.92E-03	4.92E-03	2.43E-01	3.03E-03	3.03E-03	2.61E-01	4.92E-03	4.92E-03
N	606202	Dinitrotoluene, 2,6-	mg/L	6.36E-02	3.69E-03	3.69E-03	1.33E-01	7.48E-03	7.48E-03	1.50E-01	3.69E-03	3.69E-03	1.98E-01	7.48E-03	7.48E-03
N	35572782	Dinitrotoluene, 2-Amino-4,6-	mg/L												
N	88857	Dinoseb	mg/L	9.98E-03		9.98E-03	6.96E-03		6.96E-03	1.66E-02		1.66E-02	1.04E-02		1.04E-02
N	123911	Dioxane, 1,4-	mg/L		3.51E-01	3.51E-01		2.72E+00	2.72E+00		3.51E-01	3.51E-01		2.72E+00	2.72E+00
Y	1746016	Dioxins/Furans (Total)	mg/L		4.17E-11	4.17E-11		3.56E-11	3.56E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
N	957517	*Diphenamid*	mg/L	1.63E+00		1.63E+00	2.54E+00		2.54E+00	3.59E+00		3.59E+00	3.80E+00		3.80E+00
N	127639	Diphenyl sulfone	mg/L	8.14E-01		8.14E-01				2.41E+00		2.41E+00			
N	122394	Diphenylamine	mg/L	1.37E-01		1.37E-01	9.02E-02		9.02E-02	2.22E-01		2.22E-01	1.35E-01		1.35E-01
N	122667	Diphenylhydrazine, 1,2-	mg/L		5.47E-04	5.47E-04		5.19E-04	5.19E-04		5.47E-04	5.47E-04		5.19E-04	5.19E-04
N	85007	Diquat	mg/L	1.99E-01		1.99E-01	4.29E+03		4.29E+03	5.90E-01		5.90E-01	6.41E+03		6.41E+03
N	1937377	Direct Black 38	mg/L		5.04E-04	5.04E-04		9.25E-01	9.25E-01		5.04E-04	5.04E-04		9.25E-01	9.25E-01
N	2602462	Direct Blue 6	mg/L		5.35E-04	5.35E-04					5.35E-04	5.35E-04			
N	16071866	*Direct Brown 95*	mg/L		4.66E-04	4.66E-04					4.66E-04	4.66E-04			
N	2610051	Direct Sky Blue	mg/L												
N	298044	Disulfoton	mg/L	3.99E-04		3.99E-04	2.78E-04		2.78E-04	6.66E-04		6.66E-04	4.16E-04		4.16E-04
N	330541	Diuron	mg/L	6.63E-02		6.63E-02	6.50E-02		6.50E-02	1.27E-01		1.27E-01	9.71E-02		9.71E-02
N	2439103	Dodine	mg/L	2.10E-01		2.10E-01	3.12E-01		3.12E-01	4.57E-01		4.57E-01	4.66E-01		4.66E-01
N	759944	EPTC	mg/L	2.76E-01		2.76E-01	1.95E-01		1.95E-01	4.63E-01		4.63E-01	2.91E-01		2.91E-01
N	115297	Endosulfan	mg/L	3.38E-01		3.38E-01	5.57E-01		5.57E-01	7.54E-01		7.54E-01	8.32E-01		8.32E-01
N	145733	*Endothall*	mg/L	9.42E-01		9.42E-01	1.22E+00		1.22E+00	1.97E+00		1.97E+00	1.82E+00		1.82E+00
N	72208	Endrin	mg/L	2.34E-04		2.34E-04	1.46E-04		1.46E-04	3.71E-04		3.71E-04	2.19E-04		2.19E-04
N	106898	Epichlorohydrin	mg/L	1.70E-01	3.93E-01	1.70E-01	1.69E+00	3.27E+00	1.69E+00	4.77E-01	3.93E-01	3.93E-01	2.52E+00	3.27E+00	2.52E+00
N	106887	Epoxybutane, 1,2-	mg/L	1.67E-01		1.67E-01	1.53E-01		1.53E-01	3.10E-01		3.10E-01	2.28E-01		2.28E-01
N	16672870	Ethephon	mg/L	4.20E-01		4.20E-01	3.61E+00		3.61E+00	1.17E+00		1.17E+00	5.40E+00		5.40E+00
N	563122	Ethion	mg/L	4.19E-03		4.19E-03	2.87E-03		2.87E-03	6.93E-03		6.93E-03	4.28E-03		4.28E-03
N	111159	Ethoxyethanol Acetate, 2-	mg/L	2.18E+01		2.18E+01	6.80E+01		6.80E+01	5.50E+01		5.50E+01	1.02E+02		1.02E+02
N	110805	*Ethoxyethanol, 2-*	mg/L	3.33E+01		3.33E+01	2.60E+02		2.60E+02	9.24E+01		9.24E+01	3.88E+02		3.88E+02
N	141786	Ethyl Acetate	mg/L	5.91E+01		5.91E+01	1.34E+02		1.34E+02	1.41E+02		1.41E+02	2.00E+02		2.00E+02
N	140885	Ethyl Acrylate	mg/L		3.03E-02	3.03E-02		3.89E-02	3.89E-02		3.03E-02	3.03E-02		3.89E-02	3.89E-02
N	75003	Ethyl Chloride	mg/L	1.48E+01	4.31E-01	4.31E-01	1.56E+01	5.16E-01	5.16E-01	2.90E+01	4.31E-01	4.31E-01	2.33E+01	5.16E-01	5.16E-01
N	60297	Ethyl Ether	mg/L	4.46E+00		4.46E+00	3.67E+00		3.67E+00	7.96E+00		7.96E+00	5.48E+00		5.48E+00
N	97632	Ethyl Methacrylate	mg/L	3.20E+00		3.20E+00	3.26E+00		3.26E+00	6.19E+00		6.19E+00	4.88E+00		4.88E+00
N	2104645	Ethyl-p-nitrophenyl Phosphonate	mg/L	2.33E-04		2.33E-04	1.95E-04		1.95E-04	4.19E-04		4.19E-04	2.91E-04		2.91E-04
Y	100414	*Ethylbenzene*	mg/L	7.55E-01		7.55E-01	5.11E-01		5.11E-01	1.24E+00		1.24E+00	7.64E-01		7.64E-01
N	109784	Ethylene Cyanohydrin	mg/L	2.67E+01		2.67E+01	9.75E+02		9.75E+02	7.80E+01		7.80E+01	1.46E+03		1.46E+03
N	107153	Ethylene Diamine	mg/L	1.44E+00		1.44E+00	4.38E+00		4.38E+00	3.62E+00		3.62E+00	6.55E+00		6.55E+00
N	107211	Ethylene Glycol	mg/L	1.79E+02		1.79E+02	1.08E+04		1.08E+04	5.26E+02		5.26E+02	1.62E+04		1.62E+04
N	111762	Ethylene Glycol Monobutyl Ether	mg/L	1.02E+01		1.02E+01	8.12E+00		8.12E+00	1.79E+01		1.79E+01	1.21E+01		1.21E+01
N	75218	Ethylene Oxide	mg/L		3.56E-03	3.56E-03		1.86E-02	1.86E-02		3.56E-03	3.56E-03		1.86E-02	1.86E-02
N	96457	Ethylene Thiourea	mg/L	6.90E-03	3.64E-02	6.90E-03	9.17E-02	4.00E-01	9.17E-02	1.97E-02	3.64E-02	1.97E-02	1.37E-01	4.00E-01	1.37E-01
N	84720	Ethylphthalyl Ethyl Glycolate	mg/L	1.97E+02		1.97E+02	4.50E+02		4.50E+02	4.73E+02		4.73E+02	6.72E+02		6.72E+02
N	101200480	Express	mg/L	7.24E-01		7.24E-01				2.15E+00		2.15E+00			
N	22224926	Fenamiphos	mg/L	7.95E-03		7.95E-03	7.61E-03		7.61E-03	1.51E-02		1.51E-02	1.14E-02		1.14E-02
N	39515418	Fenpropathrin	mg/L	4.80E-02		4.80E-02	3.05E-02		3.05E-02	7.67E-02		7.67E-02	4.55E-02		4.55E-02
N	2164172	Fluometuron	mg/L	5.69E-01		5.69E-01	6.85E-01		6.85E-01	1.16E+00		1.16E+00	1.02E+00		1.02E+00
Y	206440	Fluoranthene	mg/L	2.15E-02		2.15E-02	1.34E-02		1.34E-02	3.41E-02		3.41E-02	2.01E-02		2.01E-02

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action = less of hazard- and cancer-based value.

Table A.19. Surface Water No . ction Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
Y	86737	Fluorene	mg/L	3.21E-02		3.21E-02	7.31E-02		7.31E-02	9.57E-02		9.57E-02	1.63E-01		1.63E-01
N	59756604	Fluridone	mg/L	4.87E+00		4.87E+00	1.11E+01		1.11E+01	1.03E+01		1.03E+01	2.46E+01		2.46E+01
N	56425913	Flurprimidol	mg/L	7.17E-01		7.17E-01	1.63E+00		1.63E+00	1.72E+00		1.72E+00	3.63E+00		3.63E+00
N	66332965	Flutolanil	mg/L							2.62E+01		2.62E+01			
N	69409945	Fluvalinate	mg/L	1.82E-02		1.82E-02	4.16E-02		4.16E-02	5.40E-02		5.40E-02	9.24E-02		9.24E-02
N	133073	Folpet	mg/L	4.27E+00	3.42E-01	3.42E-01	9.72E+00	7.78E-01	7.78E-01	9.90E+00	3.73E-01	3.73E-01	2.16E+01	4.54E-01	4.54E-01
N	72178020	Fomesafen	mg/L		6.43E-02	6.43E-02		1.46E-01	1.46E-01		1.86E-02	1.86E-02		8.55E-02	8.55E-02
N	944229	Fonofos	mg/L	1.06E-02		1.06E-02	2.41E-02		2.41E-02	3.06E-02		3.06E-02	5.35E-02		5.35E-02
N	50000	Formaldehyde	mg/L	2.19E+01		2.19E+01	4.99E+01		4.99E+01	3.28E+01		3.28E+01	1.11E+02		1.11E+02
N	64186	Formic Acid	mg/L	9.79E+02		9.79E+02	2.23E+03		2.23E+03	6.73E+02		6.73E+02	4.96E+03		4.96E+03
N	39148248	Fosetyl-AL	mg/L							1.31E+03		1.31E+03			
N	110009	Furan	mg/L	5.27E-02		5.27E-02	1.20E-01		1.20E-01	1.16E-01		1.16E-01	2.66E-01		2.66E-01
N	67458	Furazolidone	mg/L		5.92E-03	5.92E-03		1.35E-02	1.35E-02		1.02E-03	1.02E-03		7.87E-03	7.87E-03
N	98011	Furfural	mg/L	5.47E-03		5.47E-03	1.25E-02		1.25E-02	1.62E-02		1.62E-02	2.77E-02		2.77E-02
N	531828	Furium	mg/L								8.67E-05	8.67E-05			
N	60568050	Furmecyclox	mg/L								1.45E-01	1.45E-01			
N	77182822	Glufosinate, Ammonium	mg/L							1.75E-01		1.75E-01			
N	765344	Glycidyl	mg/L	3.82E-01		3.82E-01	8.71E-01		8.71E-01	1.52E-01		1.52E-01	1.94E+00		1.94E+00
N	1071836	Glyphosate	mg/L	1.54E+04		1.54E+04	3.52E+04		3.52E+04	4.36E+01		4.36E+01	7.82E+04		7.82E+04
N	42874033	Goal	mg/L	2.23E-02		2.23E-02	5.08E-02		5.08E-02	6.36E-02		6.36E-02	1.13E-01		1.13E-01
N	69806402	Haloxyfop, Methyl	mg/L	3.24E-03		3.24E-03	7.37E-03		7.37E-03	6.72E-03		6.72E-03	1.64E-02		1.64E-02
N	79277273	Harmony	mg/L	2.37E+01		2.37E+01	5.40E+01		5.40E+01	5.26E+00		5.26E+00	1.20E+02		1.20E+02
N	76448	Heptachlor	mg/L	1.31E-02	1.64E-04	1.64E-04	2.99E-02	3.72E-04	3.72E-04	3.34E-02	2.02E-04	2.02E-04	6.65E-02	2.17E-04	2.17E-04
N	1024573	Heptachlor Epoxide	mg/L	6.83E-05	1.62E-05	1.62E-05	1.56E-04	3.68E-05	3.68E-05	1.98E-04	2.40E-05	2.40E-05	3.46E-04	2.15E-05	2.15E-05
N	142825	Heptane, N-	mg/L												
N	87821	Hexabromobenzene	mg/L	3.78E-02		3.78E-02	8.60E-02		8.60E-02	1.00E-01		1.00E-01	1.91E-01		1.91E-01
N	118741	Hexachlorobenzene	mg/L	7.65E-04	1.67E-05	1.67E-05	1.74E-03	3.81E-05	3.81E-05	2.28E-03	2.59E-05	2.59E-05	3.87E-03	2.23E-05	2.23E-05
N	87683	Hexachlorobutadiene	mg/L	3.35E-04	6.00E-04	3.35E-04	7.62E-04	1.37E-03	7.62E-04	9.91E-04	9.21E-04	9.21E-04	1.69E-03	7.99E-04	7.99E-04
N	319846	Hexachlorocyclohexane, Alpha-	mg/L		9.11E-05	9.11E-05		2.07E-04	2.07E-04		1.18E-04	1.18E-04		1.21E-04	1.21E-04
N	319857	Hexachlorocyclohexane, Beta-	mg/L		2.58E-04	2.58E-04		5.88E-04	5.88E-04		3.45E-04	3.45E-04		3.44E-04	3.44E-04
N	319868	Hexachlorocyclohexane, Delta-	mg/L												
N	6108107	Hexachlorocyclohexane, Epsilon	mg/L												
N	58899	Hexachlorocyclohexane, Gamma-	mg/L	8.34E-03	5.99E-04	5.99E-04	1.90E-02	1.36E-03	1.36E-03	2.10E-02	7.30E-04	7.30E-04	4.22E-02	7.97E-04	7.97E-04
N	608731	Hexachlorocyclohexane, Technical	mg/L		1.78E-04	1.78E-04		4.06E-04	4.06E-04		2.49E-04	2.49E-04		2.37E-04	2.37E-04
N	77474	Hexachlorocyclopentadiene	mg/L	4.15E-02		4.15E-02	9.46E-02		9.46E-02	1.19E-01		1.19E-01	2.10E-01		2.10E-01
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/L		2.01E-09	2.01E-09		4.59E-09	4.59E-09		3.13E-09	3.13E-09		2.68E-09	2.68E-09
N	67721	Hexachloroethane	mg/L	4.78E-03	9.56E-03	4.78E-03	1.09E-02	2.18E-02	1.09E-02	1.39E-02	1.42E-02	1.39E-02	2.42E-02	1.27E-02	1.27E-02
N	70304	Hexachlorophene	mg/L	4.63E-05		4.63E-05	1.05E-04		1.05E-04	1.39E-04		1.39E-04	2.34E-04		2.34E-04
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/L	6.34E-02	5.38E-03	5.38E-03	1.44E-01	1.22E-02	1.22E-02	1.66E-01	6.92E-03	6.92E-03	3.21E-01	7.15E-03	7.15E-03
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/L	4.10E-04		4.10E-04	9.33E-04		9.33E-04	6.19E-04		6.19E-04	2.07E-03		2.07E-03
N	110543	Hexane, N-	mg/L	5.84E-02		5.84E-02	1.33E-01		1.33E-01	1.74E-01		1.74E-01	2.96E-01		2.96E-01
N	591786	Hexanone, 2-	mg/L												
N	51235042	Hexazinone	mg/L	1.62E+05		1.62E+05	3.68E+05		3.68E+05	1.44E+01		1.44E+01	8.18E+05		8.18E+05
Y	37871004	HpCDD, 2,3,7,8-	mg/L		2.34E-09	2.34E-09		5.33E-09	5.33E-09		3.65E-09	3.65E-09		3.12E-09	3.12E-09
Y	38998753	HpCDF, 2,3,7,8-	mg/L								2.89E-06	2.89E-06			
Y	34465468	HxCDD, 2,3,7,8-	mg/L								2.89E-07	2.89E-07			
Y	55684941	HxCDF, 2,3,7,8-	mg/L								2.89E-07	2.89E-07			
N	302012	Hydrazine	mg/L		4.57E-02	4.57E-02		1.04E-01	1.04E-01		1.42E-03	1.42E-03		6.08E-02	6.08E-02
N	10034932	Hydrazine Sulfate	mg/L		4.57E-02	4.57E-02		1.04E-01	1.04E-01		1.42E-03	1.42E-03		6.08E-02	6.08E-02
N	123319	Hydroquinone	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	1.01E+01		1.01E+01	4.06E+01		4.06E+01
N	35554440	Imazalil	mg/L	1.74E-01		1.74E-01	3.96E-01		3.96E-01	4.78E-01		4.78E-01	8.81E-01		8.81E-01
N	81335377	Imazaquin	mg/L	1.00E+02		1.00E+02	2.29E+02		2.29E+02	8.01E+01		8.01E+01	5.08E+02		5.08E+02
Y	193395	Indeno[1,2,3-cd]pyrene	mg/L		2.51E-06	2.51E-06		5.72E-06	5.72E-06		3.92E-06	3.92E-06		3.34E-06	3.34E-06
N	36734197	Iprodione	mg/L	3.21E+00		3.21E+00	7.31E+00		7.31E+00	6.21E+00		6.21E+00	1.63E+01		1.63E+01

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
Y	86737	Fluorene	mg/L	4.96E-02		4.96E-02	3.12E-02		3.12E-02	7.89E-02		7.89E-02	4.66E-02		4.66E-02
N	59756604	Fluridone	mg/L	3.71E+00		3.71E+00	4.72E+00		4.72E+00	7.72E+00		7.72E+00	7.06E+00		7.06E+00
N	56425913	Flurprimidol	mg/L	6.93E-01		6.93E-01	6.96E-01		6.96E-01	1.33E+00		1.33E+00	1.04E+00		1.04E+00
N	66332965	Flutolanil	mg/L	5.43E+00		5.43E+00				1.61E+01		1.61E+01			
N	69409945	Fluvalinate	mg/L	2.77E-02		2.77E-02	1.77E-02		1.77E-02	4.44E-02		4.44E-02	2.65E-02		2.65E-02
N	133073	Folpet	mg/L	3.84E+00	3.73E-01	3.73E-01	4.15E+00	4.54E-01	4.54E-01	7.58E+00	3.73E-01	3.73E-01	6.20E+00	4.54E-01	4.54E-01
N	72178020	Fomesafen	mg/L		1.86E-02	1.86E-02		8.55E-02	8.55E-02		1.86E-02	1.86E-02		8.55E-02	8.55E-02
N	944229	Fonofos	mg/L	1.51E-02		1.51E-02	1.03E-02		1.03E-02	2.49E-02		2.49E-02	1.53E-02		1.53E-02
N	50000	Formaldehyde	mg/L	9.72E+00		9.72E+00	2.13E+01		2.13E+01	2.31E+01		2.31E+01	3.18E+01		3.18E+01
N	64186	Formic Acid	mg/L	1.62E+02		1.62E+02	9.51E+02		9.51E+02	4.39E+02		4.39E+02	1.42E+03		1.42E+03
N	39148248	Fosetyl-AL	mg/L	2.71E+02		2.71E+02				8.05E+02		8.05E+02			
N	110009	Furan	mg/L	4.31E-02		4.31E-02	5.11E-02		5.11E-02	8.77E-02		8.77E-02	7.64E-02		7.64E-02
N	67458	Furazolidone	mg/L		1.02E-03	1.02E-03		7.87E-03	7.87E-03		1.02E-03	1.02E-03		7.87E-03	7.87E-03
N	98011	Furfural	mg/L	8.31E-03		8.31E-03	5.32E-03		5.32E-03	1.33E-02		1.33E-02	7.95E-03		7.95E-03
N	531828	Furium	mg/L		8.67E-05	8.67E-05					8.67E-05	8.67E-05			
N	60568050	Furmecyclox	mg/L		1.45E-01	1.45E-01					1.45E-01	1.45E-01			
N	77182822	Glufosinate, Ammonium	mg/L	3.62E-02		3.62E-02				1.07E-01		1.07E-01			
N	765344	Glycidyl	mg/L	3.41E-02		3.41E-02	3.71E-01		3.71E-01	9.64E-02		9.64E-02	5.55E-01		5.55E-01
N	1071836	Glyphosate	mg/L	9.04E+00		9.04E+00	1.50E+04		1.50E+04	2.68E+01		2.68E+01	2.24E+04		2.24E+04
N	42874033	Goal	mg/L	3.09E-02		3.09E-02	2.17E-02		2.17E-02	5.17E-02		5.17E-02	3.24E-02		3.24E-02
N	69806402	Haloxyfop, Methyl	mg/L	2.39E-03		2.39E-03	3.14E-03		3.14E-03	5.02E-03		5.02E-03	4.70E-03		4.70E-03
N	79277273	Harmony	mg/L	1.14E+00		1.14E+00	2.30E+01		2.30E+01	3.29E+00		3.29E+00	3.44E+01		3.44E+01
N	76448	Heptachlor	mg/L	1.41E-02	2.02E-04	2.02E-04	1.28E-02	2.17E-04	2.17E-04	2.62E-02	2.02E-04	2.02E-04	1.91E-02	2.17E-04	2.17E-04
N	1024573	Heptachlor Epoxide	mg/L	9.80E-05	2.40E-05	2.40E-05	6.63E-05	2.15E-05	2.15E-05	1.61E-04	2.40E-05	2.40E-05	9.92E-05	2.15E-05	2.15E-05
N	142825	Heptane, N-	mg/L												
N	87821	Hexabromobenzene	mg/L	4.46E-02		4.46E-02	3.67E-02		3.67E-02	7.96E-02		7.96E-02	5.48E-02		5.48E-02
N	118741	Hexachlorobenzene	mg/L	1.18E-03	2.59E-05	2.59E-05	7.42E-04	2.23E-05	2.23E-05	1.88E-03	2.59E-05	2.59E-05	1.11E-03	2.23E-05	2.23E-05
N	87683	Hexachlorobutadiene	mg/L	5.09E-04	9.21E-04	5.09E-04	3.25E-04	7.99E-04	3.25E-04	8.15E-04	9.21E-04	8.15E-04	4.86E-04	7.99E-04	4.86E-04
N	319846	Hexachlorocyclohexane, Alpha-	mg/L		1.18E-04	1.18E-04		1.21E-04	1.21E-04		1.18E-04	1.18E-04		1.21E-04	1.21E-04
N	319857	Hexachlorocyclohexane, Beta-	mg/L		3.45E-04	3.45E-04		3.44E-04	3.44E-04		3.45E-04	3.45E-04		3.44E-04	3.44E-04
N	319868	Hexachlorocyclohexane, Delta-	mg/L												
N	6108107	Hexachlorocyclohexane, Epsilon	mg/L												
N	58899	Hexachlorocyclohexane, Gamma-	mg/L	8.82E-03	7.30E-04	7.30E-04	8.10E-03	7.97E-04	7.97E-04	1.64E-02	7.30E-04	7.30E-04	1.21E-02	7.97E-04	7.97E-04
N	608731	Hexachlorocyclohexane, Technical	mg/L		2.49E-04	2.49E-04		2.37E-04	2.37E-04		2.49E-04	2.49E-04		2.37E-04	2.37E-04
N	77474	Hexachlorocyclopentadiene	mg/L	5.80E-02		5.80E-02	4.03E-02		4.03E-02	9.66E-02		9.66E-02	6.03E-02		6.03E-02
N	19408743	Hexachlorodibenzo-p-dioxin, Mixture	mg/L		3.13E-09	3.13E-09		2.68E-09	2.68E-09		3.13E-09	3.13E-09		2.68E-09	2.68E-09
N	67721	Hexachloroethane	mg/L	6.91E-03	1.42E-02	6.91E-03	4.64E-03	1.27E-02	4.64E-03	1.13E-02	1.42E-02	1.13E-02	6.94E-03	1.27E-02	6.94E-03
N	70304	Hexachlorophene	mg/L	7.23E-05		7.23E-05	4.50E-05		4.50E-05	1.14E-04		1.14E-04	6.72E-05		6.72E-05
N	121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/L	7.26E-02	6.92E-03	6.92E-03	6.15E-02	7.15E-03	7.15E-03	1.31E-01	6.92E-03	6.92E-03	9.20E-02	7.15E-03	7.15E-03
N	822060	Hexamethylene Diisocyanate, 1,6-	mg/L	1.84E-04		1.84E-04	3.98E-04		3.98E-04	4.37E-04		4.37E-04	5.95E-04		5.95E-04
N	110543	Hexane, N-	mg/L	8.99E-02		8.99E-02	5.67E-02		5.67E-02	1.43E-01		1.43E-01	8.48E-02		8.48E-02
N	591786	Hexanone, 2-	mg/L												
N	51235042	Hexazinone	mg/L	2.99E+00		2.99E+00	1.57E+05		1.57E+05	8.85E+00		8.85E+00	2.34E+05		2.34E+05
Y	37871004	HpCDD, 2,3,7,8-	mg/L		3.65E-09	3.65E-09		3.12E-09	3.12E-09		3.65E-09	3.65E-09		3.12E-09	3.12E-09
Y	38998753	HpCDF, 2,3,7,8-	mg/L		2.89E-06	2.89E-06					2.89E-06	2.89E-06			
Y	34465468	HxCDD, 2,3,7,8-	mg/L		2.89E-07	2.89E-07					2.89E-07	2.89E-07			
Y	55684941	HxCDF, 2,3,7,8-	mg/L		2.89E-07	2.89E-07					2.89E-07	2.89E-07			
N	302012	Hydrazine	mg/L		1.42E-03	1.42E-03		6.08E-02	6.08E-02		1.42E-03	1.42E-03		6.08E-02	6.08E-02
N	10034932	Hydrazine Sulfate	mg/L		1.42E-03	1.42E-03		6.08E-02	6.08E-02		1.42E-03	1.42E-03		6.08E-02	6.08E-02
N	123319	Hydroquinone	mg/L	2.81E+00		2.81E+00	7.80E+00		7.80E+00	6.97E+00		6.97E+00	1.17E+01		1.17E+01
N	35554440	Imazalil	mg/L	2.21E-01		2.21E-01	1.69E-01		1.69E-01	3.83E-01		3.83E-01	2.52E-01		2.52E-01
N	81335377	Imazaquin	mg/L	1.98E+01		1.98E+01	9.75E+01		9.75E+01	5.28E+01		5.28E+01	1.46E+02		1.46E+02
Y	193395	Indeno[1,2,3-cd]pyrene	mg/L		3.92E-06	3.92E-06		3.34E-06	3.34E-06		3.92E-06	3.92E-06		3.34E-06	3.34E-06
N	36734197	Iprodione	mg/L	2.10E+00		2.10E+00	3.12E+00		3.12E+00	4.57E+00		4.57E+00	4.66E+00		4.66E+00

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action values are less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	78831	Isobutyl Alcohol	mg/L	3.71E+01		3.71E+01	8.44E+01		8.44E+01	6.01E+01		6.01E+01	1.88E+02		1.88E+02
N	78591	Isophorone	mg/L	9.12E+00	1.34E+00	1.34E+00	2.08E+01	3.06E+00	3.06E+00	2.08E+01	1.44E+00	1.44E+00	4.62E+01	1.79E+00	1.79E+00
N	33820530	Isopropalin	mg/L	9.41E-03		9.41E-03	2.14E-02		2.14E-02	2.81E-02		2.81E-02	4.76E-02		4.76E-02
N	67630	Isopropanol	mg/L												
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/L	4.67E+01		4.67E+01	1.06E+02		1.06E+02	3.33E+01		3.33E+01	2.36E+02		2.36E+02
N	82558507	Isoxaben	mg/L							2.18E+01		2.18E+01			
N	143500	Kepone	mg/L							7.86E+03		7.86E+03			
N	23950585	Kerb	mg/L	1.08E+00		1.08E+00	2.45E+00		2.45E+00	2.93E+00		2.93E+00	5.44E+00		5.44E+00
N	77501634	Lactofen	mg/L	5.28E-02		5.28E-02	1.20E-01		1.20E-01	1.34E-01		1.34E-01	2.67E-01		2.67E-01
N		Lead Alkyls	mg/L												
N	330552	Linuron	mg/L	3.65E-02		3.65E-02	8.31E-02		8.31E-02	9.72E-02		9.72E-02	1.85E-01		1.85E-01
N	83055996	Londax	mg/L	3.65E+02		3.65E+02	8.31E+02		8.31E+02	8.09E+01		8.09E+01	1.85E+03		1.85E+03
N	94746	MCPA	mg/L	2.05E-02		2.05E-02	4.66E-02		4.66E-02	4.79E-02		4.79E-02	1.04E-01		1.04E-01
N	94815	MCPB	mg/L	8.73E-02		8.73E-02	1.99E-01		1.99E-01	2.47E-01		2.47E-01	4.42E-01		4.42E-01
N	93652	MCPP	mg/L	3.04E-02		3.04E-02	6.93E-02		6.93E-02	7.54E-02		7.54E-02	1.54E-01		1.54E-01
N	121755	Malathion	mg/L	1.91E+00		1.91E+00	4.35E+00		4.35E+00	3.46E+00		3.46E+00	9.68E+00		9.68E+00
N	108316	Maleic Anhydride	mg/L	4.18E+01		4.18E+01	9.52E+01		9.52E+01	3.24E+01		3.24E+01	2.12E+02		2.12E+02
N	123331	Maleic Hydrazide	mg/L	4.78E+02		4.78E+02	1.09E+03		1.09E+03	1.89E+02		1.89E+02	2.42E+03		2.42E+03
N	109773	Malononitrile	mg/L	8.03E-03		8.03E-03	1.83E-02		1.83E-02	6.41E-03		6.41E-03	4.06E-02		4.06E-02
N	8018017	Mancozeb	mg/L							1.31E+01		1.31E+01			
N	12427382	Maneb	mg/L	2.18E+01	2.04E+00	2.04E+00	4.97E+01	4.64E+00	4.64E+00	2.11E+00	7.07E-02	7.07E-02	1.10E+02	2.71E+00	2.71E+00
N	950107	Mephosfolan	mg/L	7.53E-02		7.53E-02	1.71E-01		1.71E-01	3.35E-02		3.35E-02	3.81E-01		3.81E-01
N	24307264	Mepiquat Chloride	mg/L							1.31E+01		1.31E+01			
N	149304	Mercaptobenzothiazole, 2-	mg/L							4.37E+01	1.50E-01	1.50E-01			
N	150505	Merphos	mg/L	7.53E-07		7.53E-07	1.71E-06		1.71E-06	2.26E-06		2.26E-06	3.81E-06		3.81E-06
N	78488	Merphos Oxide	mg/L	2.32E-05		2.32E-05	5.27E-05		5.27E-05	6.90E-05		6.90E-05	1.17E-04		1.17E-04
N	57837191	Metalaxyl	mg/L	2.15E+01		2.15E+01	4.90E+01		4.90E+01	1.86E+01		1.86E+01	1.09E+02		1.09E+02
N	126987	Methacrylonitrile	mg/L	1.78E-02		1.78E-02	4.06E-02		4.06E-02	2.40E-02		2.40E-02	9.03E-02		9.03E-02
N	10265926	Methamidophos	mg/L	1.13E-01		1.13E-01	2.57E-01		2.57E-01	2.05E-02		2.05E-02	5.71E-01		5.71E-01
N	67561	Methanol	mg/L	1.00E+02		1.00E+02	2.29E+02		2.29E+02	1.27E+02		1.27E+02	5.08E+02		5.08E+02
N	950378	Methidathion	mg/L	1.43E-01		1.43E-01	3.26E-01		3.26E-01	2.17E-01		2.17E-01	7.26E-01		7.26E-01
N	16752775	Methomyl	mg/L	9.65E+00		9.65E+00	2.20E+01		2.20E+01	7.93E+00		7.93E+00	4.88E+01		4.88E+01
N	99592	Methoxy-5-nitroaniline, 2-	mg/L		4.89E-02	4.89E-02		1.11E-01	1.11E-01		4.22E-02	4.22E-02		6.50E-02	6.50E-02
N	72435	Methoxychlor	mg/L	5.02E-02		5.02E-02	1.14E-01		1.14E-01	1.41E-01		1.41E-01	2.54E-01		2.54E-01
N	110496	Methoxyethanol Acetate, 2-	mg/L	1.03E+00		1.03E+00	2.34E+00		2.34E+00	6.81E-01		6.81E-01	5.21E+00		5.21E+00
N	109864	Methoxyethanol, 2-	mg/L	1.06E+00		1.06E+00	2.41E+00		2.41E+00	3.84E-01		3.84E-01	5.35E+00		5.35E+00
N	79209	Methyl Acetate	mg/L	2.23E+02		2.23E+02	5.08E+02		5.08E+02	2.64E+02		2.64E+02	1.13E+03		1.13E+03
N	96333	Methyl Acrylate	mg/L	3.54E+00		3.54E+00	8.07E+00		8.07E+00	5.86E+00		5.86E+00	1.79E+01		1.79E+01
N	78933	Methyl Ethyl Ketone	mg/L	1.75E+02		1.75E+02	3.99E+02		3.99E+02	1.75E+02		1.75E+02	8.87E+02		8.87E+02
N	60344	Methyl Hydrazine	mg/L		2.84E-02	2.84E-02		6.46E-02	6.46E-02		3.62E-03	3.62E-03		3.78E-02	3.78E-02
N	108101	Methyl Isobutyl Ketone	mg/L	7.79E+00		7.79E+00	1.77E+01		1.77E+01	1.40E+01		1.40E+01	3.94E+01		3.94E+01
N	74931	Methyl Mercaptan	mg/L							2.49E-01		2.49E-01			
N	80626	Methyl Methacrylate	mg/L	1.15E+02		1.15E+02	2.63E+02		2.63E+02	2.21E+02		2.21E+02	5.84E+02		5.84E+02
N	298000	Methyl Parathion	mg/L	4.56E-02		4.56E-02	1.04E-01		1.04E-01	6.07E-02		6.07E-02	2.31E-01		2.31E-01
N	993135	Methyl Phosphonic Acid	mg/L							8.74E+00		8.74E+00			
N	25013154	Methyl Styrene (Mixed Isomers)	mg/L	2.22E-02		2.22E-02	5.04E-02		5.04E-02	6.47E-02		6.47E-02	1.12E-01		1.12E-01
N	79221	Methyl chlorocarbonate	mg/L							4.37E+02		4.37E+02			
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/L												
N	99558	Methyl-5-Nitroaniline, 2-	mg/L		2.89E-02	2.89E-02		6.57E-02	6.57E-02		3.35E-02	3.35E-02		3.84E-02	3.84E-02
N	636215	Methylaniline Hydrochloride, 2-	mg/L		1.49E-02	1.49E-02		3.39E-02	3.39E-02		1.18E-02	1.18E-02		1.98E-02	1.98E-02
N	108872	Methylcyclohexane	mg/L	5.40E+00		5.40E+00	1.23E+01		1.23E+01	1.55E+01		1.55E+01	2.73E+01		2.73E+01
N	75092	Methylene Chloride	mg/L	5.09E+00	3.16E-01	3.16E-01	1.16E+01	7.20E-01	7.20E-01	9.64E+00	2.66E-01	2.66E-01	2.57E+01	4.21E-01	4.21E-01
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/L	5.02E-03	1.54E-03	1.54E-03	1.14E-02	3.52E-03	3.52E-03	1.43E-02	2.25E-03	2.25E-03	2.54E-02	2.05E-03	2.05E-03
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/L		9.40E-04	9.40E-04		2.14E-03	2.14E-03		1.44E-03	1.44E-03		1.25E-03	1.25E-03

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	78831	Isobutyl Alcohol	mg/L	1.85E+01		1.85E+01	3.60E+01		3.60E+01	4.29E+01		4.29E+01	5.38E+01		5.38E+01
N	78591	Isophorone	mg/L	7.98E+00	1.44E+00	1.44E+00	8.86E+00	1.79E+00	1.79E+00	1.59E+01	1.44E+00	1.44E+00	1.32E+01	1.79E+00	1.79E+00
N	33820530	Isopropalin	mg/L	1.46E-02		1.46E-02	9.14E-03		9.14E-03	2.32E-02		2.32E-02	1.37E-02		1.37E-02
N	67630	Isopropanol	mg/L												
N	1832548	Isopropyl Methyl Phosphonic Acid	mg/L	8.05E+00		8.05E+00	4.53E+01		4.53E+01	2.18E+01		2.18E+01	6.78E+01		6.78E+01
N	82558507	Isoxaben	mg/L	4.52E+00		4.52E+00				1.34E+01		1.34E+01			
N	143500	Kepone	mg/L	1.63E+03		1.63E+03				4.83E+03		4.83E+03			
N	23950585	Kerb	mg/L	1.35E+00		1.35E+00	1.04E+00		1.04E+00	2.35E+00		2.35E+00	1.56E+00		1.56E+00
N	77501634	Lactofen	mg/L	5.67E-02		5.67E-02	5.13E-02		5.13E-02	1.05E-01		1.05E-01	7.67E-02		7.67E-02
N		Lead Alkyls	mg/L												
N	330552	Linuron	mg/L	4.34E-02		4.34E-02	3.54E-02		3.54E-02	7.73E-02		7.73E-02	5.30E-02		5.30E-02
N	83055996	Londax	mg/L	1.75E+01		1.75E+01	3.54E+02		3.54E+02	5.06E+01		5.06E+01	5.30E+02		5.30E+02
N	94746	MCPA	mg/L	1.88E-02		1.88E-02	1.99E-02		1.99E-02	3.68E-02		3.68E-02	2.97E-02		2.97E-02
N	94815	MCPB	mg/L	1.19E-01		1.19E-01	8.47E-02		8.47E-02	2.00E-01		2.00E-01	1.27E-01		1.27E-01
N	93652	MCPP	mg/L	3.12E-02		3.12E-02	2.95E-02		2.95E-02	5.88E-02		5.88E-02	4.41E-02		4.41E-02
N	121755	Malathion	mg/L	1.13E+00		1.13E+00	1.86E+00		1.86E+00	2.51E+00		2.51E+00	2.77E+00		2.77E+00
N	108316	Maleic Anhydride	mg/L	7.95E+00		7.95E+00	4.06E+01		4.06E+01	2.13E+01		2.13E+01	6.07E+01		6.07E+01
N	123331	Maleic Hydrazide	mg/L	4.27E+01		4.27E+01	4.64E+02		4.64E+02	1.20E+02		1.20E+02	6.94E+02		6.94E+02
N	109773	Malononitrile	mg/L	1.58E-03		1.58E-03	7.80E-03		7.80E-03	4.23E-03		4.23E-03	1.17E-02		1.17E-02
N	8018017	Mancozeb	mg/L	2.71E+00		2.71E+00				8.05E+00		8.05E+00			
N	12427382	Maneb	mg/L	4.46E-01	7.07E-02	7.07E-02	2.12E+01	2.71E+00	2.71E+00	1.31E+00	7.07E-02	7.07E-02	3.17E+01	2.71E+00	2.71E+00
N	950107	Mephosfolan	mg/L	7.62E-03		7.62E-03	7.31E-02		7.31E-02	2.14E-02		2.14E-02	1.09E-01		1.09E-01
N	24307264	Mepiquat Chloride	mg/L	2.71E+00		2.71E+00				8.05E+00		8.05E+00			
N	149304	Mercaptobenzothiazole, 2-	mg/L	9.05E+00	1.50E-01	1.50E-01				2.68E+01	1.50E-01	1.50E-01			
N	150505	Merphos	mg/L	1.18E-06		1.18E-06	7.31E-07		7.31E-07	1.86E-06		1.86E-06	1.09E-06		1.09E-06
N	78488	Merphos Oxide	mg/L	3.58E-05		3.58E-05	2.25E-05		2.25E-05	5.69E-05		5.69E-05	3.36E-05		3.36E-05
N	57837191	Metalaxyl	mg/L	4.67E+00		4.67E+00	2.09E+01		2.09E+01	1.24E+01		1.24E+01	3.12E+01		3.12E+01
N	126987	Methacrylonitrile	mg/L	6.83E-03		6.83E-03	1.73E-02		1.73E-02	1.67E-02		1.67E-02	2.59E-02		2.59E-02
N	10265926	Methamidophos	mg/L	4.41E-03		4.41E-03	1.09E-01		1.09E-01	1.28E-02		1.28E-02	1.64E-01		1.64E-01
N	67561	Methanol	mg/L	3.51E+01		3.51E+01	9.75E+01		9.75E+01	8.71E+01		8.71E+01	1.46E+02		1.46E+02
N	950378	Methidathion	mg/L	6.45E-02		6.45E-02	1.39E-01		1.39E-01	1.53E-01		1.53E-01	2.08E-01		2.08E-01
N	16752775	Methomyl	mg/L	1.97E+00		1.97E+00	9.37E+00		9.37E+00	5.24E+00		5.24E+00	1.40E+01		1.40E+01
N	99592	Methoxy-5-nitroaniline, 2-	mg/L		4.22E-02	4.22E-02		6.50E-02	6.50E-02		4.22E-02	4.22E-02		6.50E-02	6.50E-02
N	72435	Methoxychlor	mg/L	6.69E-02		6.69E-02	4.87E-02		4.87E-02	1.14E-01		1.14E-01	7.28E-02		7.28E-02
N	110496	Methoxyethanol Acetate, 2-	mg/L	1.63E-01		1.63E-01	1.00E+00		1.00E+00	4.43E-01		4.43E-01	1.49E+00		1.49E+00
N	109864	Methoxyethanol, 2-	mg/L	8.58E-02		8.58E-02	1.03E+00		1.03E+00	2.43E-01		2.43E-01	1.53E+00		1.53E+00
N	79209	Methyl Acetate	mg/L	7.18E+01		7.18E+01	2.17E+02		2.17E+02	1.81E+02		1.81E+02	3.24E+02		3.24E+02
N	96333	Methyl Acrylate	mg/L	1.82E+00		1.82E+00	3.44E+00		3.44E+00	4.20E+00		4.20E+00	5.14E+00		5.14E+00
N	78933	Methyl Ethyl Ketone	mg/L	4.53E+01		4.53E+01	1.70E+02		1.70E+02	1.17E+02		1.17E+02	2.54E+02		2.54E+02
N	60344	Methyl Hydrazine	mg/L		3.62E-03	3.62E-03		3.78E-02	3.78E-02		3.62E-03	3.62E-03		3.78E-02	3.78E-02
N	108101	Methyl Isobutyl Ketone	mg/L	4.54E+00		4.54E+00	7.56E+00		7.56E+00	1.02E+01		1.02E+01	1.13E+01		1.13E+01
N	74931	Methyl Mercaptan	mg/L	5.16E-02		5.16E-02				1.53E-01		1.53E-01			
N	80626	Methyl Methacrylate	mg/L	7.44E+01		7.44E+01	1.12E+02		1.12E+02	1.62E+02		1.62E+02	1.67E+02		1.67E+02
N	298000	Methyl Parathion	mg/L	1.72E-02		1.72E-02	4.43E-02		4.43E-02	4.21E-02		4.21E-02	6.62E-02		6.62E-02
N	993135	Methyl Phosphonic Acid	mg/L	1.81E+00		1.81E+00				5.37E+00		5.37E+00			
N	25013154	Methyl Styrene (Mixed Isomers)	mg/L	3.26E-02		3.26E-02	2.15E-02		2.15E-02	5.30E-02		5.30E-02	3.21E-02		3.21E-02
N	79221	Methyl chlorocarbonate	mg/L	9.05E+01		9.05E+01				2.68E+02		2.68E+02			
N	1634044	Methyl tert-Butyl Ether (MTBE)	mg/L												
N	99558	Methyl-5-Nitroaniline, 2-	mg/L		3.35E-02	3.35E-02		3.84E-02	3.84E-02		3.35E-02	3.35E-02		3.84E-02	3.84E-02
N	636215	Methylaniline Hydrochloride, 2-	mg/L		1.18E-02	1.18E-02		1.98E-02	1.98E-02		1.18E-02	1.18E-02		1.98E-02	1.98E-02
N	108872	Methylcyclohexane	mg/L	7.62E+00		7.62E+00	5.24E+00		5.24E+00	1.26E+01		1.26E+01	7.83E+00		7.83E+00
N	75092	Methylene Chloride	mg/L	3.23E+00	2.66E-01	2.66E-01	4.94E+00	4.21E-01	4.21E-01	7.06E+00	2.66E-01	2.66E-01	7.38E+00	4.21E-01	4.21E-01
N	101144	Methylene-bis(2-chloroaniline), 4,4'-	mg/L	6.99E-03	2.25E-03	2.25E-03	4.87E-03	2.05E-03	2.05E-03	1.17E-02	2.25E-03	2.25E-03	7.28E-03	2.05E-03	2.05E-03
N	101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	mg/L		1.44E-03	1.44E-03		1.25E-03	1.25E-03		1.44E-03	1.44E-03		1.25E-03	1.25E-03

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target [illegible] of 1E-06.
No action va[illegible] less of hazard- and cancer-based value.

Table A.19. Surface Water No[illegible]ction Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	101779	Methylenebisbenzenamine, 4,4'-	mg/L		1.41E-02	1.41E-02		3.20E-02	3.20E-02		9.68E-03	9.68E-03		1.87E-02	1.87E-02
N	101688	Methylenediphenyl Diisocyanate	mg/L	4.24E-03		4.24E-03	9.64E-03		9.64E-03	1.09E-02		1.09E-02	2.14E-02		2.14E-02
N	98839	Methylstyrene, Alpha-	mg/L	2.58E-01		2.58E-01	5.88E-01		5.88E-01	7.55E-01		7.55E-01	1.31E+00		1.31E+00
N	1762283	Methyltriethyl Lead	mg/L												
N	51218452	Metolachlor	mg/L	5.10E+00		5.10E+00	1.16E+01		1.16E+01	1.24E+01		1.24E+01	2.58E+01		2.58E+01
N	21087649	Metribuzin	mg/L	3.35E+00		3.35E+00	7.62E+00		7.62E+00	5.23E+00		5.23E+00	1.69E+01		1.69E+01
N	2385855	Mirex	mg/L	8.03E-03	6.25E-04	6.25E-04	1.83E-02	1.42E-03	1.42E-03	1.89E-02	6.94E-04	6.94E-04	4.06E-02	8.31E-04	8.31E-04
N	2212671	Molinate	mg/L	9.12E-03		9.12E-03	2.08E-02		2.08E-02	2.65E-02		2.65E-02	4.62E-02		4.62E-02
N	10599903	Monochloramine	mg/L							4.37E+01		4.37E+01			
N	25154421	Monochlorobutanes	mg/L							1.75E+02		1.75E+02			
N	300765	Naled	mg/L	4.56E-01		4.56E-01	1.04E+00		1.04E+00	5.33E-01		5.33E-01	2.31E+00		2.31E+00
Y	91203	Naphthalene	mg/L	9.31E-02		9.31E-02	2.12E-01		2.12E-01	2.70E-01		2.70E-01	4.71E-01		4.71E-01
N	90120	Naphthalene, 1-Methyl	mg/L												
N	91576	Naphthalene, 2-Methyl	mg/L												
N	15299997	Napropamide	mg/L	1.67E+02		1.67E+02	3.81E+02		3.81E+02	4.02E+01		4.02E+01	8.47E+02		8.47E+02
N	2429745	Niagara Blue 4B	mg/L												
N	13463393	Nickel Carbonyl	mg/L												
N	1929824	Nitrapyrin	mg/L	3.01E-02		3.01E-02	6.86E-02		6.86E-02	7.93E-02		7.93E-02	1.52E-01		1.52E-01
N	88744	Nitroaniline, 2-	mg/L	2.21E-03		2.21E-03	5.02E-03		5.02E-03	5.23E-03		5.23E-03	1.12E-02		1.12E-02
N	98953	Nitrobenzene	mg/L	2.82E-02		2.82E-02	6.43E-02		6.43E-02	6.10E-02		6.10E-02	1.43E-01		1.43E-01
N	67209	Nitrofurantoin	mg/L	4.53E+02		4.53E+02	1.03E+03		1.03E+03	2.99E+01		2.99E+01	2.29E+03		2.29E+03
N	59870	Nitrofurazone	mg/L		2.20E-02	2.20E-02		5.02E-02	5.02E-02		2.67E-03	2.67E-03		2.93E-02	2.93E-02
N	55630	Nitroglycerin	mg/L							6.11E+00		6.11E+00			
N	556887	Nitroguanidine	mg/L	2.01E+02		2.01E+02	4.57E+02		4.57E+02	4.07E+01		4.07E+01	1.02E+03		1.02E+03
N	100027	Nitrophenol, 4-	mg/L	5.35E-01		5.35E-01	1.22E+00		1.22E+00	1.10E+00		1.10E+00	2.71E+00		2.71E+00
N	79469	Nitropropane, 2-	mg/L	1.84E+00	9.57E-04	9.57E-04	4.18E+00	2.18E-03	2.18E-03	1.72E+00	3.52E-04	3.52E-04	9.29E+00	1.27E-03	1.27E-03
N	759739	Nitroso-N-ethylurea, N-	mg/L		7.43E-05	7.43E-05		1.69E-04	1.69E-04		2.44E-05	2.44E-05		9.89E-05	9.89E-05
N	684935	Nitroso-N-methylurea, N-	mg/L												
N	924163	Nitroso-di-N-butylamine, N-	mg/L		2.17E-04	2.17E-04		4.94E-04	4.94E-04		2.38E-04	2.38E-04		2.88E-04	2.88E-04
N	621647	Nitroso-di-N-propylamine, N-	mg/L		1.43E-04	1.43E-04		3.26E-04	3.26E-04		1.64E-04	1.64E-04		1.91E-04	1.91E-04
N	1116547	Nitrosodiethanolamine, N-	mg/L		4.01E-01	4.01E-01		9.14E-01	9.14E-01		1.54E-03	1.54E-03		5.34E-01	5.34E-01
N	55185	Nitrosodiethylamine, N-	mg/L		3.12E-05	3.12E-05		7.11E-05	7.11E-05		1.81E-05	1.81E-05		4.15E-05	4.15E-05
N	62759	Nitrosodimethylamine, N-	mg/L		4.08E-04	4.08E-04		9.29E-04	9.29E-04		7.50E-05	7.50E-05		5.43E-04	5.43E-04
N	86306	Nitrosodiphenylamine, N-	mg/L		2.87E-02	2.87E-02		6.53E-02	6.53E-02		4.26E-02	4.26E-02		3.81E-02	3.81E-02
N	10595956	Nitrosomethylethylamine, N-	mg/L		4.33E-04	4.33E-04		9.86E-04	9.86E-04		1.53E-04	1.53E-04		5.76E-04	5.76E-04
N	4549400	Nitrosomethylvinylamine, N-	mg/L												
N	930552	Nitrosopyrrolidine, N-	mg/L		3.48E-02	3.48E-02		7.91E-02	7.91E-02		1.99E-03	1.99E-03		4.62E-02	4.62E-02
N	119324	Nitrotoluene, 4-Amino-2-	mg/L												
N	99081	Nitrotoluene, m-	mg/L	2.29E-01		2.29E-01	5.22E-01		5.22E-01	5.94E-01		5.94E-01	1.16E+00		1.16E+00
N	88722	Nitrotoluene, o-	mg/L	2.68E-01		2.68E-01	6.09E-01		6.09E-01	6.78E-01		6.78E-01	1.35E+00		1.35E+00
N	99990	Nitrotoluene, p-	mg/L	2.29E-01		2.29E-01	5.22E-01		5.22E-01	5.94E-01		5.94E-01	1.16E+00		1.16E+00
N	27314132	Norflurazon	mg/L	7.30E+00		7.30E+00	1.66E+01		1.66E+01	9.71E+00		9.71E+00	3.69E+01		3.69E+01
N	85509199	Nustar	mg/L							3.06E-01		3.06E-01			
Y	3268879	OCDD	mg/L		7.35E-09	7.35E-09		1.67E-08	1.67E-08		1.15E-08	1.15E-08		9.77E-09	9.77E-09
Y	39001020	OCDF	mg/L		7.81E-09	7.81E-09		1.78E-08	1.78E-08		1.22E-08	1.22E-08		1.04E-08	1.04E-08
N	32536520	Octabromodiphenyl Ether	mg/L							1.31E+00		1.31E+00			
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/L	3.86E+01		3.86E+01	8.79E+01		8.79E+01	1.84E+01		1.84E+01	1.95E+02		1.95E+02
N	152169	Octamethylpyrophosphoramide	mg/L	2.68E+01		2.68E+01	6.09E+01		6.09E+01	8.64E-01		8.64E-01	1.35E+02		1.35E+02
N	117840	Octyl Phthalate, di-N-	mg/L	2.68E-04		2.68E-04	6.09E-04		6.09E-04	8.02E-04		8.02E-04	1.35E-03		1.35E-03
N	19044883	Oryzalin	mg/L	7.72E+00		7.72E+00	1.76E+01		1.76E+01	1.12E+01		1.12E+01	3.91E+01		3.91E+01
N	19666309	Oxadiazon	mg/L	2.64E-02		2.64E-02	6.01E-02		6.01E-02	7.64E-02		7.64E-02	1.34E-01		1.34E-01
N	23135220	Oxamyl	mg/L	1.25E+02		1.25E+02	2.86E+02		2.86E+02	1.06E+01		1.06E+01	6.35E+02		6.35E+02
N	76738620	Paclobutrazol	mg/L	4.50E-01		4.50E-01	1.02E+00		1.02E+00	1.09E+00		1.09E+00	2.28E+00		2.28E+00
N	1910425	Paraquat	mg/L	6.45E+03		6.45E+03	1.47E+04		1.47E+04	1.97E+00		1.97E+00	3.27E+04		3.27E+04

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	101779	Methylenebisbenzenamine, 4,4'-	mg/L		9.68E-03	9.68E-03		1.87E-02	1.87E-02		9.68E-03	9.68E-03		1.87E-02	1.87E-02
N	101688	Methylenediphenyl Diisocyanate	mg/L	4.64E-03		4.64E-03	4.11E-03		4.11E-03	8.54E-03		8.54E-03	6.15E-03		6.15E-03
N	98839	Methylstyrene, Alpha-	mg/L	3.80E-01		3.80E-01	2.51E-01		2.51E-01	6.19E-01		6.19E-01	3.75E-01		3.75E-01
N	1762283	Methyltriethyl Lead	mg/L												
N	51218452	Metolachlor	mg/L	5.03E+00		5.03E+00	4.96E+00		4.96E+00	9.61E+00		9.61E+00	7.41E+00		7.41E+00
N	21087649	Metribuzin	mg/L	1.58E+00		1.58E+00	3.25E+00		3.25E+00	3.71E+00		3.71E+00	4.86E+00		4.86E+00
N	2385855	Mirex	mg/L	7.42E-03	6.94E-04	6.94E-04	7.80E-03	8.31E-04	8.31E-04	1.45E-02	6.94E-04	6.94E-04	1.17E-02	8.31E-04	8.31E-04
N	2212671	Molinate	mg/L	1.32E-02		1.32E-02	8.86E-03		8.86E-03	2.17E-02		2.17E-02	1.32E-02		1.32E-02
N	10599903	Monochloramine	mg/L	9.05E+00		9.05E+00				2.68E+01		2.68E+01			
N	25154421	Monochlorobutanes	mg/L	3.62E+01		3.62E+01				1.07E+02		1.07E+02			
N	300765	Naled	mg/L	1.44E-01		1.44E-01	4.43E-01		4.43E-01	3.64E-01		3.64E-01	6.62E-01		6.62E-01
Y	91203	Naphthalene	mg/L	1.35E-01		1.35E-01	9.04E-02		9.04E-02	2.21E-01		2.21E-01	1.35E-01		1.35E-01
N	90120	Naphthalene, 1-Methyl	mg/L												
N	91576	Naphthalene, 2-Methyl	mg/L												
N	15299997	Napropamide	mg/L	8.74E+00		8.74E+00	1.62E+02		1.62E+02	2.52E+01		2.52E+01	2.43E+02		2.43E+02
N	2429745	Niagara Blue 4B	mg/L												
N	13463393	Nickel Carbonyl	mg/L												
N	1929824	Nitrapyrin	mg/L	3.50E-02		3.50E-02	2.92E-02		2.92E-02	6.29E-02		6.29E-02	4.37E-02		4.37E-02
N	88744	Nitroaniline, 2-	mg/L	2.07E-03		2.07E-03	2.14E-03		2.14E-03	4.03E-03		4.03E-03	3.20E-03		3.20E-03
N	98953	Nitrobenzene	mg/L	2.23E-02		2.23E-02	2.74E-02		2.74E-02	4.59E-02		4.59E-02	4.10E-02		4.10E-02
N	67209	Nitrofurantoin	mg/L	6.28E+00		6.28E+00	4.40E+02		4.40E+02	1.85E+01		1.85E+01	6.58E+02		6.58E+02
N	59870	Nitrofurazone	mg/L		2.67E-03	2.67E-03		2.93E-02	2.93E-02		2.67E-03	2.67E-03		2.93E-02	2.93E-02
N	55630	Nitroglycerin	mg/L	1.27E+00		1.27E+00				3.76E+00		3.76E+00			
N	556887	Nitroguanidine	mg/L	8.79E+00		8.79E+00	1.95E+02		1.95E+02	2.55E+01		2.55E+01	2.91E+02		2.91E+02
N	100027	Nitrophenol, 4-	mg/L	3.88E-01		3.88E-01	5.20E-01		5.20E-01	8.19E-01		8.19E-01	7.77E-01		7.77E-01
N	79469	Nitropropane, 2-	mg/L	4.38E-01	3.52E-04	3.52E-04	1.78E+00	1.27E-03	1.27E-03	1.15E+00	3.52E-04	3.52E-04	2.66E+00	1.27E-03	1.27E-03
N	759739	Nitroso-N-ethylurea, N-	mg/L		2.44E-05	2.44E-05		9.89E-05	9.89E-05		2.44E-05	2.44E-05		9.89E-05	9.89E-05
N	684935	Nitroso-N-methylurea, N-	mg/L												
N	924163	Nitroso-di-N-butylamine, N-	mg/L		2.38E-04	2.38E-04		2.88E-04	2.88E-04		2.38E-04	2.38E-04		2.88E-04	2.88E-04
N	621647	Nitroso-di-N-propylamine, N-	mg/L		1.64E-04	1.64E-04		1.91E-04	1.91E-04		1.64E-04	1.64E-04		1.91E-04	1.91E-04
N	1116547	Nitrosodiethanolamine, N-	mg/L		1.54E-03	1.54E-03		5.34E-01	5.34E-01		1.54E-03	1.54E-03		5.34E-01	5.34E-01
N	55185	Nitrosodiethylamine, N-	mg/L		1.81E-05	1.81E-05		4.15E-05	4.15E-05		1.81E-05	1.81E-05		4.15E-05	4.15E-05
N	62759	Nitrosodimethylamine, N-	mg/L		7.50E-05	7.50E-05		5.43E-04	5.43E-04		7.50E-05	7.50E-05		5.43E-04	5.43E-04
N	86306	Nitrosodiphenylamine, N-	mg/L		4.26E-02	4.26E-02		3.81E-02	3.81E-02		4.26E-02	4.26E-02		3.81E-02	3.81E-02
N	10595956	Nitrosomethylethylamine, N-	mg/L		1.53E-04	1.53E-04		5.76E-04	5.76E-04		1.53E-04	1.53E-04		5.76E-04	5.76E-04
N	4549400	Nitrosomethylvinylamine, N-	mg/L												
N	930552	Nitrosopyrrolidine, N-	mg/L		1.99E-03	1.99E-03		4.62E-02	4.62E-02		1.99E-03	1.99E-03		4.62E-02	4.62E-02
N	119324	Nitrotoluene, 4-Amino-2-	mg/L												
N	99081	Nitrotoluene, m-	mg/L	2.57E-01		2.57E-01	2.23E-01		2.23E-01	4.69E-01		4.69E-01	3.33E-01		3.33E-01
N	88722	Nitrotoluene, o-	mg/L	2.86E-01		2.86E-01	2.60E-01		2.60E-01	5.31E-01		5.31E-01	3.88E-01		3.88E-01
N	99990	Nitrotoluene, p-	mg/L	2.57E-01		2.57E-01	2.23E-01		2.23E-01	4.69E-01		4.69E-01	3.33E-01		3.33E-01
N	27314132	Norflurazon	mg/L	2.75E+00		2.75E+00	7.09E+00		7.09E+00	6.73E+00		6.73E+00	1.06E+01		1.06E+01
N	85509199	Nustar	mg/L	6.33E-02		6.33E-02				1.88E-01		1.88E-01			
Y	3268879	OCDD	mg/L		1.15E-08	1.15E-08		9.77E-09	9.77E-09		1.15E-08	1.15E-08		9.77E-09	9.77E-09
Y	39001020	OCDF	mg/L		1.22E-08	1.22E-08		1.04E-08	1.04E-08		1.22E-08	1.22E-08		1.04E-08	1.04E-08
N	32536520	Octabromodiphenyl Ether	mg/L	2.71E-01		2.71E-01				8.05E-01		8.05E-01			
N	2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	mg/L	4.21E+00		4.21E+00	3.75E+01		3.75E+01	1.18E+01		1.18E+01	5.60E+01		5.60E+01
N	152169	Octamethylpyrophosphoramide	mg/L	1.80E-01		1.80E-01	2.60E+01		2.60E+01	5.32E-01		5.32E-01	3.88E+01		3.88E+01
N	117840	Octyl Phthalate, di-N-	mg/L	4.19E-04		4.19E-04	2.60E-04		2.60E-04	6.62E-04		6.62E-04	3.88E-04		3.88E-04
N	19044883	Oryzalin	mg/L	3.29E+00		3.29E+00	7.50E+00		7.50E+00	7.88E+00		7.88E+00	1.12E+01		1.12E+01
N	19666309	Oxadiazon	mg/L	3.79E-02		3.79E-02	2.56E-02		2.56E-02	6.23E-02		6.23E-02	3.83E-02		3.83E-02
N	23135220	Oxamyl	mg/L	2.24E+00		2.24E+00	1.22E+02		1.22E+02	6.57E+00		6.57E+00	1.82E+02		1.82E+02
N	76738620	Paclobutrazol	mg/L	4.40E-01		4.40E-01	4.37E-01		4.37E-01	8.44E-01		8.44E-01	6.53E-01		6.53E-01
N	1910425	Paraquat	mg/L	4.07E-01		4.07E-01	6.26E+03		6.26E+03	1.21E+00		1.21E+00	9.36E+03		9.36E+03

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action v ess of hazard- and cancer-based value.

Table A.19. Surface Water N ction Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	56382	Parathion	mg/L	7.08E-02		7.08E-02	1.61E-01		1.61E-01	1.96E-01		1.96E-01	3.59E-01		3.59E-01
Y	36088229	PeCDD, 2,3,7,8-	mg/L		1.41E-10	1.41E-10		3.22E-10	3.22E-10		2.20E-10	2.20E-10		1.88E-10	1.88E-10
Y	57117416	PeCDF, 1,2,3,7,8-	mg/L		6.81E-11	6.81E-11		1.55E-10	1.55E-10		1.06E-10	1.06E-10		9.06E-11	9.06E-11
Y	57117314	PeCDF, 2,3,4,7,8-	mg/L		5.76E-10	5.76E-10		1.31E-09	1.31E-09		8.98E-10	8.98E-10		7.67E-10	7.67E-10
N	1114712	Pebulate	mg/L	1.76E-01		1.76E-01	4.01E-01		4.01E-01	5.15E-01		5.15E-01	8.91E-01		8.91E-01
N	40487421	Pendimethalin	mg/L	4.72E-02		4.72E-02	1.08E-01		1.08E-01	1.40E-01		1.40E-01	2.39E-01		2.39E-01
N	32534819	Pentabromodiphenyl Ether	mg/L							8.74E-01		8.74E-01			
N	608935	Pentachlorobenzene	mg/L	9.18E-04		9.18E-04	2.09E-03		2.09E-03	2.73E-03		2.73E-03	4.64E-03		4.64E-03
N	25329355	Pentachlorocyclopentadiene	mg/L												
N	82688	Pentachloronitrobenzene	mg/L	1.63E-02	5.86E-04	5.86E-04	3.72E-02	1.33E-03	1.33E-03	4.72E-02	8.67E-04	8.67E-04	8.27E-02	7.80E-04	7.80E-04
N	87865	Pentachlorophenol	mg/L	1.85E-02	1.44E-04	1.44E-04	4.22E-02	3.28E-04	3.28E-04	5.53E-02	2.23E-04	2.23E-04	9.38E-02	1.92E-04	1.92E-04
N	71410	Pentyl Alcohol, N-	mg/L												
N	7601903	Perchlorate	mg/L							2.18E-01		2.18E-01			
N	52645531	Permethrin	mg/L	4.18E+00		4.18E+00	9.52E+00		9.52E+00	7.96E+00		7.96E+00	2.12E+01		2.12E+01
Y	85018	Phenanthrene	mg/L												
N	13684634	Phenmedipham	mg/L	1.48E+04		1.48E+04	3.36E+04		3.36E+04	1.09E+02		1.09E+02	7.47E+04		7.47E+04
N	108952	Phenol	mg/L	3.94E+01		3.94E+01	8.98E+01		8.98E+01	8.14E+01		8.14E+01	2.00E+02		2.00E+02
N	92842	Phenothiazine	mg/L							8.74E-01		8.74E-01			
N	108452	Phenylenediamine, m-	mg/L	1.00E+01		1.00E+01	2.29E+01		2.29E+01	2.41E+00		2.41E+00	5.08E+01		5.08E+01
N	95545	Phenylenediamine, o-	mg/L		1.39E-01	1.39E-01		3.17E-01	3.17E-01		6.47E-02	6.47E-02		1.85E-01	1.85E-01
N	106503	Phenylenediamine, p-	mg/L	6.46E+02		6.46E+02	1.47E+03		1.47E+03	7.96E+01		7.96E+01	3.27E+03		3.27E+03
N	62384	Phenylmercuric Acetate	mg/L	2.97E-01		2.97E-01	6.77E-01		6.77E-01	3.36E-02		3.36E-02	1.51E+00		1.51E+00
N	90437	Phenylphenol, 2-	mg/L		1.03E-01	1.03E-01		2.36E-01	2.36E-01		1.51E-01	1.51E-01		1.38E-01	1.38E-01
N	298022	Phorate	mg/L	5.08E-02		5.08E-02	1.16E-01		1.16E-01	5.55E-02		5.55E-02	2.57E-01		2.57E-01
N	732116	Phosmet	mg/L	1.91E+00		1.91E+00	4.35E+00		4.35E+00	3.46E+00		3.46E+00	9.68E+00		9.68E+00
N	100210	Phthalic Acid, P-	mg/L	6.69E+01		6.69E+01	1.52E+02		1.52E+02	1.37E+02		1.37E+02	3.39E+02		3.39E+02
N	85449	Phthalic Anhydride	mg/L	4.67E+03		4.67E+03	1.06E+04		1.06E+04	8.22E+02		8.22E+02	2.36E+04		2.36E+04
N	1918021	Picloram	mg/L	7.40E+00		7.40E+00	1.68E+01		1.68E+01	1.28E+01		1.28E+01	3.74E+01		3.74E+01
N	29232937	Pirimiphos, Methyl	mg/L	8.03E-02		8.03E-02	1.83E-01		1.83E-01	2.28E-01		2.28E-01	4.06E-01		4.06E-01
N	59536651	Polybrominated Biphenyls	mg/L							3.06E-03	4.87E-04	4.87E-04			
Y	1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		7.23E-05	7.23E-05		1.65E-04	1.65E-04		1.12E-04	1.12E-04		9.61E-05	9.61E-05
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		4.13E-04	4.13E-04		9.40E-04	9.40E-04		6.38E-04	6.38E-04		5.49E-04	5.49E-04
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/L							7.49E-02		7.49E-02			
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		3.98E-07	3.98E-07		9.06E-07	9.06E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
N	67747095	Prochloraz	mg/L	2.32E-01	4.80E-03	4.80E-03	5.27E-01	1.09E-02	1.09E-02	5.90E-01	5.95E-03	5.95E-03	1.17E+00	6.39E-03	6.39E-03
N	26399360	Profluralin	mg/L	9.26E-03		9.26E-03	2.11E-02		2.11E-02	2.75E-02		2.75E-02	4.69E-02		4.69E-02
N	1610180	Prometon	mg/L	8.60E-01		8.60E-01	1.96E+00		1.96E+00	1.85E+00		1.85E+00	4.35E+00		4.35E+00
N	7287196	Prometryn	mg/L	2.11E-01		2.11E-01	4.81E-01		4.81E-01	4.65E-01		4.65E-01	1.07E+00		1.07E+00
N	1918167	Propachlor	mg/L	7.68E-01		7.68E-01	1.75E+00		1.75E+00	1.64E+00		1.64E+00	3.88E+00		3.88E+00
N	709988	Propanil	mg/L	6.69E-02		6.69E-02	1.52E-01		1.52E-01	1.84E-01		1.84E-01	3.39E-01		3.39E-01
N	2312358	Propargite	mg/L	8.19E-02		8.19E-02	1.87E-01		1.87E-01	2.39E-01		2.39E-01	4.15E-01		4.15E-01
N	107197	Propargyl Alcohol	mg/L	1.37E+00		1.37E+00	3.11E+00		3.11E+00	7.20E-01		7.20E-01	6.92E+00		6.92E+00
N	139402	Propazine	mg/L	1.06E+00		1.06E+00	2.41E+00		2.41E+00	2.32E+00		2.32E+00	5.35E+00		5.35E+00
N	122429	Propham	mg/L	1.38E-01		1.38E-01	3.15E-01		3.15E-01	3.96E-01		3.96E-01	7.01E-01		7.01E-01
N	60207901	Propiconazole	mg/L	5.44E-01		5.44E-01	1.24E+00		1.24E+00	1.27E+00		1.27E+00	2.75E+00		2.75E+00
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/L							4.37E-01		4.37E-01			
N	103651	Propylbenzene, n-	mg/L							4.37E+00		4.37E+00			
N	57556	Propylene Glycol	mg/L	9.79E+04		9.79E+04	2.23E+05		2.23E+05	8.48E+03		8.48E+03	4.96E+05		4.96E+05
N	1569024	Propylene Glycol Monoethyl Ether	mg/L							3.06E+02		3.06E+02			
N	107982	Propylene Glycol Monomethyl Ether	mg/L	3.51E+02		3.51E+02	8.00E+02		8.00E+02	2.37E+02		2.37E+02	1.78E+03		1.78E+03
N	75569	Propylene Oxide	mg/L	3.09E+00	4.21E-02	4.21E-02	7.04E+00	9.59E-02	9.59E-02	2.67E+00	1.42E-02	1.42E-02	1.57E+01	5.60E-02	5.60E-02
N	81335775	Pursuit	mg/L							1.09E+02		1.09E+02			
N	51630581	Pydrin	mg/L	6.97E-01		6.97E-01	1.59E+00		1.59E+00	1.75E+00		1.75E+00	3.53E+00		3.53E+00
Y	129000	Pyrene	mg/L	1.17E-02		1.17E-02	2.66E-02		2.66E-02	3.49E-02		3.49E-02	5.91E-02		5.91E-02

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	56382	Parathion	mg/L	9.21E-02		9.21E-02	6.88E-02		6.88E-02	1.58E-01		1.58E-01	1.03E-01		1.03E-01
Y	36088229	PeCDD, 2,3,7,8-	mg/L		2.20E-10	2.20E-10		1.88E-10	1.88E-10		2.20E-10	2.20E-10		1.88E-10	1.88E-10
Y	57117416	PeCDF, 1,2,3,7,8-	mg/L		1.06E-10	1.06E-10		9.06E-11	9.06E-11		1.06E-10	1.06E-10		9.06E-11	9.06E-11
Y	57117314	PeCDF, 2,3,4,7,8-	mg/L		8.98E-10	8.98E-10		7.67E-10	7.67E-10		8.98E-10	8.98E-10		7.67E-10	7.67E-10
N	1114712	Pebulate	mg/L	2.60E-01		2.60E-01	1.71E-01		1.71E-01	4.22E-01		4.22E-01	2.56E-01		2.56E-01
N	40487421	Pendimethalin	mg/L	7.24E-02		7.24E-02	4.59E-02		4.59E-02	1.16E-01		1.16E-01	6.86E-02		6.86E-02
N	32534819	Pentabromodiphenyl Ether	mg/L	1.81E-01		1.81E-01				5.37E-01		5.37E-01			
N	608935	Pentachlorobenzene	mg/L	1.41E-03		1.41E-03	8.91E-04		8.91E-04	2.25E-03		2.25E-03	1.33E-03		1.33E-03
N	25329355	Pentachlorocyclopentadiene	mg/L												
N	82688	Pentachloronitrobenzene	mg/L	2.34E-02	8.67E-04	8.67E-04	1.59E-02	7.80E-04	7.80E-04	3.85E-02	8.67E-04	8.67E-04	2.37E-02	7.80E-04	7.80E-04
N	87865	Pentachlorophenol	mg/L	2.87E-02	2.23E-04	2.23E-04	1.80E-02	1.92E-04	1.92E-04	4.56E-02	2.23E-04	2.23E-04	2.69E-02	1.92E-04	1.92E-04
N	71410	Pentyl Alcohol, N-	mg/L												
N	7601903	Perchlorate	mg/L	4.52E-02		4.52E-02				1.34E-01		1.34E-01			
N	52645531	Permethrin	mg/L	2.67E+00		2.67E+00	4.06E+00		4.06E+00	5.84E+00		5.84E+00	6.07E+00		6.07E+00
Y	85018	Phenanthrene	mg/L												
N	13684634	Phenmedipham	mg/L	2.26E+01		2.26E+01	1.43E+04		1.43E+04	6.69E+01		6.69E+01	2.14E+04		2.14E+04
N	108952	Phenol	mg/L	2.89E+01		2.89E+01	3.83E+01		3.83E+01	6.07E+01		6.07E+01	5.72E+01		5.72E+01
N	92842	Phenothiazine	mg/L	1.81E-01		1.81E-01				5.37E-01		5.37E-01			
N	108452	Phenylenediamine, m-	mg/L	5.25E-01		5.25E-01	9.75E+00		9.75E+00	1.51E+00		1.51E+00	1.46E+01		1.46E+01
N	95545	Phenylenediamine, o-	mg/L		6.47E-02	6.47E-02		1.85E-01	1.85E-01		6.47E-02	6.47E-02		1.85E-01	1.85E-01
N	106503	Phenylenediamine, p-	mg/L	1.69E+01		1.69E+01	6.28E+02		6.28E+02	4.94E+01		4.94E+01	9.38E+02		9.38E+02
N	62384	Phenylmercuric Acetate	mg/L	7.13E-03		7.13E-03	2.89E-01		2.89E-01	2.09E-02		2.09E-02	4.32E-01		4.32E-01
N	90437	Phenylphenol, 2-	mg/L		1.51E-01	1.51E-01		1.38E-01	1.38E-01		1.51E-01	1.51E-01		1.38E-01	1.38E-01
N	298022	Phorate	mg/L	1.47E-02		1.47E-02	4.93E-02		4.93E-02	3.76E-02		3.76E-02	7.38E-02		7.38E-02
N	732116	Phosmet	mg/L	1.13E+00		1.13E+00	1.86E+00		1.86E+00	2.51E+00		2.51E+00	2.77E+00		2.77E+00
N	100210	Phthalic Acid, P-	mg/L	4.85E+01		4.85E+01	6.50E+01		6.50E+01	1.02E+02		1.02E+02	9.71E+01		9.71E+01
N	85449	Phthalic Anhydride	mg/L	1.77E+02		1.77E+02	4.53E+03		4.53E+03	5.13E+02		5.13E+02	6.78E+03		6.78E+03
N	1918021	Picloram	mg/L	4.09E+00		4.09E+00	7.18E+00		7.18E+00	9.27E+00		9.27E+00	1.07E+01		1.07E+01
N	29232937	Pirimiphos, Methyl	mg/L	1.10E-01		1.10E-01	7.80E-02		7.80E-02	1.85E-01		1.85E-01	1.17E-01		1.17E-01
N	59536651	Polybrominated Biphenyls	mg/L	6.33E-04	4.87E-04	4.87E-04				1.88E-03	4.87E-04	4.87E-04			
Y	1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/L		1.12E-04	1.12E-04		9.61E-05	9.61E-05		1.12E-04	1.12E-04		9.61E-05	9.61E-05
Y	1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/L		6.38E-04	6.38E-04		5.49E-04	5.49E-04		6.38E-04	6.38E-04		5.49E-04	5.49E-04
N	9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	mg/L	1.55E-02		1.55E-02				4.60E-02		4.60E-02			
Y	50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/L		6.20E-07	6.20E-07		5.29E-07	5.29E-07		6.20E-07	6.20E-07		5.29E-07	5.29E-07
N	67747095	Prochloraz	mg/L	2.51E-01	5.95E-03	5.95E-03	2.25E-01	6.39E-03	6.39E-03	4.63E-01	5.95E-03	5.95E-03	3.36E-01	6.39E-03	6.39E-03
N	26399360	Profluralin	mg/L	1.41E-02		1.41E-02	9.00E-03		9.00E-03	2.26E-02		2.26E-02	1.34E-02		1.34E-02
N	1610180	Prometon	mg/L	6.76E-01		6.76E-01	8.35E-01		8.35E-01	1.39E+00		1.39E+00	1.25E+00		1.25E+00
N	7287196	Prometryn	mg/L	1.73E-01		1.73E-01	2.05E-01		2.05E-01	3.52E-01		3.52E-01	3.07E-01		3.07E-01
N	1918167	Propachlor	mg/L	5.94E-01		5.94E-01	7.45E-01		7.45E-01	1.23E+00		1.23E+00	1.11E+00		1.11E+00
N	709988	Propanil	mg/L	8.50E-02		8.50E-02	6.50E-02		6.50E-02	1.47E-01		1.47E-01	9.71E-02		9.71E-02
N	2312358	Propargite	mg/L	1.20E-01		1.20E-01	7.96E-02		7.96E-02	1.95E-01		1.95E-01	1.19E-01		1.19E-01
N	107197	Propargyl Alcohol	mg/L	1.67E-01		1.67E-01	1.33E+00		1.33E+00	4.63E-01		4.63E-01	1.98E+00		1.98E+00
N	139402	Propazine	mg/L	8.64E-01		8.64E-01	1.03E+00		1.03E+00	1.76E+00		1.76E+00	1.53E+00		1.53E+00
N	122429	Propham	mg/L	1.93E-01		1.93E-01	1.34E-01		1.34E-01	3.22E-01		3.22E-01	2.01E-01		2.01E-01
N	60207901	Propiconazole	mg/L	4.94E-01		4.94E-01	5.28E-01		5.28E-01	9.71E-01		9.71E-01	7.89E-01		7.89E-01
N	16484778	Propionic acid, 2-(2-Methyl-1,4-chlorophenoxy)	mg/L	9.05E-02		9.05E-02				2.68E-01		2.68E-01			
N	103651	Propylbenzene, n-	mg/L	9.05E-01		9.05E-01				2.68E+00		2.68E+00			
N	57556	Propylene Glycol	mg/L	1.79E+03		1.79E+03	9.51E+04		9.51E+04	5.25E+03		5.25E+03	1.42E+05		1.42E+05
N	1569024	Propylene Glycol Monoethyl Ether	mg/L	6.33E+01		6.33E+01				1.88E+02		1.88E+02			
N	107982	Propylene Glycol Monomethyl Ether	mg/L	5.68E+01		5.68E+01	3.41E+02		3.41E+02	1.54E+02		1.54E+02	5.10E+02		5.10E+02
N	75569	Propylene Oxide	mg/L	6.68E-01	1.42E-02	1.42E-02	3.00E+00	5.60E-02	5.60E-02	1.77E+00	1.42E-02	1.42E-02	4.49E+00	5.60E-02	5.60E-02
N	81335775	Pursuit	mg/L	2.26E+01		2.26E+01				6.71E+01		6.71E+01			
N	51630581	Pydrin	mg/L	7.36E-01		7.36E-01	6.77E-01		6.77E-01	1.37E+00		1.37E+00	1.01E+00		1.01E+00
Y	129000	Pyrene	mg/L	1.81E-02		1.81E-02	1.13E-02		1.13E-02	2.88E-02		2.88E-02	1.69E-02		1.69E-02

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action v less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	110861	Pyridine	mg/L	3.79E-02		3.79E-02	8.62E-02		8.62E-02	9.01E-02		9.01E-02	1.92E-01		1.92E-01
N	13593038	Quinalphos	mg/L	2.39E-02		2.39E-02	5.44E-02		5.44E-02	5.39E-02		5.39E-02	1.21E-01		1.21E-01
N	91225	Quinoline	mg/L		4.88E-05	4.88E-05		1.11E-04	1.11E-04		6.29E-05	6.29E-05		6.49E-05	6.49E-05
N		Refractory Ceramic Fibers	mg/L												
N	10453868	Resmethrin	mg/L	3.35E-03		3.35E-03	7.62E-03		7.62E-03	1.00E-02		1.00E-02	1.69E-02		1.69E-02
N	299843	Ronnel	mg/L	1.15E-01		1.15E-01	2.63E-01		2.63E-01	3.40E-01		3.40E-01	5.84E-01		5.84E-01
N	83794	Rotenone	mg/L	1.32E-01		1.32E-01	3.00E-01		3.00E-01	3.22E-01		3.22E-01	6.66E-01		6.66E-01
N	78587050	Savey	mg/L							1.09E+01		1.09E+01			
N	7783008	Selenious Acid	mg/L							2.18E+00		2.18E+00			
N	14124675	Selenite	mg/L												
N	630104	Selenourea	mg/L							2.18E+00		2.18E+00			
N	74051802	Sethoxydim	mg/L	7.23E-01		7.23E-01	1.65E+00		1.65E+00	2.05E+00		2.05E+00	3.66E+00		3.66E+00
N	122349	Simazine	mg/L	2.45E-01	1.14E-02	1.14E-02	5.57E-01	2.60E-02	2.60E-02	5.49E-01	1.19E-02	1.19E-02	1.24E+00	1.52E-02	1.52E-02
N	62476599	Sodium Acifluorfen	mg/L							5.68E+00		5.68E+00			
N	148185	Sodium Diethyldithiocarbamate	mg/L	2.32E+01	8.01E-02	8.01E-02	5.27E+01	1.82E-01	1.82E-01	1.10E+01	1.42E-02	1.42E-02	1.17E+02	1.07E-01	1.07E-01
N	62748	Sodium Fluoroacetate	mg/L	4.14E+00		4.14E+00	9.42E+00		9.42E+00	8.73E-03		8.73E-03	2.09E+01		2.09E+01
N	961115	Stirofos (Tetrachlorovinphos)	mg/L	1.67E+00	6.51E-02	6.51E-02	3.81E+00	1.48E-01	1.48E-01	3.63E+00	6.50E-02	6.50E-02	8.47E+00	8.65E-02	8.65E-02
N	57249	Strychnine	mg/L	1.54E-01		1.54E-01	3.52E-01		3.52E-01	1.02E-01		1.02E-01	7.82E-01		7.82E-01
N	100425	Styrene	mg/L	9.59E-02		9.59E-02	2.18E-01		2.18E-01	2.86E-01		2.86E-01	4.85E-01		4.85E-01
N	88671890	Systhane	mg/L							1.09E+01		1.09E+01			
Y	1746016	TCDD, 2,3,7,8-	mg/L		2.68E-11	2.68E-11		6.09E-11	6.09E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
Y	51207319	TCDF, 2,3,7,8-	mg/L		1.07E-09	1.07E-09		2.44E-09	2.44E-09		1.66E-09	1.66E-09		1.42E-09	1.42E-09
N	21564170	TCMTB	mg/L	4.01E-01		4.01E-01	9.14E-01		9.14E-01	1.10E+00		1.10E+00	2.03E+00		2.03E+00
N	34014181	Tebuthiuron	mg/L	1.42E+02		1.42E+02	3.23E+02		3.23E+02	2.85E+01		2.85E+01	7.18E+02		7.18E+02
N	3383968	Temephos	mg/L	8.73E-02		8.73E-02	1.99E-01		1.99E-01	2.54E-01		2.54E-01	4.42E-01		4.42E-01
N	5902512	Terbacil	mg/L	1.30E+00		1.30E+00	2.97E+00		2.97E+00	2.32E+00		2.32E+00	6.60E+00		6.60E+00
N	13071799	Terbufos	mg/L	3.58E-04		3.58E-04	8.16E-04		8.16E-04	9.78E-04		9.78E-04	1.81E-03		1.81E-03
N	886500	Terbutryn	mg/L	6.92E-03		6.92E-03	1.58E-02		1.58E-02	1.98E-02		1.98E-02	3.50E-02		3.50E-02
N	1920907	Tetrabutyl Lead	mg/L												
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/L	5.67E-04		5.67E-04	1.29E-03		1.29E-03	1.68E-03		1.68E-03	2.87E-03		2.87E-03
N	630206	Tetrachloroethane, 1,1,1,2-	mg/L	4.01E-01	1.44E-02	1.44E-02	9.14E-01	3.28E-02	3.28E-02	1.10E+00	1.98E-02	1.98E-02	2.03E+00	1.92E-02	1.92E-02
N	79345	Tetrachloroethane, 1,1,2,2-	mg/L	1.87E+00	4.37E-03	4.37E-03	4.27E+00	9.95E-03	9.95E-03	4.62E+00	5.19E-03	5.19E-03	9.48E+00	5.82E-03	5.82E-03
Y	127184	Tetrachloroethylene	mg/L	1.09E-02	5.84E-04	5.84E-04	2.47E-02	1.33E-03	1.33E-03	3.23E-02	9.02E-04	9.02E-04	5.49E-02	7.77E-04	7.77E-04
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/L	1.00E-01		1.00E-01	2.29E-01		2.29E-01	2.94E-01		2.94E-01	5.08E-01		5.08E-01
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/L		3.46E-06	3.46E-06		7.88E-06	7.88E-06		5.27E-06	5.27E-06		4.60E-06	4.60E-06
N	3689245	Tetraethyl Dithiopyrophosphate	mg/L	3.58E-02		3.58E-02	8.16E-02		8.16E-02	7.20E-02		7.20E-02	1.81E-01		1.81E-01
N	78002	Tetraethyl Lead	mg/L	2.01E-05		2.01E-05	4.57E-05		4.57E-05	2.53E-05		2.53E-05	1.02E-04		1.02E-04
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/L	2.04E+03		2.04E+03	4.64E+03		4.64E+03	3.79E+03		3.79E+03	1.03E+04		1.03E+04
N	109999	Tetrahydrofuran	mg/L							9.17E+01	5.71E-01	5.71E-01			
N	75741	Tetramethyl Lead	mg/L												
N	3440753	Tetrapropyl Lead	mg/L												
N	1314325	Thallic Oxide	mg/L							3.06E-02		3.06E-02			
N	563688	Thallium Acetate	mg/L							3.93E-02		3.93E-02			
N	6533739	Thallium Carbonate	mg/L							3.49E-02		3.49E-02			
N	28249776	Thiobencarb	mg/L	1.54E-01		1.54E-01	3.52E-01		3.52E-01	4.18E-01		4.18E-01	7.82E-01		7.82E-01
N	39196184	Thiofanox	mg/L	1.04E+01		1.04E+01	2.36E+01		2.36E+01	1.30E-01		1.30E-01	5.26E+01		5.26E+01
N	23564058	Thiophanate, Methyl	mg/L	1.07E+02		1.07E+02	2.44E+02		2.44E+02	3.15E+01		3.15E+01	5.42E+02		5.42E+02
N	137268	Thiram	mg/L	1.00E+00		1.00E+00	2.29E+00		2.29E+00	1.27E+00		1.27E+00	5.08E+00		5.08E+00
N	108883	Toluene	mg/L	1.43E+00		1.43E+00	3.25E+00		3.25E+00	4.08E+00		4.08E+00	7.23E+00		7.23E+00
N	26471625	Toluene diisocyanate mixture (TDI)	mg/L	6.58E-05		6.58E-05	1.50E-04		1.50E-04	1.93E-04		1.93E-04	3.33E-04		3.33E-04
N	95807	Toluene-2,4-diamine	mg/L		2.93E-03	2.93E-03		6.67E-03	6.67E-03		1.05E-03	1.05E-03		3.89E-03	3.89E-03
N	95705	Toluene-2,5-diamine	mg/L	2.68E+02		2.68E+02	6.09E+02		6.09E+02	1.98E+02		1.98E+02	1.35E+03		1.35E+03
N	823405	Toluene-2,6-diamine	mg/L	1.09E+01		1.09E+01	2.47E+01		2.47E+01	2.37E+01		2.37E+01	5.49E+01		5.49E+01
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/L		6.33E-03	6.33E-03		1.44E-02	1.44E-02		6.39E-03	6.39E-03		8.42E-03	8.42E-03

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	110861	Pyridine	mg/L	3.58E-02		3.58E-02	3.68E-02		3.68E-02	6.95E-02		6.95E-02	5.50E-02		5.50E-02
N	13593038	Quinalphos	mg/L	2.05E-02		2.05E-02	2.32E-02		2.32E-02	4.10E-02		4.10E-02	3.47E-02		3.47E-02
N	91225	Quinoline	mg/L		6.29E-05	6.29E-05		6.49E-05	6.49E-05		6.29E-05	6.29E-05		6.49E-05	6.49E-05
N		Refractory Ceramic Fibers	mg/L												
N	10453868	Resmethrin	mg/L	5.23E-03		5.23E-03	3.25E-03		3.25E-03	8.27E-03		8.27E-03	4.86E-03		4.86E-03
N	299843	Ronnel	mg/L	1.74E-01		1.74E-01	1.12E-01		1.12E-01	2.80E-01		2.80E-01	1.67E-01		1.67E-01
N	83794	Rotenone	mg/L	1.31E-01		1.31E-01	1.28E-01		1.28E-01	2.50E-01		2.50E-01	1.91E-01		1.91E-01
N	78587050	Savey	mg/L	2.26E+00		2.26E+00				6.71E+00		6.71E+00			
N	7783008	Selenious Acid	mg/L	4.52E-01		4.52E-01				1.34E+00		1.34E+00			
N	14124675	Selenite	mg/L												
N	630104	Selenourea	mg/L	4.52E-01		4.52E-01				1.34E+00		1.34E+00			
N	74051802	Sethoxydim	mg/L	9.93E-01		9.93E-01	7.02E-01		7.02E-01	1.67E+00		1.67E+00	1.05E+00		1.05E+00
N	122349	Simazine	mg/L	2.07E-01	1.19E-02	1.19E-02	2.38E-01	1.52E-02	1.52E-02	4.17E-01	1.19E-02	1.19E-02	3.55E-01	1.52E-02	1.52E-02
N	62476599	Sodium Acifluorfen	mg/L	1.18E+00		1.18E+00				3.49E+00		3.49E+00			
N	148185	Sodium Diethyldithiocarbamate	mg/L	2.53E+00	1.42E-02	1.42E-02	2.25E+01	1.07E-01	1.07E-01	7.06E+00	1.42E-02	1.42E-02	3.36E+01	1.07E-01	1.07E-01
N	62748	Sodium Fluoroacetate	mg/L	1.81E-03		1.81E-03	4.02E+00		4.02E+00	5.36E-03		5.36E-03	6.01E+00		6.01E+00
N	961115	Stirofos (Tetrachlorovinphos)	mg/L	1.33E+00	6.50E-02	6.50E-02	1.62E+00	8.65E-02	8.65E-02	2.73E+00	6.50E-02	6.50E-02	2.43E+00	8.65E-02	8.65E-02
N	57249	Strychnine	mg/L	2.44E-02		2.44E-02	1.50E-01		1.50E-01	6.65E-02		6.65E-02	2.24E-01		2.24E-01
N	100425	Styrene	mg/L	1.49E-01		1.49E-01	9.31E-02		9.31E-02	2.36E-01		2.36E-01	1.39E-01		1.39E-01
N	88671890	Systhane	mg/L	2.26E+00		2.26E+00				6.71E+00		6.71E+00			
Y	1746016	TCDD, 2,3,7,8-	mg/L		4.17E-11	4.17E-11		3.56E-11	3.56E-11		4.17E-11	4.17E-11		3.56E-11	3.56E-11
Y	51207319	TCDF, 2,3,7,8-	mg/L		1.66E-09	1.66E-09		1.42E-09	1.42E-09		1.66E-09	1.66E-09		1.42E-09	1.42E-09
N	21564170	TCMTB	mg/L	5.10E-01		5.10E-01	3.90E-01		3.90E-01	8.84E-01		8.84E-01	5.83E-01		5.83E-01
N	34014181	Tebuthiuron	mg/L	6.16E+00		6.16E+00	1.38E+02		1.38E+02	1.78E+01		1.78E+01	2.06E+02		2.06E+02
N	3383968	Temephos	mg/L	1.27E-01		1.27E-01	8.47E-02		8.47E-02	2.08E-01		2.08E-01	1.27E-01		1.27E-01
N	5902512	Terbacil	mg/L	7.46E-01		7.46E-01	1.27E+00		1.27E+00	1.68E+00		1.68E+00	1.89E+00		1.89E+00
N	13071799	Terbufos	mg/L	4.49E-04		4.49E-04	3.48E-04		3.48E-04	7.84E-04		7.84E-04	5.20E-04		5.20E-04
N	886500	Terbutryn	mg/L	9.67E-03		9.67E-03	6.72E-03		6.72E-03	1.61E-02		1.61E-02	1.00E-02		1.00E-02
N	1920907	Tetrabutyl Lead	mg/L												
N	95943	Tetrachlorobenzene, 1,2,4,5-	mg/L	8.59E-04		8.59E-04	5.50E-04		5.50E-04	1.38E-03		1.38E-03	8.23E-04		8.23E-04
N	630206	Tetrachloroethane, 1,1,1,2-	mg/L	5.10E-01	1.98E-02	1.98E-02	3.90E-01	1.92E-02	1.92E-02	8.84E-01	1.98E-02	1.98E-02	5.83E-01	1.92E-02	1.92E-02
N	79345	Tetrachloroethane, 1,1,2,2-	mg/L	1.90E+00	5.19E-03	5.19E-03	1.82E+00	5.82E-03	5.82E-03	3.60E+00	5.19E-03	5.19E-03	2.72E+00	5.82E-03	5.82E-03
Y	127184	Tetrachloroethylene	mg/L	1.67E-02	9.02E-04	9.02E-04	1.05E-02	7.77E-04	7.77E-04	2.66E-02	9.02E-04	9.02E-04	1.57E-02	7.77E-04	7.77E-04
N	58902	Tetrachlorophenol, 2,3,4,6-	mg/L	1.48E-01		1.48E-01	9.75E-02		9.75E-02	2.41E-01		2.41E-01	1.46E-01		1.46E-01
N	5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	mg/L		5.27E-06	5.27E-06		4.60E-06	4.60E-06		5.27E-06	5.27E-06		4.60E-06	4.60E-06
N	3689245	Tetraethyl Dithiopyrophosphate	mg/L	2.50E-02		2.50E-02	3.48E-02		3.48E-02	5.34E-02		5.34E-02	5.20E-02		5.20E-02
N	78002	Tetraethyl Lead	mg/L	7.02E-06		7.02E-06	1.95E-05		1.95E-05	1.74E-05		1.74E-05	2.91E-05		2.91E-05
N	811972	Tetrafluoroethane, 1,1,1,2-	mg/L	1.25E+03		1.25E+03	1.98E+03		1.98E+03	2.77E+03		2.77E+03	2.96E+03		2.96E+03
N	109999	Tetrahydrofuran	mg/L	1.90E+01	5.71E-01	5.71E-01				5.63E+01	5.71E-01	5.71E-01			
N	75741	Tetramethyl Lead	mg/L												
N	3440753	Tetrapropyl Lead	mg/L												
N	1314325	Thallic Oxide	mg/L	6.33E-03		6.33E-03				1.88E-02		1.88E-02			
N	563688	Thallium Acetate	mg/L	8.14E-03		8.14E-03				2.41E-02		2.41E-02			
N	6533739	Thallium Carbonate	mg/L	7.24E-03		7.24E-03				2.15E-02		2.15E-02			
N	28249776	Thiobencarb	mg/L	1.91E-01		1.91E-01	1.50E-01		1.50E-01	3.35E-01		3.35E-01	2.24E-01		2.24E-01
N	39196184	Thiofanox	mg/L	2.71E-02		2.71E-02	1.01E+01		1.01E+01	8.02E-02		8.02E-02	1.51E+01		1.51E+01
N	23564058	Thiophanate, Methyl	mg/L	6.94E+00		6.94E+00	1.04E+02		1.04E+02	1.99E+01		1.99E+01	1.55E+02		1.55E+02
N	137268	Thiram	mg/L	3.51E-01		3.51E-01	9.75E-01		9.75E-01	8.71E-01		8.71E-01	1.46E+00		1.46E+00
N	108883	Toluene	mg/L	1.99E+00		1.99E+00	1.39E+00		1.39E+00	3.31E+00		3.31E+00	2.07E+00		2.07E+00
N	26471625	Toluene diisocyanate mixture (TDI)	mg/L	9.74E-05		9.74E-05	6.39E-05		6.39E-05	1.58E-04		1.58E-04	9.55E-05		9.55E-05
N	95807	Toluene-2,4-diamine	mg/L		1.05E-03	1.05E-03		3.89E-03	3.89E-03		1.05E-03	1.05E-03		3.89E-03	3.89E-03
N	95705	Toluene-2,5-diamine	mg/L	4.81E+01		4.81E+01	2.60E+02		2.60E+02	1.30E+02		1.30E+02	3.88E+02		3.88E+02
N	823405	Toluene-2,6-diamine	mg/L	8.76E+00		8.76E+00	1.05E+01		1.05E+01	1.79E+01		1.79E+01	1.57E+01		1.57E+01
N	95534	Toluidine, o- (Methylaniline, 2-)	mg/L		6.39E-03	6.39E-03		8.42E-03	8.42E-03		6.39E-03	6.39E-03		8.42E-03	8.42E-03

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action v[illegible] less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	106490	Toluidine, p-	mg/L		2.55E-03	2.55E-03		5.82E-03	5.82E-03		3.37E-03	3.37E-03		3.40E-03	3.40E-03
N	8001352	Toxaphene	mg/L		3.41E-04	3.41E-04		7.76E-04	7.76E-04		4.68E-04	4.68E-04		4.53E-04	4.53E-04
N	66841256	Tralomethrin	mg/L							3.28E+00		3.28E+00			
N	2303175	Triallate	mg/L	1.45E-01		1.45E-01	3.30E-01		3.30E-01	4.04E-01		4.04E-01	7.34E-01		7.34E-01
N	82097505	Triasulfuron	mg/L							4.37E+00		4.37E+00			
N	615543	Tribromobenzene, 1,2,4-	mg/L	3.42E-02		3.42E-02	7.78E-02		7.78E-02	9.78E-02		9.78E-02	1.73E-01		1.73E-01
N	594150	Tribromochloromethane	mg/L												
N	49690940	Tribromodiphenyl Ether	mg/L												
N	56359	Tributyltin Oxide	mg/L							1.31E-01		1.31E-01			
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/L	1.00E+03		1.00E+03	2.29E+03		2.29E+03	2.45E+03		2.45E+03	5.08E+03		5.08E+03
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/L												
N	76039	Trichloroacetic Acid	mg/L												
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/L								1.50E-01	1.50E-01			
N	634935	Trichloroaniline, 2,4,6-	mg/L		4.35E-03	4.35E-03		9.91E-03	9.91E-03		6.44E-03	6.44E-03		5.79E-03	5.79E-03
N	120821	Trichlorobenzene, 1,2,4-	mg/L	3.89E-02		3.89E-02	8.87E-02		8.87E-02	1.14E-01		1.14E-01	1.97E-01		1.97E-01
N	71556	Trichloroethane, 1,1,1-	mg/L	7.44E-01		7.44E-01	1.69E+00		1.69E+00	1.95E+00		1.95E+00	3.77E+00		3.77E+00
N	79005	Trichloroethane, 1,1,2-	mg/L	1.55E-01	1.90E-02	1.90E-02	3.53E-01	4.33E-02	4.33E-02	3.67E-01	2.13E-02	2.13E-02	7.84E-01	2.53E-02	2.53E-02
Y	79016	Trichloroethylene	mg/L	2.26E-02	9.58E-03	9.58E-03	5.14E-02	2.18E-02	2.18E-02	6.60E-02	1.44E-02	1.44E-02	1.14E-01	1.27E-02	1.27E-02
N	75694	Trichlorofluoromethane	mg/L	1.63E+00		1.63E+00	3.71E+00		3.71E+00	4.71E+00		4.71E+00	8.25E+00		8.25E+00
N	95954	Trichlorophenol, 2,4,5-	mg/L	3.40E-01		3.40E-01	7.75E-01		7.75E-01	9.96E-01		9.96E-01	1.72E+00		1.72E+00
N	88062	Trichlorophenol, 2,4,6-	mg/L		8.66E-03	8.66E-03		1.97E-02	1.97E-02		1.31E-02	1.31E-02		1.15E-02	1.15E-02
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/L	6.42E-02		6.42E-02	1.46E-01		1.46E-01	1.82E-01		1.82E-01	3.25E-01		3.25E-01
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/L	5.58E-02		5.58E-02	1.27E-01		1.27E-01	1.61E-01		1.61E-01	2.82E-01		2.82E-01
N	598776	Trichloropropane, 1,1,2-	mg/L	4.46E-01		4.46E-01	1.02E+00		1.02E+00	8.29E-01		8.29E-01	2.26E+00		2.26E+00
N	96184	Trichloropropane, 1,2,3-	mg/L	4.38E-03	2.92E-06	2.92E-06	9.97E-03	6.65E-06	6.65E-06	1.31E-02	4.52E-06	4.52E-06	2.22E-02	3.88E-06	3.88E-06
N	96195	Trichloropropene, 1,2,3-	mg/L	6.98E-02		6.98E-02	1.59E-01		1.59E-01	1.91E-01		1.91E-01	3.53E-01		3.53E-01
N	2077465	Trichlorotoluene, 2,3,6-	mg/L												
N	2014837	Trichlorotoluene, alpha 2,6-	mg/L												
N	58138082	Tridiphane	mg/L							1.31E+00		1.31E+00			
N	5224237	Triethyl Lead	mg/L												
N	121448	Triethylamine	mg/L	1.43E-01		1.43E-01	3.25E-01		3.25E-01	2.87E-01		2.87E-01	7.23E-01		7.23E-01
N	1582098	Trifluralin	mg/L	1.52E-02	7.37E-03	7.37E-03	3.46E-02	1.68E-02	1.68E-02	4.49E-02	1.13E-02	1.13E-02	7.70E-02	9.81E-03	9.81E-03
N	7442139	Trimethyl Lead	mg/L												
N	512561	Trimethyl Phosphate	mg/L		1.65E+00	1.65E+00		3.76E+00	3.76E+00		1.12E-01	1.12E-01		2.20E+00	2.20E+00
N	95636	Trimethylbenzene, 1,2,4-	mg/L							2.18E+01		2.18E+01			
N	108678	Trimethylbenzene, 1,3,5-	mg/L							2.18E+01		2.18E+01			
N	1762261	Trimethylethyl Lead	mg/L												
N	99354	Trinitrobenzene, 1,3,5-	mg/L	1.15E+01		1.15E+01	2.62E+01		2.62E+01	9.50E+00		9.50E+00	5.83E+01		5.83E+01
N	479458	Trinitrophenylmethylnitramine	mg/L	2.26E+00		2.26E+00	5.14E+00		5.14E+00	2.65E+00		2.65E+00	1.14E+01		1.14E+01
N	118967	Trinitrotoluene, 2,4,6-	mg/L	3.54E-02	6.61E-02	3.54E-02	8.07E-02	1.51E-01	8.07E-02	7.14E-02	6.02E-02	6.02E-02	1.79E-01	8.80E-02	8.80E-02
N	6618037	Tripropyl Lead	mg/L												
N	1929777	Vernolate	mg/L	3.46E-03		3.46E-03	7.88E-03		7.88E-03	1.01E-02		1.01E-02	1.75E-02		1.75E-02
N	50471448	Vinclozolin	mg/L	9.29E-01		9.29E-01	2.12E+00		2.12E+00	2.22E+00		2.22E+00	4.70E+00		4.70E+00
N	108054	Vinyl Acetate	mg/L	2.17E+01		2.17E+01	4.95E+01		4.95E+01	5.67E+01		5.67E+01	1.10E+02		1.10E+02
N	593602	Vinyl Bromide	mg/L	5.01E-02	1.49E-02	1.49E-02	1.14E-01	3.38E-02	3.38E-02	1.07E-01	1.46E-02	1.46E-02	2.53E-01	1.98E-02	1.98E-02
Y	75014	Vinyl Chloride	mg/L	1.65E-01	1.10E-03	1.10E-03	3.76E-01	2.50E-03	2.50E-03	3.59E-01	1.10E-03	1.10E-03	8.35E-01	1.46E-03	1.46E-03
N	81812	Warfarin	mg/L	1.28E-02		1.28E-02	2.92E-02		2.92E-02	2.97E-02		2.97E-02	6.49E-02		6.49E-02
Y	1330207	Xylene, Mixture	mg/L	7.78E+00		7.78E+00	1.77E+01		1.77E+01	2.27E+01		2.27E+01	3.94E+01		3.94E+01
Y	108383	Xylene, m-	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	2.34E+01		2.34E+01	4.06E+01		4.06E+01
Y	95476	Xylene, o-	mg/L	8.03E+00		8.03E+00	1.83E+01		1.83E+01	2.34E+01		2.34E+01	4.06E+01		4.06E+01
Y	106423	Xylene, p-	mg/L												
N	12122677	Zineb	mg/L	3.04E+01		3.04E+01	6.93E+01		6.93E+01	1.76E+01		1.76E+01	1.54E+02		1.54E+02
Y	14596102	Am-241	pCi/L								4.11E+01	4.11E+01			
Y	10198400	Co-60	pCi/L								2.72E+02	2.72E+02			

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
N	106490	Toluidine, p-	mg/L		3.37E-03	3.37E-03		3.40E-03	3.40E-03		3.37E-03	3.37E-03		3.40E-03	3.40E-03
N	8001352	Toxaphene	mg/L		4.68E-04	4.68E-04		4.53E-04	4.53E-04		4.68E-04	4.68E-04		4.53E-04	4.53E-04
N	66841256	Tralomethrin	mg/L	*6.79E-01*		*6.79E-01*				*2.01E+00*		*2.01E+00*			
N	2303175	Triallate	mg/L	1.90E-01		1.90E-01	1.41E-01		1.41E-01	3.25E-01		3.25E-01	2.10E-01		2.10E-01
N	82097505	Triasulfuron	mg/L	9.05E-01		9.05E-01				2.68E+00		2.68E+00			
N	615543	Tribromobenzene, 1,2,4-	mg/L	4.78E-02		4.78E-02	3.32E-02		3.32E-02	7.96E-02		7.96E-02	4.96E-02		4.96E-02
N	594150	Tribromochloromethane	mg/L												
N	49690940	Tribromodiphenyl Ether	mg/L												
N	56359	Tributyltin Oxide	mg/L	2.71E-02		2.71E-02				8.05E-02		8.05E-02			
N	76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/L	9.95E+02		9.95E+02	9.75E+02		9.75E+02	1.90E+03		1.90E+03	1.46E+03		1.46E+03
N	3380345	Trichloro-2'-hydroxydiphenylether	mg/L												
N	76039	Trichloroacetic Acid	mg/L												
N	33663502	Trichloroaniline HCl, 2,4,6-	mg/L		1.50E-01	1.50E-01					1.50E-01	1.50E-01			
N	634935	Trichloroaniline, 2,4,6-	mg/L		6.44E-03	6.44E-03		5.79E-03	5.79E-03		6.44E-03	6.44E-03		5.79E-03	5.79E-03
N	120821	Trichlorobenzene, 1,2,4-	mg/L	5.71E-02		5.71E-02	3.78E-02		3.78E-02	9.30E-02		9.30E-02	5.65E-02		5.65E-02
N	71556	Trichloroethane, 1,1,1-	mg/L	8.51E-01		8.51E-01	7.22E-01		7.22E-01	1.54E+00		1.54E+00	1.08E+00		1.08E+00
N	79005	Trichloroethane, 1,1,2-	mg/L	1.45E-01	2.13E-02	2.13E-02	1.50E-01	2.53E-02	2.53E-02	2.82E-01	2.13E-02	2.13E-02	2.25E-01	2.53E-02	2.53E-02
Y	79016	Trichloroethylene	mg/L	3.32E-02	1.44E-02	1.44E-02	2.19E-02	1.27E-02	1.27E-02	5.40E-02	1.44E-02	1.44E-02	3.28E-02	1.27E-02	1.27E-02
N	75694	Trichlorofluoromethane	mg/L	2.33E+00		2.33E+00	1.58E+00		1.58E+00	3.84E+00		3.84E+00	2.36E+00		2.36E+00
N	95954	Trichlorophenol, 2,4,5-	mg/L	5.03E-01		5.03E-01	3.30E-01		3.30E-01	8.16E-01		8.16E-01	4.94E-01		4.94E-01
N	88062	Trichlorophenol, 2,4,6-	mg/L		1.31E-02	1.31E-02		1.15E-02	1.15E-02		1.31E-02	1.31E-02		1.15E-02	1.15E-02
N	93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/L	8.83E-02		8.83E-02	6.24E-02		6.24E-02	1.48E-01		1.48E-01	9.32E-02		9.32E-02
N	93765	Trichlorophenoxyacetic Acid, 2,4,5-	mg/L	7.96E-02		7.96E-02	5.41E-02		5.41E-02	1.31E-01		1.31E-01	8.09E-02		8.09E-02
N	598776	Trichloropropane, 1,1,2-	mg/L	2.74E-01		2.74E-01	4.33E-01		4.33E-01	6.06E-01		6.06E-01	6.47E-01		6.47E-01
N	96184	Trichloropropane, 1,2,3-	mg/L	6.77E-03	4.52E-06	4.52E-06	4.25E-03	3.88E-06	3.88E-06	1.08E-02	4.52E-06	4.52E-06	6.36E-03	3.88E-06	3.88E-06
N	96195	Trichloropropene, 1,2,3-	mg/L	8.80E-02		8.80E-02	6.78E-02		6.78E-02	1.53E-01		1.53E-01	1.01E-01		1.01E-01
N	2077465	Trichlorotoluene, 2,3,6-	mg/L												
N	2014837	Trichlorotoluene, alpha 2,6-	mg/L												
N	58138082	Tridiphane	mg/L	2.71E-01		2.71E-01				8.05E-01		8.05E-01			
N	5224237	Triethyl Lead	mg/L												
N	121448	Triethylamine	mg/L	1.00E-01		1.00E-01	1.39E-01		1.39E-01	2.13E-01		2.13E-01	2.07E-01		2.07E-01
N	1582098	Trifluralin	mg/L	2.30E-02	1.13E-02	1.13E-02	1.48E-02	9.81E-03	9.81E-03	3.69E-02	1.13E-02	1.13E-02	2.21E-02	9.81E-03	9.81E-03
N	7442139	Trimethyl Lead	mg/L												
N	512561	Trimethyl Phosphate	mg/L		1.12E-01	1.12E-01		2.20E+00	2.20E+00		1.12E-01	1.12E-01		2.20E+00	2.20E+00
N	95636	Trimethylbenzene, 1,2,4-	mg/L	4.52E+00		4.52E+00				1.34E+01		1.34E+01			
N	108678	Trimethylbenzene, 1,3,5-	mg/L	4.52E+00		4.52E+00				1.34E+01		1.34E+01			
N	1762261	Trimethylethyl Lead	mg/L												
N	99354	Trinitrobenzene, 1,3,5-	mg/L	2.36E+00		2.36E+00	1.12E+01		1.12E+01	6.28E+00		6.28E+00	1.67E+01		1.67E+01
N	479458	Trinitrophenylmethylnitramine	mg/L	7.20E-01		7.20E-01	2.19E+00		2.19E+00	1.81E+00		1.81E+00	3.27E+00		3.27E+00
N	118967	Trinitrotoluene, 2,4,6-	mg/L	2.49E-02	6.02E-02	2.49E-02	3.44E-02	8.80E-02	3.44E-02	5.30E-02	6.02E-02	5.30E-02	5.14E-02	8.80E-02	5.14E-02
N	6618037	Tripropyl Lead	mg/L												
N	1929777	Vernolate	mg/L	5.11E-03		5.11E-03	3.36E-03		3.36E-03	8.30E-03		8.30E-03	5.02E-03		5.02E-03
N	50471448	Vinclozolin	mg/L	8.85E-01		8.85E-01	9.02E-01		9.02E-01	1.71E+00		1.71E+00	1.35E+00		1.35E+00
N	108054	Vinyl Acetate	mg/L	2.47E+01		2.47E+01	2.11E+01		2.11E+01	4.48E+01		4.48E+01	3.16E+01		3.16E+01
N	593602	Vinyl Bromide	mg/L	3.90E-02	1.46E-02	1.46E-02	4.86E-02	1.98E-02	1.98E-02	8.05E-02	1.46E-02	1.46E-02	7.26E-02	1.98E-02	1.98E-02
Y	75014	Vinyl Chloride	mg/L	1.32E-01	1.10E-03	1.10E-03	1.60E-01	1.46E-03	1.46E-03	2.71E-01	1.10E-03	1.10E-03	2.39E-01	1.46E-03	1.46E-03
N	81812	Warfarin	mg/L	1.15E-02		1.15E-02	1.24E-02		1.24E-02	2.27E-02		2.27E-02	1.86E-02		1.86E-02
Y	1330207	Xylene, Mixture	mg/L	1.14E+01		1.14E+01	7.55E+00		7.55E+00	1.86E+01		1.86E+01	1.13E+01		1.13E+01
Y	108383	Xylene, m-	mg/L	1.17E+01		1.17E+01	7.80E+00		7.80E+00	1.92E+01		1.92E+01	1.17E+01		1.17E+01
Y	95476	Xylene, o-	mg/L	1.17E+01		1.17E+01	7.80E+00		7.80E+00	*1.92E+01*		*1.92E+01*	*1.17E+01*		*1.17E+01*
Y	106423	Xylene, p-	mg/L												
N	12122677	Zineb	mg/L	4.13E+00		4.13E+00	2.95E+01		2.95E+01	1.14E+01		1.14E+01	4.41E+01		4.41E+01
Y	14596102	Am-241	pCi/L		4.11E+01	4.11E+01					4.11E+01	4.11E+01			
Y	10198400	Co-60	pCi/L		2.72E+02	2.72E+02					2.72E+02	2.72E+02			

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action v[illegible]less of hazard- and cancer-based value.

Table A.19. Surface Water No . .ction Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary				Excavation Worker			Industrial Worker			Adult Recreational (Swimming)			Adult Recreational (Wading)		
COPC?	Parameter	Chemical	Units	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
Y	10045973	Cs-137+D	pCi/L								1.41E+02	1.41E+02			
Y	13994202	Np-237+D	pCi/L								6.34E+01	6.34E+01			
Y	13981163	Pu-238	pCi/L								3.26E+01	3.26E+01			
Y	15117483	Pu-239	pCi/L								3.17E+01	3.17E+01			
Y	14119336	Pu-240	pCi/L								3.17E+01	3.17E+01			
Y	13982633	Ra-226+D	pCi/L								1.11E+01	1.11E+01			
Y	14859677	Rn-222+D	pCi/L												
Y	10098972	Sr-90+D	pCi/L								5.78E+01	5.78E+01			
Y	14133767	Tc-99	pCi/L								1.55E+03	1.55E+03			
Y	14274829	Th-228+D	pCi/L								1.42E+01	1.42E+01			
Y	14269637	Th-230	pCi/L								4.70E+01	4.70E+01			
Y	N2608	Th-232	pCi/L								4.23E+01	4.23E+01			
Y	13966295	U-234	pCi/L								6.04E+01	6.04E+01			
Y	15117961	U-235+D	pCi/L								5.95E+01	5.95E+01			
Y	24678828	U-238+D	pCi/L								4.91E+01	4.91E+01			

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action value is less of hazard- and cancer-based value.

Table A.19. Surface Water No Action Levels for the PGDP

(Values calculated on 12/12/2001 and are based on the best available information.)

Primary COPC?	Parameter	Chemical	Units	Child Recreational (Swimming)			Child Recreational (Wading)			Teen Recreational (Swimming)			Teen Recreational (Wading)		
				Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action	Hazard	Cancer	No Action
Y	10045973	Cs-137+D	pCi/L		1.41E+02	1.41E+02					1.41E+02	1.41E+02			
Y	13994202	Np-237+D	pCi/L		6.34E+01	6.34E+01					6.34E+01	6.34E+01			
Y	13981163	Pu-238	pCi/L		3.26E+01	3.26E+01					3.26E+01	3.26E+01			
Y	15117483	Pu-239	pCi/L		3.17E+01	3.17E+01					3.17E+01	3.17E+01			
Y	14119336	Pu-240	pCi/L		3.17E+01	3.17E+01					3.17E+01	3.17E+01			
Y	13982633	Ra-226+D	pCi/L		1.11E+01	1.11E+01					1.11E+01	1.11E+01			
Y	14859677	Rn-222+D	pCi/L												
Y	10098972	Sr-90+D	pCi/L		5.78E+01	5.78E+01					5.78E+01	5.78E+01			
Y	14133767	Tc-99	pCi/L		1.55E+03	1.55E+03					1.55E+03	1.55E+03			
Y	14274829	Th-228+D	pCi/L		1.42E+01	1.42E+01					1.42E+01	1.42E+01			
Y	14269637	Th-230	pCi/L		4.70E+01	4.70E+01					4.70E+01	4.70E+01			
Y	N2608	Th-232	pCi/L		4.23E+01	4.23E+01					4.23E+01	4.23E+01			
Y	13966295	U-234	pCi/L		6.04E+01	6.04E+01					6.04E+01	6.04E+01			
Y	15117961	U-235+D	pCi/L		5.95E+01	5.95E+01					5.95E+01	5.95E+01			
Y	24678828	U-238+D	pCi/L		4.91E+01	4.91E+01					4.91E+01	4.91E+01			

Hazard-based values calculated using target HI of 0.1.
Cancer-based values calculated using target ELCR of 1E-06.
No action v 'ess of hazard- and cancer-based value.

Table A.20. Regulatory Action Levels for the PGDP
(Value compiled on December 12, 2001)

Parameter	Chemical	Units	Primary MCLs	Secondary MCLs	State Water Supply WQC	State Fish Consump. WQC	Fed. Combined WQC
83329	Acenaphthene	mg/l					1.2
107028	Acrolein	mg/l			0.32	0.78	0.32
107131	Acrylonitrile	mg/l			0.000058	0.00065	0.000059
15972608	Alachlor	mg/l	0.002				
116063	Aldicarb	mg/l	0.003				
1646884	Aldicarb Sulfone	mg/l	0.003				
309002	Aldrin	mg/l			0.000000074	0.000000079	0.00000013
7429905	Aluminum	mg/l		0.2			
120127	Anthracene	mg/l					9.6
7440360	Antimony (metallic)	mg/l	0.006		0.146	45	0.014
12674112	Aroclor 1016	mg/l					0.00000017
12674112	Aroclor 1016	mg/l					0.00000017
11104282	Aroclor 1221	mg/l					0.00000017
11104282	Aroclor 1221	mg/l					0.00000017
11141165	Aroclor 1232	mg/l					0.00000017
11141165	Aroclor 1232	mg/l					0.00000017
53469219	Aroclor 1242	mg/l					0.00000017
53469219	Aroclor 1242	mg/l					0.00000017
12672296	Aroclor 1248	mg/l					0.00000017
12672296	Aroclor 1248	mg/l					0.00000017
11097691	Aroclor 1254	mg/l					0.00000017
11097691	Aroclor 1254	mg/l					0.00000017
11096825	Aroclor 1260	mg/l					0.00000017
11096825	Aroclor 1260	mg/l					0.00000017
7440382	Arsenic, Inorganic	mg/l	0.01				0.000018
1332214	Asbestos	fibers/l	7,000,000		30,000		7,000,000
1912249	Atrazine	mg/l	0.003				
7440393	Barium	mg/l	2		1		
56553	Benz[a]anthracene	mg/l					0.0000044
71432	Benzene	mg/l	0.005		0.0012	0.071	0.0012
92875	Benzidine	mg/l			0.00000012	0.00000053	0.00000012
50328	Benzo[a]pyrene	mg/l	0.0002				0.0000044
205992	Benzo[b]fluoranthene	mg/l					0.0000044
207089	Benzo[k]fluoranthene	mg/l					0.0000044
7440417	Beryllium and compounds	mg/l	0.004		0.0000068	0.000117	

Values taken from best available information.

Table A.20. Regulatory Action Levels for the PGDP
(Value compiled on December 12, 2001)

Parameter	Chemical	Units	Primary MCLs	Secondary MCLs	State Water Supply WQC	State Fish Consump. WQC	Fed. Combined WQC
111444	Bis(2-chloroethyl)ether	mg/l			0.00003	0.00136	0.000031
39638329	Bis(2-chloroisopropyl)ether	mg/l			0.0347	4.36	1.4
117817	Bis(2-ethylhexyl)phthalate	mg/l	0.006		15	50	0.0018
75274	Bromodichloromethane	mg/l	0.08				0.00056
75252	Bromoform	mg/l	0.08				0.0043
74839	Bromomethane	mg/l					0.048
85687	Butyl Benzyl Phthlate	mg/l					3
7440439	Cadmium (Water)	mg/l	0.005		0.01		
1563662	Carbofuran	mg/l	0.04				
56235	Carbon Tetrachloride	mg/l	0.005		0.0004	0.00694	0.00025
57749	Chlordane	mg/l	0.002		0.00000046	0.00000048	0.0000021
16887006	Chloride	mg/l		250	250		
7758192	Chlorite (Sodium Salt)	mg/l	1				
79118	Chloroacetic Acid	mg/l	0.06				
108907	Chlorobenzene	mg/l	0.1		0.488		0.68
67663	Chloroform	mg/l	0.08		0.0057	0.47	0.0057
91587	Chloronaphthalene, Beta-	mg/l					1.7
95578	Chlorophenol, 2-	mg/l					0.12
16065831	Chromium (III) (Insoluble Salts)	mg/l	0.1		33	670	
18540299	Chromium VI (particulates)	mg/l	0.1				
218019	Chrysene	mg/l					0.0000044
7440508	Copper	mg/l	1.3	1	1		1.3
57125	Cyanide (CN-)	mg/l	0.2		0.2		0.7
72548	DDD	mg/l					0.00000083
72559	DDE	mg/l					0.00000059
50293	DDT	mg/l			0.000000024	0.000000024	0.00000059
75990	Dalapon	mg/l	0.2				
103231	Di(2-ethylhexyl)adipate	mg/l	0.4				
53703	Dibenz[a,h]anthracene	mg/l					0.0000044
96128	Dibromo-3-chloropropane, 1,2-	mg/l	0.0002				
124481	Dibromochloromethane	mg/l	0.08				0.00041
106934	Dibromoethane, 1,2-	mg/l	0.00005				
84742	Dibutyl Phthalate	mg/l			34	154	2.7
79436	Dichloroacetic Acid	mg/l	0.06				
95501	Dichlorobenzene, 1,2-	mg/l	0.6	0.01	0.4	2.6	2.7

Values [illegible] from best available information.

Table A.20. Regulatory Action Levels for the PGDP
(Value compiled on December 12, 2001)

Parameter	Chemical	Units	Primary MCLs	Secondary MCLs	State Water Supply WQC	State Fish Consump. WQC	Fed. Combined WQC
541731	Dichlorobenzene, 1,3-	mg/l			0.4	2.6	0.4
106467	Dichlorobenzene, 1,4-	mg/l	0.075	0.005	0.4	2.6	0.4
91941	Dichlorobenzidine, 3,3'-	mg/l			0.00001	0.00002	0.00004
107062	Dichloroethane, 1,2-	mg/l	0.005		0.00094	0.243	0.00038
75354	Dichloroethylene, 1,1-	mg/l	0.007		0.000033	0.00185	0.000057
156592	Dichloroethylene, 1,2-cis-	mg/l	0.07				
156605	Dichloroethylene, 1,2-trans-	mg/l	0.1				0.7
120832	Dichlorophenol, 2,4-	mg/l			3.09		0.093
94757	Dichlorophenoxy Acetic Acid, 2,4-	mg/l	0.07				
78875	Dichloropropane, 1,2-	mg/l	0.005				0.00052
542756	Dichloropropene, 1,3-	mg/l			0.087	14.1	0.01
10061015	Dichloropropene, cis-1,3-	mg/l			0.087	14.1	
10051026	Dichloropropene, trans-1,3-	mg/l			0.087	14.1	
60571	Dieldrin	mg/l			0.000000071	0.000000076	0.00000014
84662	Diethyl Phthalate	mg/l			350	1,800	23
105679	Dimethylphenol, 2,4-	mg/l					0.54
131113	Dimethylphthalate	mg/l			313	2,900	313
534521	Dinitro-o-cresol, 4,6-	mg/l			0.0134	0.765	0.0134
51285	Dinitrophenol, 2,4-	mg/l			0.07	14.3	0.07
329715	Dinitrophenol, 2,5-	mg/l			0.07	14.3	
573568	Dinitrophenol, 2,6-	mg/l			0.07	14.3	
121142	Dinitrotoluene, 2,4-	mg/l			0.00011	0.0091	0.00011
122667	Diphenylhydrazine, 1,2-	mg/l			0.000042	0.00056	0.00004
85007	Diquat	mg/l	0.02				
115297	Endosulfan	mg/l			0.074	0.159	
1031078	Endosulfan sulphate	mg/l					0.11
959988	Endosulfan, alpha-	mg/l					0.11
33213659	Endosulfan, beta-	mg/l					0.11
145733	Endothall	mg/l	0.1				
72208	Endrin	mg/l	0.002		0.001		0.00076
7421934	Endrin aldehyde	mg/l					0.00076
100414	Ethylbenzene	mg/l	0.7	0.03	3.1	29	3.1
206440	Fluoranthene	mg/l			0.042	0.054	0.3
86737	Fluorene	mg/l					1.3
7782414	Fluorine (Soluble Fluoride)	mg/l	4	2	1		

Values taken from best available information.

Table A.20. Regulatory Action Levels for the PGDP
(Value compiled on December 12, 2001)

Parameter	Chemical	Units	Primary MCLs	Secondary MCLs	State Water Supply WQC	State Fish Consump. WQC	Fed. Combined WQC
1071836	Glyphosate	mg/l	0.7				
76448	Heptachlor	mg/l	0.0004		0.00000028	0.00000029	0.00000021
1024573	Heptachlor Epoxide	mg/l	0.0002				0.0000001
118741	Hexachlorobenzene	mg/l	0.001		0.00000072	0.00000074	0.00000075
87683	Hexachlorobutadiene	mg/l			0.00045	0.05	0.00044
319846	Hexachlorocyclohexane, Alpha-	mg/l			0.000009	0.000031	0.0000039
319857	Hexachlorocyclohexane, Beta-	mg/l			0.000016	0.0000547	0.000014
58899	Hexachlorocyclohexane, Gamma-	mg/l	0.0002		0.000019	0.0000625	0.000019
608731	Hexachlorocyclohexane, Technical	mg/l			0.000012	0.0000414	
77474	Hexachlorocyclopentadiene	mg/l	0.05	0.008	0.206		0.24
67721	Hexachloroethane	mg/l			0.0019	0.00874	0.0019
193395	Indeno[1,2,3-cd]pyrene	mg/l					0.0000044
7439896	Iron	mg/l		0.3			
78591	Isophorone	mg/l			5.2	520	0.036
7439921	Lead And Compounds	mg/l	0.015		0.05		
7439965	Manganese (Water)	mg/l		0.05	0.05		
7439976	Mercury (elemental)	mg/l	0.002		0.000144	0.000146	0.00005
7439976	Mercury, Inorganic Salts	mg/l	0.002		0.000144	0.000146	0.00005
72435	Methoxychlor	mg/l	0.04				
75092	Methylene Chloride	mg/l	0.005				0.0047
7440020	Nickel Soluble Salts	mg/l	0.1		0.61	4.6	0.61
14797558	Nitrate	mg/l	10		10		
14797650	Nitrite	mg/l	1				
98953	Nitrobenzene	mg/l			19.8		0.017
924163	Nitroso-di-N-butylamine, N-	mg/l			0.0000064	0.000587	
621647	Nitroso-di-N-propylamine, N-	mg/l					0.000005
55185	Nitrosodiethylamine, N-	mg/l			0.0000008	0.00124	
62759	Nitrosodimethylamine, N-	mg/l			0.0000014	0.016	0.00000069
86306	Nitrosodiphenylamine, N-	mg/l			0.0049	0.0161	0.005
930552	Nitrosopyrrolidine, N-	mg/l			0.000016	0.0919	
23135220	Oxamyl	mg/l	0.2				
608935	Pentachlorobenzene	mg/l			0.074	0.085	
87865	Pentachlorophenol	mg/l	0.001	0.03	1		0.00028
108952	Phenol	mg/l			3.5		21
1918021	Picloram	mg/l	0.5				

Values taken from best available information.

Table A.20. Regulatory Action Levels for the PGDP
(Value compiled on December 12, 2001)

Parameter	Chemical	Units	Primary MCLs	Secondary MCLs	State Water Supply WQC	State Fish Consump. WQC	Fed. Combined WQC
1336363	Polychlorinated Biphenyls (Total) (high risk)	mg/l	0.0005		0.000000079	0.000000079	0.00000017
1336363	Polychlorinated Biphenyls (Total) (low risk)	mg/l	0.0005		0.000000079	0.000000079	0.00000017
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	mg/l	0.0005		0.000000079	0.000000079	0.00000017
50328	Polynuclear Aromatic Hydrocarbons (Total)	mg/l			0.000028	0.0000311	
129000	Pyrene	mg/l					0.96
7782492	Selenium	mg/l	0.05		0.01		0.17
7440224	Silver	mg/l		0.1	0.05		
122349	Simazine	mg/l	0.004				
100425	Styrene	mg/l	0.1	0.01			
14808798	Sulfate	mg/l	500	250	250		
1746016	TCDD, 2,3,7,8-	mg/l	0.00000003				1.3E-11
95943	Tetrachlorobenzene, 1,2,4,5-	mg/l			0.038	0.048	
79345	Tetrachloroethane, 1,1,2,2-	mg/l			0.00017	0.0107	0.00017
127184	Tetrachloroethylene	mg/l	0.005		0.0008	0.00885	0.0008
7440280	Thallium (Soluble Salts)	mg/l	0.002		0.013	0.048	0.0017
108883	Toluene	mg/l	1	0.04	14.3	424	6.8
8001352	Toxaphene	mg/l	0.003		0.00000071	0.00000073	0.00000073
76039	Trichloroacetic Acid	mg/l	0.06				
120821	Trichlorobenzene, 1,2,4-	mg/l	0.07				0.26
71556	Trichloroethane, 1,1,1-	mg/l	0.2		18.4	1,030	
79005	Trichloroethane, 1,1,2-	mg/l	0.005		0.0006	0.0418	0.0006
79016	Trichloroethylene	mg/l	0.005		0.0027	0.0807	0.0027
95954	Trichlorophenol, 2,4,5-	mg/l			2.6		
88062	Trichlorophenol, 2,4,6-	mg/l			0.0012	0.0036	0.0021
93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	mg/l	0.05				
	Uranium (Soluble Salts)	mg/l	0.03				
75014	Vinyl Chloride	mg/l	0.002		0.002	0.525	0.002
1330207	Xylene, Mixture	mg/l	10	0.02			
7440666	Zinc (Metallic)	mg/l		5			9.1
12587461	Gross alpha	pCi/l	15				
12587472	Gross beta	mrem/yr	4				
10028178	H-3	pCi/l	20,000				
13982633	Ra-226	pCi/l	5				
13982633	Ra-226+D	pCi/l	5				
15262201	Ra-228	pCi/l	5				

Values taken from best available information.

Table A.20. Regulatory Action Levels for the PGDP

(Value compiled on December 12, 2001)

Parameter	Chemical	Units	Primary MCLs	Secondary MCLs	State Water Supply WQC	State Fish Consump. WQC	Fed. Combined WQC
15262201	Ra-228+D	pCi/l	5				
14859677	Rn-222+D	pCi/l	300				
10098972	Sr-90	pCi/l	8				
10098972	Sr-90+D	pCi/l	8				
14133767	Tc-99	pCi/l	900				
14158293	U-232	pCi/l	20				
13968553	U-233	pCi/l	20				
13966295	U-234	pCi/l	20				
15117961	U-235	pCi/l	20				
15117961	U-235+D	pCi/l	20				
13982702	U-236	pCi/l	20				
14269751	U-237	pCi/l	20				
7440611	U-238	pCi/l	20				
7440611	U-238+D	pCi/l	20				
15687533	U-240	pCi/l	20				

Notes: Please see source materials for complete discussions of these values. Only values for water are provided.

Values are for planning purposes only. A regulatory specialist should be consulted prior to using these values for screening.

APPENDIX B

Derivation of Preliminary Remediation Goals

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1. DERIVATION OF RISK-BASED PRELIMINARY REMEDIATION GOALS

This appendix presents the methods used to derive the direct-contact risk-based action and no action screening levels [i.e., preliminary remediation goals (PRGs)]. Methods used to derive the groundwater protection soil screening levels are not discussed because these are taken from a U.S. Environmental Protection Agency- (EPA) sponsored site on the World Wide Web (http://risk.lsd.ornl.gov/calc_start.htm). (All derivations performed using default values associated with Method A.)

1.1 INTRODUCTION

No action and action direct-contact risk-based PRGs were derived using a modification of methods described in Risk Assessment Guidance for Superfund (RAGS), Part B. In RAGS, Part B, risk-based PRGs are developed by rearranging the equations used to calculate risk or hazard in a risk assessment so that the equations solve for a concentration or activity of an analyte that "yields" a target risk or hazard. However, to derive the direct-contact PRGs, the linear, direct relationship between the concentration or activity of an analyte in an environmental medium and the risk or hazard that exposure to this analyte can present were used. Although this method differs from that in RAGS, Part B, the ultimate results of the modified calculations match those that are received by rearranging the risk or hazard equations.

1.2 MATERIALS

To derive risk-based PRGs, the following pieces of information are required: the receptors of interest, the routes through which the receptors may be exposed and equations describing these routes, carcinogenic (cancer) and noncarcinogenic (hazard) toxicity values, and target risk and hazard values. Each of these is discussed in the following.

1.2.1 Receptors

Table B.1 provides a matrix of showing the medium-receptor combinations for which PRGs were derived. As shown there, over all media, the receptors for which no action and action direct-contact risk-based PRGs were derived are the industrial worker, the resident, the recreational user, and the excavation worker. These receptors were chosen because they represent the most likely current and future receptors for most areas and units at Paducah Gaseous Diffusion Plant (PGDP). Also, it is believed that the PRGs derived for these receptors yield a range of values that are most useful for determining the clean-up priority for the various areas and units at the PGDP.

Table B.1 also includes a series of notes that discuss how the PRGs are to be applied to data during site scoping. These notes should be considered before site scoping is attempted.

Table B.1 Action and no action risk-based screening levels (PRGs) derived for PGDP by medium

Scenario/Receptor	Medium		
	Groundwater[1]	Surface Water[2]	Soil/Sediment[3,4]
Excavation Worker	No	Yes	Yes
Industrial Worker	No	Yes	Yes
Adult Recreator	No	Yes	Yes
Teen Recreator	No	Yes	Yes
Child Recreator	No	Yes	Yes
Adult Resident	Yes	No	Yes
Child Resident	Yes	No	Yes

Notes:

[1] All groundwater screening is to be performed using the resident. Of the two receptors (i.e., child and adult), use of the child is more "conservative." Note that values for soil deemed protective of groundwater are also available and are based on the resident only.

[2] Which surface water screening value to use is a location-specific decision. For all areas along effluent ditches or along creeks carrying effluent, the industrial worker screening values are appropriate. Additionally, at areas outside the industrialized areas, use of the recreator values are appropriate. Of the recreator values available, the child recreator values are most "conservative." Note, that two sets of recreator values are available. These are a set for screening shallow water courses under a wading scenario and a set for screening deeper water courses under a swimming scenario. While which of these values to use is a location-specific decision, general guidance should be to use the wading values for most areas. If exposure by a resident to surface water is of concern, use of the recreator values is appropriate. Use of the recreator values for the resident is deemed appropriate because rates of contact for the recreator were selected assuming that the individual would be a local resident.

[3] Which soil and sediment screening value is appropriate is a location-specific decision. For all areas inside the industrialized areas at the PGDP where surface soil contamination is of concern, use of the industrial worker values is appropriate. For areas inside the industrialized areas at the PGDP where subsurface soil of concern (i.e., soil down to 16 ft bgs), use of the excavation worker values is appropriate. Note that the excavation worker values can also be used for surface soil as a surrogate for a "gardener" or "maintenance worker" type work activity. For areas, outside the industrialized area, use of the recreator and/or resident values is appropriate. As with the surface water values, the child values are the most "conservative." Generally, the recreator values are more appropriate for areas along ditches and creeks (i.e., for bank soils), and the resident values are more appropriate for grassy fields. Also, note that the recreator and resident values are actually only applicable to surface soil.

[4] As mentioned above, values for soil for protection of groundwater are also available. These should be used in all areas.

1.2.2 Exposure Routes and Equations

The exposure routes considered for the various media-scenario combinations are provided below. Included in this list are the tables from Appendix D that display the equations used in the PRG derivation. The exposure parameters used in the derivation differ in some cases from those shown in the tables in Appendix D. These exposure parameters are summarized in Table B.4 presented at the end of this appendix.

- Residential Scenario (Child and Adult)—Groundwater, Chemicals
  Ingestion of water (Table D-1), inhalation of vapors emitted from water during showering (Table D-2), inhalation of vapors emitted from water during household use (Table D-3), dermal contact with water during showering (Table D-4).

- Residential Scenario (Child and Adult)—Groundwater, Radionuclides
  Ingestion of water (Table D-1), inhalation of vapors emitted from water during showering (Table D-2), inhalation of vapors emitted from water during household use (Table D-3).

- Residential Scenario (Child and Adult)—Soil and Sediment, Chemicals
  Incidental ingestion of contaminated soil or sediment (Table D-5), dermal contact with contaminated soil or sediment (Table D-6), inhalation of particulates emitted from soil or sediment (Table D-7), inhalation of vapors emitted from soil or sediment (Table D-7),

- Residential Scenario (Child and Adult)—Soil and Sediment, Radionuclides
  Incidental ingestion of contaminated soil or sediment (Table D-5), inhalation of particulates emitted from soil or sediment (Table D-7), inhalation of vapors emitted from soil or sediment (Table D-7), external exposure to ionizing radiation from soil or sediment (Table D-18).

- Industrial Worker Scenario—Surface Water, Chemicals
  Dermal contact with contaminated surface water (Table D-33).

- Industrial Worker Scenario—Soil, Chemicals
  Incidental ingestion of contaminated soil (Table D-29), inhalation of particulates emitted from soil (Tables D-31), inhalation of vapors emitted from soil (Table D-31), dermal contact with contaminated soil (Table D-33).

- Industrial Worker Scenario—Soil, Radionuclides
  Incidental ingestion of contaminated soil (Table D-29), inhalation of particulates emitted from soil (Table D-31), inhalation of vapors emitted from soil (Table D-31), external exposure to ionizing radiation from soil (Table D-34).

- Excavation Worker Scenario—Surface Water, Chemicals
  Dermal contact with contaminated surface water (Table D-33).

- Excavation Worker Scenario—Soil and Sediment, Chemicals
  Incidental ingestion of contaminated soil or sediment (Table D-37), inhalation of particulates emitted from soil or sediment (Tables D-38), inhalation of vapors emitted from soil or sediment (Table D-38), dermal contact with contaminated soil or sediment (Table D-39).

- Excavation Worker Scenario—Soil and Sediment, Radionuclides
  Incidental ingestion of contaminated soil or sediment (Table D-37), inhalation of particulates emitted from soil or sediment (Table D-38), inhalation of vapors emitted from soil or sediment (Table D38), external exposure to ionizing radiation from soil or sediment (Table D-40).

- Recreational User Scenario (Child, Teen, and Adult)—Sediment, Chemicals
  Incidental ingestion of contaminated sediment (Table D-15), dermal contact with contaminated sediment (Table D-16), inhalation of particulates emitted from sediment (Tables D-17), inhalation of vapors emitted from sediment (Table D-17).

- Recreational User Scenario (Child, Teen, and Adult)—Sediment, Radionuclides
  Incidental ingestion of contaminated sediment (Table D-15), inhalation of particulates emitted from sediment (Tables D-17), inhalation of vapors emitted from sediment (Table D-17), external exposure to ionizing radiation from soil or sediment (Table D-18).

- Recreational User Scenario (Child, Teen, and Adult)—Surface Water (Swimming), Chemicals
  Incidental ingestion of contaminated surface water (Table D-19), dermal contact with surface water (Table D-21).

- Recreational User Scenario (Child, Teen, and Adult)—Surface Water (Wading), Chemicals
  Dermal contact with surface water (Table D-20).

It is important to note that PRGs are not derived for industrial use of groundwater. These are not derived because they would not be useful to remedial decision making as indicated in the following material taken from RAGS, Part B, Section 3.2.1.

> Once groundwater is determined to be suitable for drinking, risk-based concentrations should be based on residential exposures....Similarly, for surface water that is to be used for drinking, the risk-based PRGs should be calculated for residential populations, and not simply worker populations.

Also note that the number of exposure routes included in these calculations exceeds that presented in RAGS, Part B for each scenario. Including exposure routes beyond those discussed in RAGS, Part B is consistent with material in Section 3.1.1 of RAGS, Part B where it is stated:

> Additional exposure pathways (e.g., dermal absorption) are possible and may be significant at some sites for some contaminants, while perhaps only one exposure pathway (e.g., direct ingestion of water only) may be relevant in others. In any case, the risk-based PRG for each chemical should be calculated by considering all of the relevant exposure pathways.

1.2.3 Toxicity Values

The toxicity values used in the derivation of the risk-based concentrations are taken from a variety of sources. The sources of these values are discussed in Section 3.3.5. The values are presented in Table B.5 at the end of this appendix.

1.2.4 Target Risk and Hazard Values

The target risk and hazard values used when deriving the risk-based concentrations for no action are 1×10^{-6} and 0.1, respectively. The target risk and hazard values used when deriving the risk-based concentrations for action are 1×10^{-4} and 3, respectively.

1.3 METHOD OF DERIVATION

Each risk-based PRG is calculated using the same method. In the following, the method is first presented generally. An example derivation for trichloroethene in groundwater follows.

1.3.1 General

The general equation used to calculate all goals reflects the direct, linear relationship between the environmental concentrations and the risk or hazard estimate. This is shown in Eq. 1.

$$\frac{C}{TR} = \frac{UC}{UR} \qquad \textbf{Eq. 1}$$

where: C = The risk-based concentration (i.e., calculated value)
TR = The target risks (see Sect. 2.4)
UC = Unit concentration or activity (i.e., 1 mg/kg, 1 pCi/g, 1 mg/l, or 1 pCi/l)
UR = Unit risk or hazard calculated for the unit concentration or activity

$$C = \frac{UC \times TR}{UR} \qquad \textbf{Eq. 2}$$

This equation can be rearranged to solve for "C" as shown in Eq. 2.

As can be seen, the only unknown in Eq. 2 is "UR" or the unit risk or hazard posed by the analyte at the unit concentration or activity. This unknown is calculated using the equations and toxicity values discussed earlier. The calculation is shown in the following.

$$UR = \sum_{r=1}^{n} (CDI_r \times TV_r \qquad \textbf{Eq. 3}$$

where: UR = Unit risk or hazard
CDI_r = The chronic daily intake or absorbed dose for exposure route r. (See Eq. 4.)
TV_r = The chronic toxicity value for exposure route r. Note, this value varies for cancer and hazard calculations. For cancer calculations, TV_r is the cancer slope factor appropriate to exposure route r. For hazard calculations, TV_r is the inverse of the reference dose (RfD) appropriate to exposure route r.

$$CDI_r = UC \times EXP_r \qquad \textbf{Eq. 4}$$

where: CDI_r = The chronic daily intake or absorbed dose for exposure route r
UC = The unit concentrations described earlier
Exp_r = The product of the exposure parameters included in the exposure equation for exposure route r shown in Appendix 4. Note, for some exposure equations, this solution requires chemical-specific parameters beyond the concentration of the chemical in the environmental medium.

Equations 1 through 4 can be combined as shown in Eq. 5 where all parameters are as previously defined.

$$C = \frac{UC \times TR}{\sum_{r=1}^{n} (UC \times Exp_r) \times TV_r} \qquad \textbf{Eq. 5}$$

where: All parameters are as previously defined.

1.3.2 Example Derivation for Trichloroethene in Groundwater

The following is an example calculation for the derivation of the risk-based concentration for trichloroethene in groundwater. The end-point considered in this example is cancer risk.

General Equation:

$$C = \frac{UC \times TR}{\sum_{r=1}^{n} (UC \times Exp_r) \times TV_r} \qquad \textbf{Eq. 6}$$

Expanding this for all exposure routes:

$$C = \frac{UC \times TR}{(UC \times Exp_o \times TV_o) + (UC \times Exp_{is} \times TV_i) + (UC \times Exp_{ih} \times TV_i) + (UC \times Exp_d \times TV_d)} \qquad \textbf{Eq. 7}$$

where: C = Risk-based PRG for trichloroethene (lifetime = 2.01×10^{-3} mg/l)
UC = Unit concentrations (1 mg/l)
TR = Target risk (1×10^{-6})
Exp_o = Exposure factor for ingestion of water [0.0190 liter/(kg × day)] (see Eq. 8)
TV_o = Oral cancer slope factor $\{1.1 \times 10^{-2}$ [(mg/(kg × day)]$^{-1}\}$
Exp_{is} = Exposure factor for inhalation in shower [0.00672 liter/(kg × day)] (see Eq. 9)
TV_i = Inhalation cancer slope factor $\{6.0 \times 10^{-3}$ [(mg/(kg × day)]$^{-1}\}$
Exp_{ih} = Exposure factor for inhalation in home [0.0351 liter/(kg × day)] (see Eq. 11)
Exp_d = Exposure factor for dermal exposure while showering [5.16×10^{-4} liter/(kg × day)] (see Eq. 13)
TV_d = Absorbed dose cancer slope factor $\{7.33 \times 10^{-2}$[(mg/(kg × day)]$^{-1}\}$ (based on a GI absorption of 15%)

$$Exp_o = \left(\frac{IR_a \times EF \times ED_a}{BW_a \times AT}\right) + \left(\frac{IR_c \times EF \times ED_c}{BW_c \times AT}\right) \qquad \textbf{Eq. 8}$$

where: Exp_o = Exposure factor for ingestion of water [0.0190 liter/(kg × day)]
IR_a = Intake rate of water by adult (2 liter/day)
EF = Exposure frequency (350 days/year)
ED_o = Exposure duration (34 years)
BW_a = Body weight of adult (70 kg)
AT = Averaging time (25,550 days)
IR_c = Intake rate of child (1 liter/day)
ED_c = Exposure duration (6 years)
BW_c = Body weight of child (14.5 kg)

$$Exp_{is} = \left(\frac{C_{shower} \times IR_a \times EF \times ED_a \times ET}{BW_a \times AT}\right) + \left(\frac{C_{shower} \times IR_c \times EF \times ED_c \times ET}{BW_c \times AT}\right) \qquad \textbf{Eq. 9}$$

where: Exp_{is} = Exposure factor for inhalation in shower [0.00672 liter/(kg × day)]
C_{shower} = Chemical-specific parameters that are used to convert UC to concentration of TCE in air (4.55 liter/m^3) (see Eq. 10)

IR = Inhalation rate (0.6 m^3/hour)
EF = Exposure frequency (350 days/year)
ED_a = Exposure duration for adult (34 years)
ET = Exposure time (0.2 hours/day)
BW_a = Body weight of adult (70 kg)
AT = Averaging time (25,550 days)
ED_c = Exposure duration for child (6 years)
BW_c = Body weight of child (14.5 kg)

$$C_{shower} = \frac{\left[\left(\frac{\left(\frac{f \times F_w \times t_1}{2}\right)}{V_a} \times t_1\right)\right] + \left(\frac{f \times F_w \times t_1 \times t_2}{V_a}\right)}{t_1 + t_2} \qquad \textbf{Eq. 10}$$

where: C_{shower} = Chemical-specific parameters that are used to convert UC to concentration of TCE in air (4.55 liter/m^3)
f = Fraction volatilized (0.75)
F_w = Water flow rate (890 liters/hour)
t_1 = Time of shower (0.1 hour)
t_2 = Time spent in bath after shower (0.1 hour)
V_a = Volume of bathroom (11 m^3)

$$Exp_{ih} = \left(\frac{C_{house} \times IR_a \times EF \times ED_a \times ET}{BW_a \times AT}\right) + \left(\frac{C_{house} \times IR_c \times EF \times ED_c \times ET}{BW_c \times AT}\right) \qquad \textbf{Eq. 11}$$

where: Exp_{ih} = Exposure factor for inhalation in home [0.0351 liter/(kg × day)]
C_{house} = Chemical-specific parameters that are used to convert UC to concentration of TCE in air (0.297 liter/m^3) (see Eq. 12)
IR = Inhalation rate (0.6 m^3/hour)
EF = Exposure frequency (350 days/year)
ED_a = Exposure duration for adult (34 years)
ET = Exposure time (16 hours/day)
BW_a = Body weight of adult (70 kg)
AT = Averaging time (25,550 days)
ED_c = Exposure duration for child (6 years)
BW_c = Body weight of child (14.5 kg)

$$C_{house} = \frac{WHF \times f}{HV \times ER \times MC} \qquad \textbf{Eq. 12}$$

where: C_{house} = Chemical-specific parameters that are used to convert UC to concentration of TCE in air (0.297 liter/m^3)
WHF = Water flow rate (890 liters/day)

f = Fraction volatilized (0.75)
HV = House volume (450 m^3/change)
ER = Exchange rate (10 changes/day)
MC = Mixing coefficient (0.5)

$$Exp_d = \left(\frac{SA_a \times P_c \times CF \times EF \times ED_a \times ET}{BW_a \times AT}\right) + \left(\frac{SA_a \times P_c \times CF \times EF \times ED_c \times ET}{BW_c \times AT}\right) \quad \textbf{Eq. 13}$$

where: Exp_d = Exposure factor for dermal exposure while showering [5.16×10^{-4} liter/(kg×day)]
SA_a = Surface area exposed by adult during shower (1.815 m^2)
P_c = Permeability constant (1.6×10^{-2} cm/hour) (Chemical-specific for TCE)
CF = Conversion factor [10 (liters × m)/(cm × m^3)]
ED_a = Exposure duration for adult (34 years)
EF = Exposure frequency (350 days/year)
ET = Exposure time in shower (0.2 hour/day)
BW_a = Body weight of an adult (70 kg)
AT = Averaging time (25,550 days)
SA_c = Surface area exposed by child during shower (0.72 m^2)
ED_c = Exposure duration for child (6 years)
BW_c = Body weight of child (14.5 kg)

1.3.3 Example Derivation for ^{99}Tc in Groundwater

The following is an example calculation for the derivation of the risk-based concentration for ^{99}Tc in groundwater. The end-point considered in this example is cancer risk. Note that only one exposure route, ingestion, is relevant to this derivation because ^{99}Tc is not volatile at ambient temperatures.

General Equation:

$$C = \frac{UC \times TR}{\sum_{r=1}^{n}(UC \times Exp_r) \times TV_r} \quad \textbf{Eq. 14}$$

Expanding this for the single exposure routes:

$$C = \frac{UC \times TR}{(UC \times Exp_o \times TV_o)} \quad \textbf{Eq. 15}$$

where: C = Risk-based PRG for ^{99}Tc (lifetime = 27.6 pCi/l)
UC = Unit concentrations (1 pCi/l)
TR = Target risk (1×10^{-6})
Exp_o = Exposure factor for ingestion of water [liter] (see Eq. 16)
TV_o = Oral cancer slope factor {1.4×10^{-12} [(risk/(liter)]}

$$Exp_o = (IR_a \times EF \times ED_a) + (IR_c \times EF \times ED_c) \qquad \textbf{Eq. 16}$$

where: Exp_o = Exposure factor for ingestion of water (25,900 liter)
IR_a = Intake rate of water by adult (2 liter/day)
EF = Exposure frequency (350 days/year)
ED_o = Exposure duration (34 years)
IR_c = Intake rate of child (1 liter/day)
ED_c = Exposure duration (6 years)

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2. DERIVATION OF DOSE-BASED PRELIMINARY REMEDIATION GOALS

The following describes the methods used to derive direct-contact dose-based screening. Methods for deriving the groundwater protection soil screening levels (SSLs) are also provided for comparison to direct-contact preliminary remediation goals (PRGs).

2.1 INTRODUCTION

Direct-contact dose-based PRGs were derived using a modification of methods described by Risk Assessment Guidance for Superfund (RAGS), Part B. This modified approach is similar to that used to develop risk-based PRGs for the Paducah Gaseous Diffusion Plant (PGDP) except for two additional modifications. These are (1) the exposure duration (ED) term was dropped because dose limits are based one yearly and not lifetime exposure, and (2) slope factors and reference doses were replaced with radiation dose conversion factors (DCFs). Additionally, dose-based and risk-based SSLs were derived using the RESRAD computer code, version 6.0.

2.2 MATERIALS

To derive dose-based screening levels, the following pieces of information are required: the receptors of interest, the routes through which the receptors may be exposed and equations describing these routes, activity- or concentration-to-dose conversion factors, and target dose values. Each of these are discussed in the following.

2.2.1 Receptors

The receptors considered in dose-based screening level calculations are described in the derivation of risk-based PRGs. The description is not repeated here, although it is noted that the exposure duration term is not relevant for dose calculations. This is because dose-based values generally call for yearly rather than lifetime values and are the value that would the yield target dose in a given year (e.g., in units of mrem/yr). Direct-contact screening levels were derived for the industrial worker, the resident (adult and child), the recreational user (adult, child and teen), and the excavation worker. These receptors were chosen because they represent the most likely current and future receptors for most areas and units at PGDP. Also, it is believed that the screening levels derived for these receptors yield a range of values that are most useful for determining the clean-up priority for the various areas and units at the PGDP.

Table B.2 lists the media evaluated, by receptor, and includes a series of notes that discuss how the screening levels are to be applied to data during site scoping. These notes should be considered before site scoping is attempted. Table B.2 varies slightly from the version used in non-radiological risk-based PRG development because dermal contact is not a relevant pathway for the radionuclides of interest.

Table B.2. Action and No Action Risk-Based Screening Levels and Soil Screening Levels Derived for PGDP by Medium

Scenario/Receptor	Medium		
	Groundwater[1]	Surface Water[2]	Soil/Sediment[3,4]
Excavation Worker	No	No	Yes
Industrial Worker	No	No	Yes
Adult Recreator	No	Yes	Yes
Teen Recreator	No	Yes	Yes
Child Recreator	No	Yes	Yes
Adult Resident	Yes	No	Yes
Child Resident	Yes	No	Yes

Notes:

[1] All groundwater screening is to be performed using the resident. Note that values for soil deemed protective of groundwater are also available and are based on the resident only.

[2] Dose-based values for surface water are only available for recreators.

[3] Which soil and sediment screening value is appropriate is a location-specific decision. For all areas inside the industrialized areas at the PGDP where surface soil contamination is of concern, use of the industrial worker values is appropriate. For areas inside the industrialized areas at the PGDP where subsurface soil of concern (i.e., soil down to 16 ft bgs), use of the excavation worker values is appropriate. Note that the excavation worker values can also be used for surface soil as a surrogate for a "gardener" or "maintenance worker" type work activity. For areas, outside the industrialized area, use of the recreator and/or resident values is appropriate. Generally, the recreator values are more appropriate for areas along ditches and creeks (i.e., for bank soils), and the resident values are more appropriate for grassy fields. Also, note that the recreator and resident values are actually only applicable to surface soil.

[4] As mentioned above, values for soil for protection of groundwater are also available. These should be used in all areas.

2.2.2 Exposure Routes and Equations

As previously discussed, the exposure routes and equations used to calculate dose-based screening levels are similar to those used to develop risk-based PRGs. The only pathway-specific difference is that dermal contact is not considered. Instead, the external gamma pathway is evaluated to account for non-uptake exposures. This being the only difference, the complete list of exposure routes considered for the various media-scenario combinations are not repeated here.

The equations used to calculate dose-based screening levels are similar to those used to develop risk-based values, but with two exceptions. First, dose-based limits are typically for a single year of exposure. Therefore, The ED terms dropped from all equations to produce per-year PRG and SSL results. Second, slope factors and reference doses were replaced with DCFs given that the human-health-based limits are radiological doses (in units mrem/yr) rather than carcinogenic risk or non-carcinogenic hazard.

2.2.3 Toxicity Values

The toxicity values (DCFs) used in the derivation of the dose-based concentrations are taken from RESRAD output. These DCFs are given in unit mrem/pCi for the inhalation and ingestion pathways or mrem/yr/pCi/g (i.e., pCi/g in soil/sediment) for the external gamma pathway. The values are provided in Table B.3.

2.2.4 Target Dose Values

The target dose values used when deriving the dose-based concentrations in soil and sediment are 1.0, 15 and 25 mrem/yr. An additional target dose of 4.0 mrem/yr was added for the surface water and groundwater media in consideration of the Federal drinking water standard.

Table B.3. Dose Conversion Factors for Radionuclides of Interest

Radionuclide	Pathway (units)		
	Ingestion (mrem/pCi)	Inhalation (mrem/pCi)	External Gamma (mrem/yr per pCi/g)
Americium-241	3.64E-03	4.44E-01	4.37E-02
Cesium-137	5.00E-05	3.19E-05	3.41E+00
Cobalt-60	2.69E-05	2.19E-04	1.62E+01
Neptunium-237+D[1]	4.44E-03	5.40E-01	1.10E+00
Plutonium-238	3.20E-03	3.92E-01	1.51E-04
Plutonium-239	3.54E-03	4.29E-01	2.95E-04
Plutonium-240	3.54E-03	4.29E-01	1.47E-04
Radium-226+D	1.33E-03	8.60E-03	1.12E+01
Strontium-90+D	1.53E-04	1.31E-03	2.46E-02
Technetium-99	1.46E-06	8.33E-06	1.26E-04
Thorium-228+D	8.08E-04	3.45E-01	1.02E+01
Thorium-230	5.48E-04	3.26E-01	1.21E-03
Thorium-232	2.73E-03	1.64E+00	5.21E-04
Uranium-234	2.83E-04	1.32E-01	4.02E-04
Uranium-235+D	2.67E-04	1.23E-01	7.57E-01
Uranium-238+D	2.69E-04	1.18E-01	1.37E-01

Note:
[1] "D" stands for short-lived decay product (i.e., radioactive decay product with a half-life less than 6 months).

2.3 METHOD OF DERIVATION

Each dose-based PRG is calculated in the same manner. The general equation used to calculate all PRGs reflects the direct, linear relationship between the environmental concentrations and the dose estimate. This is shown in Eq. 1 to include the difference from that used in estimated risk-based (non-radiological) PRGs. For this evaluation, PRGs were developed by combining the soil ingestion, dust inhalation and external gamma pathways. Both surface water and groundwater ingestion were considered separately as these media should be considered on a case-by-case basis. While radon is considered a radionuclide of interest, PRGs (and SSLs) were not produced given the significant uncertainty in radon modeling and given that radon is typically limited via an indoor air concentration limit rather than a soil/sediment concentration.

SSLs were calculated for each radionuclide of interest using the RESRAD code version 6.0, site-specific information related to geophysical characteristics at PGDP, and the same exposure parameter values used in PRG calculations. The model included five distinct soil strata and distribution coefficients that generally and conservatively match the defaults for a sandy soil type. Exceptions include plutonium (100 cm^3/g was used instead of the 550 cm^3/g default) and neptunium (RESRAD assigned a value based on the soil-to-plant transfer factor). The model assumed a 10,000-year evaluation period as opposed to the more typical 1,000-year period, but some radionuclides still did not "break though" to groundwater where they could be ingested by a receptor.

$$C_i = \frac{TD}{\sum_{i,j}\left(DCF_{ij} \times I_j\right)} \qquad \textbf{Eq. 1}$$

where: C_i = The dose-based concentration for radionuclide "i" (i.e., calculated screening level)
TD = The target doses (see Sect. 2.4)
DCF_{ij} = Dose conversion factor for radionuclide "i" and pathway "j" (i.e., in mrem/pCi or mrem/yr per pCi/g)
I_j = Material intake (i.e., grams inhaled or injested) or time fraction for external exposure, respective to pathway "j"

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Exposure Frequency EF (days/year)	Exposure Duration ED (years)	Body Weight BW (kg)	Averaging Time for Cancer Risk AT_C (days)	Averaging Time for Noncancer Risk AT_N (days)	Correction Factor CF (units vary)
Adult Resident	Residential	Water	Groundwater	Ingestion	350	34	70.0		12410	
Child Resident	Residential	Water	Groundwater	Ingestion	350	6	14.5	25550	2190	
Adult Resident	Residential	Water	Groundwater	Inhalation/Showering	350	34	70.0	25550	12410	
Child Resident	Residential	Water	Groundwater	Inhalation/Showering	350	6	14.5	25550	2190	
Adult Resident	Residential	Water	Groundwater	Inhalation/Household Use	350	34	70.0	25550	12410	
Child Resident	Residential	Water	Groundwater	Inhalation/Household Use	350	6	14.5	25550	2190	
Adult Resident	Residential	Water	Groundwater	Dermal	350	34	70.0	25550	12410	10.00
Child Resident	Residential	Water	Groundwater	Dermal	350	6	14.5	25550	2190	10.00
Adult Resident	Residential	Soil	Soil	Ingestion	350	34	70.0	25550	12410	1000.00
Child Resident	Residential	Soil	Soil	Ingestion	350	6	14.5	25550	2190	1000.00
Adult Resident	Residential	Soil	Soil	Inhalation	350	34	70.0	25550	12410	1000.00
Child Resident	Residential	Soil	Soil	Inhalation	350	6	14.5	25550	2190	1000.00
Adult Resident	Residential	Soil	Soil	Dermal	350	34	70.0	25550	12410	0.01
Child Resident	Residential	Soil	Soil	Dermal	350	6	14.5	25550	2190	0.01
Adult Resident	Residential	Soil	Soil	External Exposure		34				
Child Resident	Residential	Soil	Soil	External Exposure		6				
Industrial Worker Default	Industrial	Water	Surface Water	Dermal	250	25	70.0	25550	9125	10.00
Industrial Worker Default	Industrial	Soil	Soil	Ingestion	250	25	70.0	25550	9125	1000.00
Industrial Worker Default	Industrial	Soil	Soil	Inhalation	250	25	70.0	25550	9125	1000.00
Industrial Worker Default	Industrial	Soil	Soil	Dermal	250	25	70.0	25550	9125	0.01
Industrial Worker Default	Industrial	Soil	Soil	External Exposure		25				
Industrial Worker Current	Industrial	Water	Surface Water	Dermal	250	25	70.0	25550	9125	10.00
Industrial Worker Current	Industrial	Soil	Soil	Ingestion	250	25	70.0	25550	9125	1000.00
Industrial Worker Current	Industrial	Soil	Soil	Inhalation	250	25	70.0	25550	9125	1000.00
Industrial Worker Current	Industrial	Soil	Soil	Dermal	250	25	70.0	25550	9125	0.01
Industrial Worker Current	Industrial	Soil	Soil	External Exposure		25				
Excavation Worker Default	Industrial	Soil	Soil	Ingestion	185	25	70.0	25550	9125	1000.00
Excavation Worker Default	Industrial	Soil	Soil	Inhalation	185	25	70.0	25550	9125	1000.00
Excavation Worker Default	Industrial	Soil	Soil	Dermal	185	25	70.0	25550	9125	0.01
Excavation Worker Default	Industrial	Soil	Soil	External Exposure		25				
Excavation Worker Default	Industrial	Water	Surface Water	Dermal	20	25	70.0	25550	9125	10.00
Excavation Worker Current	Industrial	Soil	Soil	Ingestion	20	1	70.0	25550	365	1000.00
Excavation Worker Current	Industrial	Soil	Soil	Inhalation	20	1	70.0	25550	365	1000.00
Excavation Worker Current	Industrial	Soil	Soil	Dermal	20	1	70.0	25550	365	0.01
Excavation Worker Current	Industrial	Soil	Soil	External Exposure		1				
Excavation Worker Current	Industrial	Water	Surface Water	Dermal	20	1	70.0	25550	365	10.00
Adult Recreator	Recreational	Soil	Soil	Ingestion	104	22	70.0	25550	8030	1000.00
Teen Recreator	Recreational	Soil	Soil	Ingestion	140	12	43.0	25550	4380	1000.00
Child Recreator	Recreational	Soil	Soil	Ingestion	140	6	14.5	25550	2190	1000.00
Adult Recreator	Recreational	Soil	Soil	Inhalation	104	22	70.0	25550	8030	1000.00
Teen Recreator	Recreational	Soil	Soil	Inhalation	140	12	43.0	25550	4380	1000.00
Child Recreator	Recreational	Soil	Soil	Inhalation	140	6	14.5	25550	2190	1000.00
Adult Recreator	Recreational	Soil	Soil	Dermal	104	22	70.0	25550	8030	0.01

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Correction Factor 2 CF2 (units vary)	Intake Rate of Medium IR (mg/l water) or (kg/kg soil)	Exposure Time ET (hours/day)	Fraction Ingested from Source FI (unitless)	Intake Rate of Air IR_AIR (m3/hr) or (m3/day)
Adult Resident	Residential	Water	Groundwater	Ingestion		2.00000			
Child Resident	Residential	Water	Groundwater	Ingestion		1.00000			
Adult Resident	Residential	Water	Groundwater	Inhalation/Showering			0.2		0.6
Child Resident	Residential	Water	Groundwater	Inhalation/Showering			0.2		0.6
Adult Resident	Residential	Water	Groundwater	Inhalation/Household Use			16.0		0.833
Child Resident	Residential	Water	Groundwater	Inhalation/Household Use			16.0		0.833
Adult Resident	Residential	Water	Groundwater	Dermal			0.2		
Child Resident	Residential	Water	Groundwater	Dermal			0.2		
Adult Resident	Residential	Soil	Soil	Ingestion		0.00010		1.00	
Child Resident	Residential	Soil	Soil	Ingestion		0.00020		1.00	
Adult Resident	Residential	Soil	Soil	Inhalation					20.0
Child Resident	Residential	Soil	Soil	Inhalation					20.0
Adult Resident	Residential	Soil	Soil	Dermal					
Child Resident	Residential	Soil	Soil	Dermal					
Adult Resident	Residential	Soil	Soil	External Exposure					
Child Resident	Residential	Soil	Soil	External Exposure					
Industrial Worker Default	Industrial	Water	Surface Water	Dermal			2.6		
Industrial Worker Default	Industrial	Soil	Soil	Ingestion		0.00005		1.00	
Industrial Worker Default	Industrial	Soil	Soil	Inhalation					20.0
Industrial Worker Default	Industrial	Soil	Soil	Dermal					
Industrial Worker Default	Industrial	Soil	Soil	External Exposure					
Industrial Worker Current	Industrial	Water	Surface Water	Dermal			2.6		
Industrial Worker Current	Industrial	Soil	Soil	Ingestion		0.00005		1.00	
Industrial Worker Current	Industrial	Soil	Soil	Inhalation					20.0
Industrial Worker Current	Industrial	Soil	Soil	Dermal					
Industrial Worker Current	Industrial	Soil	Soil	External Exposure					
Excavation Worker Default	Industrial	Soil	Soil	Ingestion		0.00048		1.00	
Excavation Worker Default	Industrial	Soil	Soil	Inhalation					20.0
Excavation Worker Default	Industrial	Soil	Soil	Dermal					
Excavation Worker Default	Industrial	Soil	Soil	External Exposure					
Excavation Worker Default	Industrial	Water	Surface Water	Dermal			8.0		
Excavation Worker Current	Industrial	Soil	Soil	Ingestion		0.00048		1.00	
Excavation Worker Current	Industrial	Soil	Soil	Inhalation					20.0
Excavation Worker Current	Industrial	Soil	Soil	Dermal					
Excavation Worker Current	Industrial	Soil	Soil	External Exposure					
Excavation Worker Current	Industrial	Water	Surface Water	Dermal			8.0		
Adult Recreator	Recreational	Soil	Soil	Ingestion	0.0417	0.00010	5.0	1.00	
Teen Recreator	Recreational	Soil	Soil	Ingestion	0.0417	0.00010	5.0	1.00	
Child Recreator	Recreational	Soil	Soil	Ingestion	0.0417	0.00020	5.0	1.00	
Adult Recreator	Recreational	Soil	Soil	Inhalation					12.5
Teen Recreator	Recreational	Soil	Soil	Inhalation					12.5
Child Recreator	Recreational	Soil	Soil	Inhalation					12.5
Adult Recreator	Recreational	Soil	Soil	Dermal					

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Exposure Frequency for Rads EF_X (fraction of year; unitless)	Exposure Time for Rads TE (fraction of day; unitless)	Gamma Shielding Factor SE (unitless)	Surface Area of Body Exposed SA (meters^2)
Adult Resident	Residential	Water	Groundwater	Ingestion				
Child Resident	Residential	Water	Groundwater	Ingestion				
Adult Resident	Residential	Water	Groundwater	Inhalation/Showering				
Child Resident	Residential	Water	Groundwater	Inhalation/Showering				
Adult Resident	Residential	Water	Groundwater	Inhalation/Household Use				
Child Resident	Residential	Water	Groundwater	Inhalation/Household Use				
Adult Resident	Residential	Water	Groundwater	Dermal				1.815
Child Resident	Residential	Water	Groundwater	Dermal				0.720
Adult Resident	Residential	Soil	Soil	Ingestion				
Child Resident	Residential	Soil	Soil	Ingestion				
Adult Resident	Residential	Soil	Soil	Inhalation				
Child Resident	Residential	Soil	Soil	Inhalation				
Adult Resident	Residential	Soil	Soil	Dermal				0.350
Child Resident	Residential	Soil	Soil	Dermal				0.373
Adult Resident	Residential	Soil	Soil	External Exposure	0.959	1.000	0.2	
Child Resident	Residential	Soil	Soil	External Exposure	0.959	1.000	0.2	
Industrial Worker Default	Industrial	Water	Surface Water	Dermal				0.430
Industrial Worker Default	Industrial	Soil	Soil	Ingestion				
Industrial Worker Default	Industrial	Soil	Soil	Inhalation				
Industrial Worker Default	Industrial	Soil	Soil	Dermal				0.430
Industrial Worker Default	Industrial	Soil	Soil	External Exposure	0.685	0.333	0.2	
Industrial Worker Current	Industrial	Water	Surface Water	Dermal				0.430
Industrial Worker Current	Industrial	Soil	Soil	Ingestion				
Industrial Worker Current	Industrial	Soil	Soil	Inhalation				
Industrial Worker Current	Industrial	Soil	Soil	Dermal				0.430
Industrial Worker Current	Industrial	Soil	Soil	External Exposure	0.685	0.333	0.2	
Excavation Worker Default	Industrial	Soil	Soil	Ingestion				
Excavation Worker Default	Industrial	Soil	Soil	Inhalation				
Excavation Worker Default	Industrial	Soil	Soil	Dermal				0.430
Excavation Worker Default	Industrial	Soil	Soil	External Exposure	0.055	0.333	0.2	
Excavation Worker Default	Industrial	Water	Surface Water	Dermal				0.430
Excavation Worker Current	Industrial	Soil	Soil	Ingestion				
Excavation Worker Current	Industrial	Soil	Soil	Inhalation				
Excavation Worker Current	Industrial	Soil	Soil	Dermal				0.430
Excavation Worker Current	Industrial	Soil	Soil	External Exposure	0.055	0.333	0.2	
Excavation Worker Current	Industrial	Water	Surface Water	Dermal				0.430
Adult Recreator	Recreational	Soil	Soil	Ingestion				
Teen Recreator	Recreational	Soil	Soil	Ingestion				
Child Recreator	Recreational	Soil	Soil	Ingestion				
Adult Recreator	Recreational	Soil	Soil	Inhalation				
Teen Recreator	Recreational	Soil	Soil	Inhalation				
Child Recreator	Recreational	Soil	Soil	Inhalation				
Adult Recreator	Recreational	Soil	Soil	Dermal				0.350

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Adherence Factor AF (mg/cm^2)	Fraction Volatilized from Water F (unitless)	Flow Rate of Shower FW (l/hr)	Time Taken for Shower T1 (hour)	Time in Bathroom After Shower T2 (hour)
Adult Resident	Residential	Water	Groundwater	Ingestion					
Child Resident	Residential	Water	Groundwater	Ingestion					
Adult Resident	Residential	Water	Groundwater	Inhalation/Showering		0.75	890	0.1	0.1
Child Resident	Residential	Water	Groundwater	Inhalation/Showering		0.75	890	0.1	0.1
Adult Resident	Residential	Water	Groundwater	Inhalation/Household Use		0.75	890		
Child Resident	Residential	Water	Groundwater	Inhalation/Household Use		0.75	890		
Adult Resident	Residential	Water	Groundwater	Dermal					
Child Resident	Residential	Water	Groundwater	Dermal					
Adult Resident	Residential	Soil	Soil	Ingestion					
Child Resident	Residential	Soil	Soil	Ingestion					
Adult Resident	Residential	Soil	Soil	Inhalation					
Child Resident	Residential	Soil	Soil	Inhalation					
Adult Resident	Residential	Soil	Soil	Dermal	1.00				
Child Resident	Residential	Soil	Soil	Dermal	1.00				
Adult Resident	Residential	Soil	Soil	External Exposure					
Child Resident	Residential	Soil	Soil	External Exposure					
Industrial Worker Default	Industrial	Water	Surface Water	Dermal					
Industrial Worker Default	Industrial	Soil	Soil	Ingestion					
Industrial Worker Default	Industrial	Soil	Soil	Inhalation					
Industrial Worker Default	Industrial	Soil	Soil	Dermal	1.00				
Industrial Worker Default	Industrial	Soil	Soil	External Exposure					
Industrial Worker Current	Industrial	Water	Surface Water	Dermal					
Industrial Worker Current	Industrial	Soil	Soil	Ingestion					
Industrial Worker Current	Industrial	Soil	Soil	Inhalation					
Industrial Worker Current	Industrial	Soil	Soil	Dermal	1.00				
Industrial Worker Current	Industrial	Soil	Soil	External Exposure					
Excavation Worker Default	Industrial	Soil	Soil	Ingestion					
Excavation Worker Default	Industrial	Soil	Soil	Inhalation					
Excavation Worker Default	Industrial	Soil	Soil	Dermal	1.00				
Excavation Worker Default	Industrial	Soil	Soil	External Exposure					
Excavation Worker Default	Industrial	Water	Surface Water	Dermal					
Excavation Worker Current	Industrial	Soil	Soil	Ingestion					
Excavation Worker Current	Industrial	Soil	Soil	Inhalation					
Excavation Worker Current	Industrial	Soil	Soil	Dermal	1.00				
Excavation Worker Current	Industrial	Soil	Soil	External Exposure					
Excavation Worker Current	Industrial	Water	Surface Water	Dermal					
Adult Recreator	Recreational	Soil	Soil	Ingestion					
Teen Recreator	Recreational	Soil	Soil	Ingestion					
Child Recreator	Recreational	Soil	Soil	Ingestion					
Adult Recreator	Recreational	Soil	Soil	Inhalation					
Teen Recreator	Recreational	Soil	Soil	Inhalation					
Child Recreator	Recreational	Soil	Soil	Inhalation					
Adult Recreator	Recreational	Soil	Soil	Dermal	1.00				

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Volume of Bathroom VA (m3)	House Volume HV (m^3 /change)	Exchange Rate ER (changes/day)	Mixing Coefficient MC (unitless)
Adult Resident	Residential	Water	Groundwater	Ingestion				
Child Resident	Residential	Water	Groundwater	Ingestion				
Adult Resident	Residential	Water	Groundwater	Inhalation/Showering	11			
Child Resident	Residential	Water	Groundwater	Inhalation/Showering	11			
Adult Resident	Residential	Water	Groundwater	Inhalation/Household Use		450	10	0.5
Child Resident	Residential	Water	Groundwater	Inhalation/Household Use		450	10	0.5
Adult Resident	Residential	Water	Groundwater	Dermal				
Child Resident	Residential	Water	Groundwater	Dermal				
Adult Resident	Residential	Soil	Soil	Ingestion				
Child Resident	Residential	Soil	Soil	Ingestion				
Adult Resident	Residential	Soil	Soil	Inhalation				
Child Resident	Residential	Soil	Soil	Inhalation				
Adult Resident	Residential	Soil	Soil	Dermal				
Child Resident	Residential	Soil	Soil	Dermal				
Adult Resident	Residential	Soil	Soil	External Exposure				
Child Resident	Residential	Soil	Soil	External Exposure				
Industrial Worker Default	Industrial	Water	Surface Water	Dermal				
Industrial Worker Default	Industrial	Soil	Soil	Ingestion				
Industrial Worker Default	Industrial	Soil	Soil	Inhalation				
Industrial Worker Default	Industrial	Soil	Soil	Dermal				
Industrial Worker Default	Industrial	Soil	Soil	External Exposure				
Industrial Worker Current	Industrial	Water	Surface Water	Dermal				
Industrial Worker Current	Industrial	Soil	Soil	Ingestion				
Industrial Worker Current	Industrial	Soil	Soil	Inhalation				
Industrial Worker Current	Industrial	Soil	Soil	Dermal				
Industrial Worker Current	Industrial	Soil	Soil	External Exposure				
Excavation Worker Default	Industrial	Soil	Soil	Ingestion				
Excavation Worker Default	Industrial	Soil	Soil	Inhalation				
Excavation Worker Default	Industrial	Soil	Soil	Dermal				
Excavation Worker Default	Industrial	Soil	Soil	External Exposure				
Excavation Worker Default	Industrial	Water	Surface Water	Dermal				
Excavation Worker Current	Industrial	Soil	Soil	Ingestion				
Excavation Worker Current	Industrial	Soil	Soil	Inhalation				
Excavation Worker Current	Industrial	Soil	Soil	Dermal				
Excavation Worker Current	Industrial	Soil	Soil	External Exposure				
Excavation Worker Current	Industrial	Water	Surface Water	Dermal				
Adult Recreator	Recreational	Soil	Soil	Ingestion				
Teen Recreator	Recreational	Soil	Soil	Ingestion				
Child Recreator	Recreational	Soil	Soil	Ingestion				
Adult Recreator	Recreational	Soil	Soil	Inhalation				
Teen Recreator	Recreational	Soil	Soil	Inhalation				
Child Recreator	Recreational	Soil	Soil	Inhalation				
Adult Recreator	Recreational	Soil	Soil	Dermal				

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Exposure Frequency EF (days/year)	Exposure Duration ED (years)	Body Weight BW (kg)	Averaging Time for Cancer Risk AT_C (days)	Averaging Time for Noncancer Risk AT_N (days)	Correction Factor CF (units vary)
Teen Recreator	Recreational	Soil	Soil	Dermal	140	12	43.0	25550	4380	0.01
Child Recreator	Recreational	Soil	Soil	Dermal	140	6	14.5	25550	2190	0.01
Adult Recreator	Recreational	Soil	Soil	External Exposure		22				
Teen Recreator	Recreational	Soil	Soil	External Exposure		12				
Child Recreator	Recreational	Soil	Soil	External Exposure		6				
Adult Recreator	Recreational	Water	Surface Water	Ingestion	45	22	70.0	25550	8030	
Teen Recreator	Recreational	Water	Surface Water	Ingestion	45	12	43.0	25550	4380	
Child Recreator	Recreational	Water	Surface Water	Ingestion	45	6	14.5	25550	2190	
Adult Recreator	Recreational	Water	Surface Water	Dermal	45	22	70.0	25550	8030	10.00
Teen Recreator	Recreational	Water	Surface Water	Dermal	45	12	43.0	25550	4380	10.00
Child Recreator	Recreational	Water	Surface Water	Dermal	45	6	14.5	25550	2190	10.00
Adult Recreator/Wading	Recreational	Water	Surface Water	Dermal	52	22	70.0	25550	8030	10.00
Teen Recreator/Wading	Recreational	Water	Surface Water	Dermal	140	12	43.0	25550	4380	10.00
Child Recreator/Wading	Recreational	Water	Surface Water	Dermal	140	6	14.5	25550	2190	10.00

Table B.4. Exposure Parameters Used ... Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Correction Factor 2 CF2 (units vary)	Intake Rate of Medium IR (mg/l water) or (kg/kg soil)	Exposure Time ET (hours/day)	Fraction Ingested from Source FI (unitless)	Intake Rate of Air IR_AIR (m3/hr) or (m3/day)
Teen Recreator	Recreational	Soil	Soil	Dermal					
Child Recreator	Recreational	Soil	Soil	Dermal					
Adult Recreator	Recreational	Soil	Soil	External Exposure					
Teen Recreator	Recreational	Soil	Soil	External Exposure					
Child Recreator	Recreational	Soil	Soil	External Exposure					
Adult Recreator	Recreational	Water	Surface Water	Ingestion		0.05000	2.6		
Teen Recreator	Recreational	Water	Surface Water	Ingestion		0.05000	2.6		
Child Recreator	Recreational	Water	Surface Water	Ingestion		0.05000	2.6		
Adult Recreator	Recreational	Water	Surface Water	Dermal			2.6		
Teen Recreator	Recreational	Water	Surface Water	Dermal			2.6		
Child Recreator	Recreational	Water	Surface Water	Dermal			2.6		
Adult Recreator/Wading	Recreational	Water	Surface Water	Dermal			2.6		
Teen Recreator/Wading	Recreational	Water	Surface Water	Dermal			2.6		
Child Recreator/Wading	Recreational	Water	Surface Water	Dermal			2.6		

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Exposure Frequency for Rads EF_X (fraction of year; unitless)	Exposure Time for Rads TE (fraction of day; unitless)	Gamma Shielding Factor SE (unitless)	Surface Area of Body Exposed SA (meters^2)
Teen Recreator	Recreational	Soil	Soil	Dermal				0.740
Child Recreator	Recreational	Soil	Soil	Dermal				0.373
Adult Recreator	Recreational	Soil	Soil	External Exposure	0.285	0.208	0.2	
Teen Recreator	Recreational	Soil	Soil	External Exposure	0.384	0.208	0.2	
Child Recreator	Recreational	Soil	Soil	External Exposure	0.384	0.208	0.2	
Adult Recreator	Recreational	Water	Surface Water	Ingestion				
Teen Recreator	Recreational	Water	Surface Water	Ingestion				
Child Recreator	Recreational	Water	Surface Water	Ingestion				
Adult Recreator	Recreational	Water	Surface Water	Dermal				1.815
Teen Recreator	Recreational	Water	Surface Water	Dermal				1.350
Child Recreator	Recreational	Water	Surface Water	Dermal				0.720
Adult Recreator/Wading	Recreational	Water	Surface Water	Dermal				0.930
Teen Recreator/Wading	Recreational	Water	Surface Water	Dermal				0.740
Child Recreator/Wading	Recreational	Water	Surface Water	Dermal				0.373

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Adherence Factor AF (mg/cm^2)	Fraction Volatilized from Water F (unitless)	Flow Rate of Shower FW (l/hr)	Time Taken for Shower T1 (hour)	Time in Bathroom After Shower T2 (hour)
Teen Recreator	Recreational	Soil	Soil	Dermal	1.00				
Child Recreator	Recreational	Soil	Soil	Dermal	1.00				
Adult Recreator	Recreational	Soil	Soil	External Exposure					
Teen Recreator	Recreational	Soil	Soil	External Exposure					
Child Recreator	Recreational	Soil	Soil	External Exposure					
Adult Recreator	Recreational	Water	Surface Water	Ingestion					
Teen Recreator	Recreational	Water	Surface Water	Ingestion					
Child Recreator	Recreational	Water	Surface Water	Ingestion					
Adult Recreator	Recreational	Water	Surface Water	Dermal					
Teen Recreator	Recreational	Water	Surface Water	Dermal					
Child Recreator	Recreational	Water	Surface Water	Dermal					
Adult Recreator/Wading	Recreational	Water	Surface Water	Dermal					
Teen Recreator/Wading	Recreational	Water	Surface Water	Dermal					
Child Recreator/Wading	Recreational	Water	Surface Water	Dermal					

Table B.4. Exposure Parameters Used in Calculation of Human Health PRGs

(Information current as of December 12, 2001.)

RECEPTOR	LANDUSE	MEDIUM	MEDIA	PATHWAY	Volume of Bathroom VA (m3)	House Volume HV (m^3 /change)	Exchange Rate ER (changes/day)	Mixing Coefficient MC (unitless)
Teen Recreator	Recreational	Soil	Soil	Dermal				
Child Recreator	Recreational	Soil	Soil	Dermal				
Adult Recreator	Recreational	Soil	Soil	External Exposure				
Teen Recreator	Recreational	Soil	Soil	External Exposure				
Child Recreator	Recreational	Soil	Soil	External Exposure				
Adult Recreator	Recreational	Water	Surface Water	Ingestion				
Teen Recreator	Recreational	Water	Surface Water	Ingestion				
Child Recreator	Recreational	Water	Surface Water	Ingestion				
Adult Recreator	Recreational	Water	Surface Water	Dermal				
Teen Recreator	Recreational	Water	Surface Water	Dermal				
Child Recreator	Recreational	Water	Surface Water	Dermal				
Adult Recreator/Wading	Recreational	Water	Surface Water	Dermal				
Teen Recreator/Wading	Recreational	Water	Surface Water	Dermal				
Child Recreator/Wading	Recreational	Water	Surface Water	Dermal				

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Primary	Tier	Used for Soil?	Used for Water?	Used for Food?	GI Absorption Factor (Unitless)	Oral RfD [mg/(kg x day)]	Reference for Oral RfD	Absorbed Dose RfD [mg/(kg x day)]
7440360	Antimony (metallic)	Y		Y	Y	Y	0.02	4.00E-04	a	8.00E-06
7440382	Arsenic, Inorganic	Y		Y	Y	Y	0.41	3.00E-04	a	1.23E-04
7440417	Beryllium and compounds	Y		Y	Y	Y	0.01	2.00E-03	a	2.00E-05
7440439	Cadmium (Diet)	Y		Y	N	Y	0.01	1.00E-03	a,j	1.00E-05
7440439	Cadmium (Water)	Y		N	Y	N	0.01	5.00E-04	a,j	5.00E-06
16065831	Chromium (III) (Insoluble Salts)	Y		Y	Y	Y	0.005	1.50E+00	a	7.50E-03
18540299	Chromium VI (chromic acid mists)	Y		N	Y	N	0.02	3.00E-03	a	6.00E-05
18540299	Chromium VI (particulates)	Y		Y	N	Y	0.02	3.00E-03	a	6.00E-05
7440473	Chromium (Total)	Y		Y	Y	Y	0.005	1.50E+00	c	7.50E-03
7440508	Copper	Y		Y	Y	Y	0.3	3.70E-02	b	1.11E-02
7439896	Iron	Y		Y	Y	Y	0.15	3.00E-01	x	4.50E-02
7439921	Lead And Compounds	Y		Y	Y	Y	0.15			
7439965	Manganese	Y		Y	Y	Y	0.04	2.40E-02	a, m	9.60E-04
7439976	Mercury, Inorganic Salts	Y		Y	Y	Y	0.07	3.00E-04	w	2.10E-05
7439987	Molybdenum	Y		Y	Y	Y	0.38	5.00E-03	a	1.90E-03
7440020	Nickel Soluble Salts	Y		Y	Y	Y	0.27	2.00E-02	a,t	5.40E-03
7782492	Selenium	Y		Y	Y	Y	0.44	5.00E-03	a	2.20E-03
7440224	Silver	Y		Y	Y	Y	0.18	5.00E-03	a	9.00E-04
7791120	Thallium Chloride	Y		Y	Y	Y	0.2	8.00E-05	a	1.60E-05
7440611	Uranium (Soluble Salts)	Y		Y	Y	Y	0.85	6.00E-04	ae	5.10E-04
7440622	Vanadium, Metallic	Y		Y	Y	Y	0.01	7.00E-03	b	7.00E-05
7440666	Zinc (Metallic)	Y		Y	Y	Y	0.2	3.00E-01	a	6.00E-02
83329	Acenaphthene	Y		Y	Y	Y	0.31	6.00E-02	a	1.86E-02
208968	Acenaphthylene	Y		Y	Y	Y	0.31			
107131	Acrylonitrile	Y		Y	Y	Y	0.8	1.00E-03	b	8.00E-04
120127	Anthracene	Y		Y	Y	Y	0.76	3.00E-01	a	2.28E-01
12674112	Aroclor 1016	Y	High	Y	N	Y	0.9	7.00E-05	a	6.30E-05
12674112	Aroclor 1016	Y	Low	N	Y	N	0.9	7.00E-05	a	6.30E-05
11104282	Aroclor 1221	Y	High	Y	N	Y	0.9			
11104282	Aroclor 1221	Y	Low	N	Y	N	0.9			
11141165	Aroclor 1232	Y	High	Y	N	Y	0.9			
11141165	Aroclor 1232	Y	Low	N	Y	N	0.9			
53469219	Aroclor 1242	Y	High	Y	N	Y	0.9			
53469219	Aroclor 1242	Y	Low	N	Y	N	0.9			
12672296	Aroclor 1248	Y	High	Y	N	Y	0.9			
12672296	Aroclor 1248	Y	Low	N	Y	N	0.9			
11097691	Aroclor 1254	Y	High	Y	N	Y	0.9	2.00E-05	a	1.80E-05
11097691	Aroclor 1254	Y	Low	N	Y	N	0.9	2.00E-05	a	1.80E-05

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Inhalation RfC (m3/day)	Reference for Inhalation RfC	Inhalation RfD [mg/(kg x day)]	Oral Slope Factor [mg/(kg x day)]$^{-1}$	Reference for Oral Slope Factor	Oral Slope Factor for Water (pCi)$^{-1}$	Oral Slope Factor for Soil (pCi)$^{-1}$	Oral Slope Factor for Food (pCi)$^{-1}$
7440360	Antimony (metallic)								
7440382	Arsenic, Inorganic				1.50E+00	a			
7440417	Beryllium and compounds	2.00E-05	a	5.71E-06					
7440439	Cadmium (Diet)								
7440439	Cadmium (Water)								
16065831	Chromium (III) (Insoluble Salts)								
18540299	Chromium VI (chromic acid mists)	8.00E-06	a	2.29E-06					
18540299	Chromium VI (particulates)	1.00E-04	a	2.86E-05					
7440473	Chromium (Total)		c						
7440508	Copper								
7439896	Iron								
7439921	Lead And Compounds								
7439965	Manganese	5.00E-05	a	1.43E-05					
7439976	Mercury, Inorganic Salts								
7439987	Molybdenum								
7440020	Nickel Soluble Salts								
7782492	Selenium								
7440224	Silver								
7791120	Thallium Chloride								
7440611	Uranium (Soluble Salts)								
7440622	Vanadium, Metallic								
7440666	Zinc (Metallic)								
83329	Acenaphthene	2.09E-01	ex	5.97E-02					
208968	Acenaphthylene								
107131	Acrylonitrile	2.00E-03	a	5.71E-04	5.40E-01	a			
120127	Anthracene	1.05E+00	ex	3.00E-01					
12674112	Aroclor 1016	2.44E-04	ex	6.97E-05	2.00E+00	n			
12674112	Aroclor 1016	2.44E-04	ex	6.97E-05	4.00E-01	o			
11104282	Aroclor 1221				2.00E+00	n			
11104282	Aroclor 1221				4.00E-01	o			
11141165	Aroclor 1232				2.00E+00	n			
11141165	Aroclor 1232				4.00E-01	o			
53469219	Aroclor 1242				2.00E+00	n			
53469219	Aroclor 1242				4.00E-01	o			
12672296	Aroclor 1248				2.00E+00	n			
12672296	Aroclor 1248				4.00E-01	o			
11097691	Aroclor 1254	6.98E-05	ex	1.99E-05	2.00E+00	n			
11097691	Aroclor 1254	6.98E-05	ex	1.99E-05	4.00E-01	o			

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Absorbed Dose Slope Factor $[mg/(kg \times day)]^{-1}$ or $(pCi)^{-1}$	Inhalation Slope Factor $[mg/(kg \times day)]^{-1}$ or $(pCi)^{-1}$	Reference for Inhalation Slope Factor	External Exposure Slope Factor $[(pCi \times year)/g]^{-1}$	Reference for External Slope Factor	EPA Cancer Class
7440360	Antimony (metallic)						NA
7440382	Arsenic, Inorganic	3.66E+00	1.50E+01	a			A
7440417	Beryllium and compounds		8.40E+00	u,a			B1
7440439	Cadmium (Diet)		6.10E+00	w			B1
7440439	Cadmium (Water)		6.10E+00	w			B1
16065831	Chromium (III) (Insoluble Salts)						D
18540299	Chromium VI (chromic acid mists)		2.94E+02	u,c1			A
18540299	Chromium VI (particulates)		2.94E+02	u, c1			A
7440473	Chromium (Total)		4.20E+01	c			D
7440508	Copper						D
7439896	Iron						NA
7439921	Lead And Compounds						B2
7439965	Manganese						D
7439976	Mercury, Inorganic Salts						C
7439987	Molybdenum						NA
7440020	Nickel Soluble Salts						NA
7782492	Selenium						D
7440224	Silver						D
7791120	Thallium Chloride						D
7440611	Uranium (Soluble Salts)						NA
7440622	Vanadium, Metallic						NA
7440666	Zinc (Metallic)						D
83329	Acenaphthene						NA
208968	Acenaphthylene						NA
107131	Acrylonitrile	6.75E-01	2.38E-01	u,a			B1
120127	Anthracene						D
12674112	Aroclor 1016	2.22E+00	2.00E+00	q			B2
12674112	Aroclor 1016	4.44E-01	4.00E-01	q			B2
11104282	Aroclor 1221	2.22E+00	2.00E+00	q			B2
11104282	Aroclor 1221	4.44E-01	4.00E-01	q			B2
11141165	Aroclor 1232	2.22E+00	2.00E+00	q			B2
11141165	Aroclor 1232	4.44E-01	4.00E-01	q			B2
53469219	Aroclor 1242	2.22E+00	2.00E+00	q			B2
53469219	Aroclor 1242	4.44E-01	4.00E-01	q			B2
12672296	Aroclor 1248	2.22E+00	2.00E+00	q			B2
12672296	Aroclor 1248	4.44E-01	4.00E-01	q			B2
11097691	Aroclor 1254	2.22E+00	2.00E+00	q			B2
11097691	Aroclor 1254	4.44E-01	4.00E-01	q			B2

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Reference for EPA Cancer Class	Date Withdrawn	Radionuclide Half-life	Radionuclide Half-life Units	Volatile Organic?	Particle Emission Factor (m^3/kg)	Volatilization Factor (m^3/kg)
7440360	Antimony (metallic)						3.21E+10	
7440382	Arsenic, Inorganic	a	Jan-98				3.21E+10	
7440417	Beryllium and compounds	a	Apr-98				3.21E+10	
7440439	Cadmium (Diet)	a	Jul-97				3.21E+10	
7440439	Cadmium (Water)	a	Jul-97				3.21E+10	
16065831	Chromium (III) (Insoluble Salts)	a					3.21E+10	
18540299	Chromium VI (chromic acid mists)	a					3.21E+10	
18540299	Chromium VI (particulates)	a					3.21E+10	
7440473	Chromium (Total)	a					3.21E+10	
7440508	Copper	a					3.21E+10	
7439896	Iron						3.21E+10	
7439921	Lead And Compounds	a					3.21E+10	
7439965	Manganese	a	Jan-98				3.21E+10	
7439976	Mercury, Inorganic Salts	w	Sep-95				3.21E+10	3.50E+04
7439987	Molybdenum						3.21E+10	
7440020	Nickel Soluble Salts						3.21E+10	
7782492	Selenium	a					3.21E+10	
7440224	Silver	a					3.21E+10	
7791120	Thallium Chloride	a					3.21E+10	
7440611	Uranium (Soluble Salts)						3.21E+10	
7440622	Vanadium, Metallic						3.21E+10	
7440666	Zinc (Metallic)	a					3.21E+10	
83329	Acenaphthene					YES	3.21E+10	2.31E+05
208968	Acenaphthylene					YES	3.21E+10	1.41E+05
107131	Acrylonitrile	a				YES	3.21E+10	8.33E+03
120127	Anthracene	a				YES	3.21E+10	8.27E+05
12674112	Aroclor 1016	a					3.21E+10	5.02E+05
12674112	Aroclor 1016	a					3.21E+10	5.02E+05
11104282	Aroclor 1221						3.21E+10	
11104282	Aroclor 1221						3.21E+10	
11141165	Aroclor 1232						3.21E+10	
11141165	Aroclor 1232						3.21E+10	
53469219	Aroclor 1242	a					3.21E+10	3.83E+05
53469219	Aroclor 1242	a					3.21E+10	3.83E+05
12672296	Aroclor 1248						3.21E+10	
12672296	Aroclor 1248						3.21E+10	
11097691	Aroclor 1254	a					3.21E+10	5.62E+05
11097691	Aroclor 1254	a					3.21E+10	5.62E+05

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	City of Basis for PEF and VF	EPA Default ABS (Unitless)	Reference for EPA ABS	KY Default ABS (Unitless)	Reference for KY ABS	Pemeability Constant (cm/hr)
7440360	Antimony (metallic)	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440382	Arsenic, Inorganic	Little Rock, AK	0.001	ac	0.03	c	1.00E-03
7440417	Beryllium and compounds	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440439	Cadmium (Diet)	Little Rock, AK	0.01	ab	0.001	c	1.00E-03
7440439	Cadmium (Water)	Little Rock, AK	0.01	ab	0.001	c	1.00E-03
16065831	Chromium (III) (Insoluble Salts)	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
18540299	Chromium VI (chromic acid mists)	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
18540299	Chromium VI (particulates)	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440473	Chromium (Total)	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440508	Copper	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7439896	Iron	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7439921	Lead And Compounds	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7439965	Manganese	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7439976	Mercury, Inorganic Salts	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7439987	Molybdenum	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440020	Nickel Soluble Salts	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7782492	Selenium	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440224	Silver	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7791120	Thallium Chloride	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440611	Uranium (Soluble Salts)	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440622	Vanadium, Metallic	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
7440666	Zinc (Metallic)	Little Rock, AK	0.001	ac	0.05	k	1.00E-03
83329	Acenaphthene	Little Rock, AK	0.01	ac	0.13	c	2.50E-01
208968	Acenaphthylene	Little Rock, AK	0.01	ac	0.13	c	9.50E-02
107131	Acrylonitrile	Little Rock, AK	0.01	ac	0.25	k	1.40E-03
120127	Anthracene	Little Rock, AK	0.01	ac	0.13	c	2.20E-01
12674112	Aroclor 1016	Little Rock, AK	0.06	ab	0.14	c	7.90E-01
12674112	Aroclor 1016	Little Rock, AK	0.06	ab	0.14	c	7.90E-01
11104282	Aroclor 1221	Little Rock, AK	0.06	ab	0.14	c	9.20E-02
11104282	Aroclor 1221	Little Rock, AK	0.06	ab	0.14	c	9.20E-02
11141165	Aroclor 1232	Little Rock, AK	0.06	ab	0.14	c	1.40E-02
11141165	Aroclor 1232	Little Rock, AK	0.06	ab	0.14	c	1.40E-02
53469219	Aroclor 1242	Little Rock, AK	0.06	ab	0.14	c	3.70E-02
53469219	Aroclor 1242	Little Rock, AK	0.06	ab	0.14	c	3.70E-02
12672296	Aroclor 1248	Little Rock, AK	0.06	ab	0.14	c	3.70E-01
12672296	Aroclor 1248	Little Rock, AK	0.06	ab	0.14	c	3.70E-01
11097691	Aroclor 1254	Little Rock, AK	0.06	ab	0.14	c	3.50E-01
11097691	Aroclor 1254	Little Rock, AK	0.06	ab	0.14	c	3.50E-01

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Primary	Tier	Used for Soil?	Used for Water?	Used for Food?	GI Absorption Factor (Unitless)	Oral RfD [mg/(kg x day)]	Reference for Oral RfD	Absorbed Dose RfD [mg/(kg x day)]
11096825	Aroclor 1260	Y	High	Y	N	Y	0.9			
11096825	Aroclor 1260	Y	Low	N	Y	N	0.9			
56553	Benz[a]anthracene	Y		Y	Y	Y	0.31			
71432	Benzene	Y		Y	Y	Y	0.97	3.00E-03	x	2.91E-03
50328	Benzo[a]pyrene	Y		Y	Y	Y	0.31			
205992	Benzo[b]fluoranthene	Y		Y	Y	Y	0.31			
207089	Benzo[k]fluoranthene	Y		Y	Y	Y	0.31			
56235	Carbon Tetrachloride	Y		Y	Y	Y	0.65	7.00E-04	a	4.55E-04
67663	Chloroform	Y		Y	Y	Y	0.2	1.00E-02	a	2.00E-03
218019	Chrysene	Y		Y	Y	Y	0.31			
53703	Dibenz[a,h]anthracene	Y		Y	Y	Y	0.31			
75354	Dichloroethylene, 1,1-	Y		Y	Y	Y	1	9.00E-03	a	9.00E-03
540590	Dichloroethylene, 1,2- (Mixed Isomers)	Y		Y	Y	Y	0.8	9.00E-03	b	7.20E-03
156592	Dichloroethylene, 1,2-cis-	Y		Y	Y	Y	1	1.00E-02	b	1.00E-02
156605	Dichloroethylene, 1,2-trans-	Y		Y	Y	Y	1	2.00E-02	a	2.00E-02
1746016	Dioxins/Furans (Total)	Y		Y	Y	Y	0.5			
100414	Ethylbenzene	Y		Y	Y	Y	0.97	1.00E-01	a	9.70E-02
206440	Fluoranthene	Y		Y	Y	Y	0.31	4.00E-02	a	1.24E-02
86737	Fluorene	Y		Y	Y	Y	0.5	4.00E-02	a	2.00E-02
37871004	HpCDD, 2,3,7,8-	Y		Y	Y	Y	0.5			
38998753	HpCDF, 2,3,7,8-	Y		Y	Y	Y	0.5			
34465468	HxCDD, 2,3,7,8-	Y		Y	Y	Y	0.5			
55684941	HxCDF, 2,3,7,8-	Y		Y	Y	Y	0.5			
193395	Indeno[1,2,3-cd]pyrene	Y		Y	Y	Y	0.31			
91203	Naphthalene	Y		Y	Y	Y	0.8	2.00E-02	a	1.60E-02
3268879	OCDD	Y		Y	Y	Y	0.5			
39001020	OCDF	Y		Y	Y	Y	0.5			
36088229	PeCDD, 2,3,7,8-	Y		Y	Y	Y	0.5			
57117416	PeCDF, 1,2,3,7,8-	Y		Y	Y	Y	0.5			
57117314	PeCDF, 2,3,4,7,8-	Y		Y	Y	Y	0.5			
85018	Phenanthrene	Y		Y	Y	Y	0.73			
1336363	Polychlorinated Biphenyls (Total) (high risk)	Y	High	Y	N	Y	0.9			
1336363	Polychlorinated Biphenyls (Total) (low risk)	Y	Low	N	Y	N	0.9			
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	Y	Lowest	Y	Y	N	0.9			
50328	Polynuclear Aromatic Hydrocarbons (Total)	Y		Y	Y	Y	0.31			
129000	Pyrene	Y		Y	Y	Y	0.31	3.00E-02	a	9.30E-03
1746016	TCDD, 2,3,7,8-	Y		Y	Y	Y	0.5			
51207319	TCDF, 2,3,7,8-	Y		Y	Y	Y	0.5			

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Inhalation RfC (m3/day)	Reference for Inhalation RfC	Inhalation RfD [mg/(kg x day)]	Oral Slope Factor $[mg/(kg \times day)]^{-1}$	Reference for Oral Slope Factor	Oral Slope Factor for Water $(pCi)^{-1}$	Oral Slope Factor for Soil $(pCi)^{-1}$	Oral Slope Factor for Food $(pCi)^{-1}$
11096825	Aroclor 1260				2.00E+00	n			
11096825	Aroclor 1260				4.00E-01	o			
56553	Benz[a]anthracene				7.30E-01	r			
71432	Benzene	5.93E-03	x	1.69E-03	5.50E-02	a			
50328	Benzo[a]pyrene				7.30E+00	a			
205992	Benzo[b]fluoranthene				7.30E-01	r			
207089	Benzo[k]fluoranthene				7.30E-02	r			
56235	Carbon Tetrachloride	2.44E-03	ex	6.97E-04	1.30E-01	a			
67663	Chloroform	3.00E-04	x	8.57E-05	6.10E-03	a			
218019	Chrysene				7.30E-03	r			
53703	Dibenz[a,h]anthracene				7.30E+00	r			
75354	Dichloroethylene, 1,1-	3.14E-02	ex	8.97E-03	6.00E-01	a			
540590	Dichloroethylene, 1,2- (Mixed Isomers)	3.14E-02	ex	8.97E-03					
156592	Dichloroethylene, 1,2-cis-	3.49E-02	ex	9.97E-03					
156605	Dichloroethylene, 1,2-trans-	6.98E-02	ex	1.99E-02					
1746016	Dioxins/Furans (Total)				1.50E+05	b			
100414	Ethylbenzene	1.00E+00	a	2.86E-01					
206440	Fluoranthene	1.40E-01	ex	4.00E-02					
86737	Fluorene	1.40E-01	ex	4.00E-02					
37871004	HpCDD, 2,3,7,8-				1.50E+03	r			
38998753	HpCDF, 2,3,7,8-				1.50E+03	r			
34465468	HxCDD, 2,3,7,8-				1.50E+04	r			
55684941	HxCDF, 2,3,7,8-				1.50E+04	r			
193395	Indeno[1,2,3-cd]pyrene				7.30E-01	r			
91203	Naphthalene	3.00E-03	a	8.57E-04					
3268879	OCDD				1.50E+02	r			
39001020	OCDF				1.50E+02	r			
36088229	PeCDD, 2,3,7,8-				7.50E+04	r			
57117416	PeCDF, 1,2,3,7,8-				7.50E+04	r			
57117314	PeCDF, 2,3,4,7,8-				7.50E+03	r			
85018	Phenanthrene								
1336363	Polychlorinated Biphenyls (Total) (high risk)				2.00E+00	a,n			
1336363	Polychlorinated Biphenyls (Total) (low risk)				4.00E-01	a,o			
1336363	Polychlorinated Biphenyls (Total) (lowest risk)				7.00E-02	a,p			
50328	Polynuclear Aromatic Hydrocarbons (Total)				7.30E+00	a			
129000	Pyrene	1.05E-01	ex	3.00E-02					
1746016	TCDD, 2,3,7,8-				1.50E+05	b			
51207319	TCDF, 2,3,7,8-				1.50E+04	r			

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Absorbed Dose Slope Factor $[mg/(kg \times day)]^{-1}$ or $(pCi)^{-1}$	Inhalation Slope Factor $[mg/(kg \times day)]^{-1}$ or $(pCi)^{-1}$	Reference for Inhalation Slope Factor	External Exposure Slope Factor $[(pCi \times year)/g]^{-1}$	Reference for External Slope Factor	EPA Cancer Class
11096825	Aroclor 1260	2.22E+00	2.00E+00	q			B2
11096825	Aroclor 1260	4.44E-01	4.00E-01	q			B2
56553	Benz[a]anthracene	2.35E+00	3.10E-01	r			B2
71432	Benzene	5.67E-02	2.73E-02	u,a			A
50328	Benzo[a]pyrene	2.35E+01	3.10E+00	x			B2
205992	Benzo[b]fluoranthene	2.35E+00	3.10E-01	r			B2
207089	Benzo[k]fluoranthene	2.35E-01	3.10E-02	r			B2
56235	Carbon Tetrachloride	2.00E-01	5.25E-02	u,a			B2
67663	Chloroform	3.05E-02	8.05E-02	u,a			B2
218019	Chrysene	2.35E-02	3.10E-03	r			B2
53703	Dibenz[a,h]anthracene	2.35E+01	3.10E+00	r			B2
75354	Dichloroethylene, 1,1-	6.00E-01	1.75E-01	u,a			C
540590	Dichloroethylene, 1,2- (Mixed Isomers)						NA
156592	Dichloroethylene, 1,2-cis-						D
156605	Dichloroethylene, 1,2-trans-						NA
1746016	Dioxins/Furans (Total)	3.00E+05	1.50E+05	b			B2
100414	Ethylbenzene		3.85E-03	u,v			D
206440	Fluoranthene						D
86737	Fluorene						D
37871004	HpCDD, 2,3,7,8-	3.00E+03	1.50E+03	r			B2
38998753	HpCDF, 2,3,7,8-	3.00E+03	1.50E+03	r			B2
34465468	HxCDD, 2,3,7,8-	3.00E+04	1.50E+04	r			B2
55684941	HxCDF, 2,3,7,8-	3.00E+04	1.50E+04	r			B2
193395	Indeno[1,2,3-cd]pyrene	2.35E+00	3.10E-01	r			B2
91203	Naphthalene						C
3268879	OCDD	3.00E+02	1.50E+02	r			B2
39001020	OCDF	3.00E+02	1.50E+02	r			B2
36088229	PeCDD, 2,3,7,8-	1.50E+05	7.50E+04	r			B2
57117416	PeCDF, 1,2,3,7,8-	1.50E+05	7.50E+04	r			B2
57117314	PeCDF, 2,3,4,7,8-	1.50E+04	7.50E+03	r			B2
85018	Phenanthrene						D
1336363	Polychlorinated Biphenyls (Total) (high risk)	2.22E+00	2.00E+00	a,n			B2
1336363	Polychlorinated Biphenyls (Total) (low risk)	4.44E-01	4.00E-01	a,q			B2
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	7.78E-02	7.00E-02	a,p			B2
50328	Polynuclear Aromatic Hydrocarbons (Total)	2.35E+01	3.10E+00	x			B2
129000	Pyrene						D
1746016	TCDD, 2,3,7,8-	3.00E+05	1.50E+05	b			B2
51207319	TCDF, 2,3,7,8-	3.00E+04	1.50E+04	r			B2

See Note at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Reference for EPA Cancer Class	Date Withdrawn	Radionuclide Half-life	Radionuclide Half-life Units	Volatile Organic?	Particle Emission Factor (m^3/kg)	Volatilization Factor (m^3/kg)
11096825	Aroclor 1260	a					3.21E+10	4.74E+05
11096825	Aroclor 1260	a					3.21E+10	4.74E+05
56553	Benz[a]anthracene	a					3.21E+10	1.00E+07
71432	Benzene	a				YES	3.21E+10	2.89E+03
50328	Benzo[a]pyrene	a					3.21E+10	2.60E+07
205992	Benzo[b]fluoranthene	a					3.21E+10	4.90E+06
207089	Benzo[k]fluoranthene	a					3.21E+10	4.17E+07
56235	Carbon Tetrachloride	a				YES	3.21E+10	2.19E+03
67663	Chloroform	a				YES	3.21E+10	2.82E+03
218019	Chrysene	a					3.21E+10	2.88E+06
53703	Dibenz[a,h]anthracene	a					3.21E+10	1.11E+08
75354	Dichloroethylene, 1,1-	a				YES	3.21E+10	1.52E+03
540590	Dichloroethylene, 1,2- (Mixed Isomers)					YES	3.21E+10	
156592	Dichloroethylene, 1,2-cis-	a				YES	3.21E+10	3.07E+03
156605	Dichloroethylene, 1,2-trans-					YES	3.21E+10	2.46E+03
1746016	Dioxins/Furans (Total)	b					3.21E+10	6.22E+05
100414	Ethylbenzene	a				YES	3.21E+10	5.71E+03
206440	Fluoranthene	a					3.21E+10	3.24E+06
86737	Fluorene	a				YES	3.21E+10	5.41E+05
37871004	HpCDD, 2,3,7,8-	r					3.21E+10	
38998753	HpCDF, 2,3,7,8-	r					3.21E+10	
34465468	HxCDD, 2,3,7,8-	r					3.21E+10	
55684941	HxCDF, 2,3,7,8-	r					3.21E+10	
193395	Indeno[1,2,3-cd]pyrene	a					3.21E+10	6.05E+07
91203	Naphthalene	a				YES	3.21E+10	5.91E+04
3268879	OCDD	r					3.21E+10	
39001020	OCDF	r					3.21E+10	
36088229	PeCDD, 2,3,7,8-	r					3.21E+10	
57117416	PeCDF, 1,2,3,7,8-	r					3.21E+10	
57117314	PeCDF, 2,3,4,7,8-	r					3.21E+10	
85018	Phenanthrene	a					3.21E+10	
1336363	Polychlorinated Biphenyls (Total) (high risk)	a					3.21E+10	1.00E+06
1336363	Polychlorinated Biphenyls (Total) (low risk)	a					3.21E+10	1.00E+06
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	a					3.21E+10	1.00E+06
50328	Polynuclear Aromatic Hydrocarbons (Total)	a					3.21E+10	2.60E+07
129000	Pyrene	a					3.21E+10	4.02E+06
1746016	TCDD, 2,3,7,8-	b					3.21E+10	6.22E+05
51207319	TCDF, 2,3,7,8-	r					3.21E+10	

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	City of Basis for PEF and VF	EPA Default ABS (Unitless)	Reference for EPA ABS	KY Default ABS (Unitless)	Reference for KY ABS	Pemeability Constant (cm/hr)
11096825	Aroclor 1260	Little Rock, AK	0.06	ab	0.14	c	1.10E+00
11096825	Aroclor 1260	Little Rock, AK	0.06	ab	0.14	c	1.10E+00
56553	Benz[a]anthracene	Little Rock, AK	0.01	ac	0.13	c	8.10E-01
71432	Benzene	Little Rock, AK	0.01	ac	0.25	k	2.10E-02
50328	Benzo[a]pyrene	Little Rock, AK	0.01	ac	0.13	c	1.20E+00
205992	Benzo[b]fluoranthene	Little Rock, AK	0.01	ac	0.13	c	1.20E+00
207089	Benzo[k]fluoranthene	Little Rock, AK	0.01	ac	0.13	c	6.00E-01
56235	Carbon Tetrachloride	Little Rock, AK	0.01	ac	0.25	k	2.20E-02
67663	Chloroform	Little Rock, AK	0.01	ac	0.25	k	8.90E-03
218019	Chrysene	Little Rock, AK	0.01	ac	0.13	c	8.10E-01
53703	Dibenz[a,h]anthracene	Little Rock, AK	0.01	ac	0.13	c	2.70E+00
75354	Dichloroethylene, 1,1-	Little Rock, AK	0.01	ac	0.25	k	8.90E-03
540590	Dichloroethylene, 1,2- (Mixed Isomers)	Little Rock, AK	0.01	ac	0.25	k	1.10E-03
156592	Dichloroethylene, 1,2-cis-	Little Rock, AK	0.01	ac	0.25	k	1.00E-02
156605	Dichloroethylene, 1,2-trans-	Little Rock, AK	0.01	ac	0.25	k	1.10E-03
1746016	Dioxins/Furans (Total)	Little Rock, AK	0.03	c	0.03	c	1.40E+00
100414	Ethylbenzene	Little Rock, AK	0.01	ac	0.25	k	7.40E-02
206440	Fluoranthene	Little Rock, AK	0.01	ac	0.13	c	3.60E-01
86737	Fluorene	Little Rock, AK	0.01	ac	0.13	c	2.50E-01
37871004	HpCDD, 2,3,7,8-	Little Rock, AK	0.03	ab	0.03	c	1.60E+00
38998753	HpCDF, 2,3,7,8-	Little Rock, AK	0.01	ac	0.03	c	
34465468	HxCDD, 2,3,7,8-	Little Rock, AK	0.03	ab	0.03	c	
55684941	HxCDF, 2,3,7,8-	Little Rock, AK	0.01	ac	0.03	c	
193395	Indeno[1,2,3-cd]pyrene	Little Rock, AK	0.01	ac	0.13	c	1.90E+00
91203	Naphthalene	Little Rock, AK	0.01	ac	0.13	c	6.90E-02
3268879	OCDD	Little Rock, AK	0.03	ab	0.03	c	5.10E+00
39001020	OCDF	Little Rock, AK	0.01	ac	0.03	c	4.80E+00
36088229	PeCDD, 2,3,7,8-	Little Rock, AK	0.03	ab	0.03	c	5.30E-01
57117416	PeCDF, 1,2,3,7,8-	Little Rock, AK	0.01	ac	0.03	c	1.10E+00
57117314	PeCDF, 2,3,4,7,8-	Little Rock, AK	0.01	ac	0.03	c	1.30E+00
85018	Phenanthrene	Little Rock, AK	0.01	ac	0.13	c	2.70E-01
1336363	Polychlorinated Biphenyls (Total) (high risk)	Little Rock, AK	0.06	ab	0.14	c	3.50E-01
1336363	Polychlorinated Biphenyls (Total) (low risk)	Little Rock, AK	0.06	ab	0.14	c	3.50E-01
1336363	Polychlorinated Biphenyls (Total) (lowest risk)	Little Rock, AK	0.06	ab	0.14	c	3.50E-01
50328	Polynuclear Aromatic Hydrocarbons (Total)	Little Rock, AK	0.01	ac	0.13	c	1.20E+00
129000	Pyrene	Little Rock, AK	0.01	ac	0.13	c	3.20E-01
1746016	TCDD, 2,3,7,8-	Little Rock, AK	0.03	ab	0.03	c	1.40E+00
51207319	TCDF, 2,3,7,8-	Little Rock, AK	0.01	ac	0.03	c	3.50E-01

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Primary	Tier	Used for Soil?	Used for Water?	Used for Food?	GI Absorption Factor (Unitless)	Oral RfD [mg/(kg x day)]	Reference for Oral RfD	Absorbed Dose RfD [mg/(kg x day)]
127184	Tetrachloroethylene	Y		Y	Y	Y	1	1.00E-02	a	1.00E-02
79016	Trichloroethylene	Y		Y	Y	Y	0.15	6.00E-03	v	9.00E-04
75014	Vinyl Chloride	Y		Y	Y	Y	1	3.00E-03	a	3.00E-03
1330207	Xylene, Mixture	Y		Y	Y	Y	0.92	2.00E+00	a	1.84E+00
108383	Xylene, m-	Y		Y	Y	Y	0.8	2.00E+00	b	1.60E+00
95476	Xylene, o-	Y		Y	Y	Y	0.8	2.00E+00	b	1.60E+00
106423	Xylene, p-	Y		Y	Y	Y	0.8			
14596102	Am-241	Y		Y	Y	Y	0.001			
10198400	Co-60	Y		Y	Y	Y	0.3			
10045973	Cs-137+D	Y		Y	Y	Y	0.95			
13994202	Np-237+D	Y		Y	Y	Y	0.001			
13981163	Pu-238	Y		Y	Y	Y	0.001			
15117483	Pu-239	Y		Y	Y	Y	0.001			
14119336	Pu-240	Y		Y	Y	Y	0.001			
13982633	Ra-226+D	Y		Y	Y	Y	0.2			
14859677	Rn-222+D	Y		Y	Y	Y				
10098972	Sr-90+D	Y		Y	Y	Y	0.3			
14133767	Tc-99	Y		Y	Y	Y	0.8			
14274829	Th-228+D	Y		Y	Y	Y	0.0002			
14269637	Th-230	Y		Y	Y	Y	0.0002			
N2608	Th-232	Y		Y	Y	Y	0.0002			
13966295	U-234	Y		Y	Y	Y	0.05			
15117961	U-235+D	Y		Y	Y	Y	0.05			
24678828	U-238+D	Y		Y	Y	Y	0.05			

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Inhalation RfC (m3/day)	Reference for Inhalation RfC	Inhalation RfD [mg/(kg x day)]	Oral Slope Factor [mg/(kg x day)]$^{-1}$	Reference for Oral Slope Factor	Oral Slope Factor for Water (pCi)$^{-1}$	Oral Slope Factor for Soil (pCi)$^{-1}$	Oral Slope Factor for Food (pCi)$^{-1}$
127184	Tetrachloroethylene	6.00E-01	v	1.71E-01	5.20E-02	v			
79016	Trichloroethylene	2.09E-02	ex	5.97E-03	1.10E-02	x			
75014	Vinyl Chloride	1.00E-01	a	2.86E-02	1.40E+00	a			
1330207	Xylene, Mixture	6.98E-01	w	1.99E-01					
108383	Xylene, m-	5.49E+00	ex	1.57E+00					
95476	Xylene, o-	5.49E+00	ex	1.57E+00					
106423	Xylene, p-								
14596102	Am-241					HEAST	1.04E-10	2.17E-10	1.34E-10
10198400	Co-60					HEAST	1.57E-11	4.03E-11	2.23E-11
10045973	Cs-137+D					HEAST	3.04E-11	4.33E-11	3.74E-11
13994202	Np-237+D					HEAST	6.74E-11	1.62E-10	9.10E-11
13981163	Pu-238					HEAST	1.31E-10	2.72E-10	1.69E-10
15117483	Pu-239					HEAST	1.35E-10	2.76E-10	1.74E-10
14119336	Pu-240					HEAST	1.35E-10	2.77E-10	1.74E-10
13982633	Ra-226+D					HEAST	3.86E-10	7.30E-10	5.15E-10
14859677	Rn-222+D					HEAST			
10098972	Sr-90+D					HEAST	7.40E-11	1.44E-10	9.53E-11
14133767	Tc-99					HEAST	2.75E-12	7.66E-12	4.00E-12
14274829	Th-228+D					HEAST	3.00E-10	8.09E-10	4.22E-10
14269637	Th-230					HEAST	9.10E-11	2.02E-10	1.19E-10
N2608	Th-232					HEAST	1.01E-10	2.31E-10	1.33E-10
13966295	U-234					HEAST	7.07E-11	1.58E-10	9.55E-11
15117961	U-235+D					HEAST	7.18E-11	1.63E-10	9.76E-11
24678828	U-238+D					HEAST	8.71E-11	2.10E-10	1.21E-10

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Absorbed Dose Slope Factor $[mg/(kg \times day)]^{-1}$ or $(pCi)^{-1}$	Inhalation Slope Factor $[mg/(kg \times day)]^{-1}$ or $(pCi)^{-1}$	Reference for Inhalation Slope Factor	External Exposure Slope Factor $[(pCi \times year)/g]^{-1}$	Reference for External Slope Factor	EPA Cancer Class
127184	Tetrachloroethylene	5.20E-02	2.00E-03	v			NA
79016	Trichloroethylene	7.33E-02	6.00E-03	x			NA
75014	Vinyl Chloride	1.40E+00	3.08E-02	u,a			A
1330207	Xylene, Mixture						D
108383	Xylene, m-						NA
95476	Xylene, o-						NA
106423	Xylene, p-						NA
14596102	Am-241		2.81E-08	HEAST	2.76E-08	HEAST	A
10198400	Co-60		3.58E-11	HEAST	1.24E-05	HEAST	A
10045973	Cs-137+D		1.19E-11	HEAST	2.55E-06	HEAST	A
13994202	Np-237+D		1.77E-08	HEAST	7.97E-07	HEAST	A
13981163	Pu-238		3.36E-08	HEAST	7.22E-11	HEAST	A
15117483	Pu-239		3.33E-08	HEAST	2.00E-10	HEAST	A
14119336	Pu-240		3.33E-08	HEAST	6.98E-11	HEAST	A
13982633	Ra-226+D		1.16E-08	HEAST	8.49E-06	HEAST	A
14859677	Rn-222+D		7.57E-12	HEAST		HEAST	A
10098972	Sr-90+D		1.13E-10	HEAST	1.96E-08	HEAST	A
14133767	Tc-99		1.41E-11	HEAST	8.14E-11	HEAST	A
14274829	Th-228+D		1.43E-07	HEAST	7.76E-06	HEAST	A
14269637	Th-230		2.85E-08	HEAST	8.19E-10	HEAST	A
N2608	Th-232		4.33E-08	HEAST	3.42E-10	HEAST	A
13966295	U-234		1.14E-08	HEAST	2.52E-10	HEAST	A
15117961	U-235+D		1.01E-08	HEAST	5.43E-07	HEAST	A
24678828	U-238+D		9.35E-09	HEAST	1.14E-07	HEAST	A

See Notes at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	Reference for EPA Cancer Class	Date Withdrawn	Radionuclide Half-life	Radionuclide Half-life Units	Volatile Organic?	Particle Emission Factor (m^3/kg)	Volatilization Factor (m^3/kg)
127184	Tetrachloroethylene	e				YES	3.21E+10	2.70E+03
79016	Trichloroethylene	e				YES	3.21E+10	3.45E+03
75014	Vinyl Chloride	b				YES	3.21E+10	1.10E+03
1330207	Xylene, Mixture	a				YES	3.21E+10	7.23E+03
108383	Xylene, m-					YES	3.21E+10	6.45E+03
95476	Xylene, o-					YES	3.21E+10	6.50E+03
106423	Xylene, p-					YES	3.21E+10	5.90E+03
14596102	Am-241			4.32E+02	y		3.21E+10	
10198400	Co-60			5.27E+00	y		3.21E+10	
10045973	Cs-137+D			3.00E+01	y		3.21E+10	
13994202	Np-237+D			2.14E+06	y		3.21E+10	
13981163	Pu-238			8.77E+01	y		3.21E+10	
15117483	Pu-239			2.41E+04	y		3.21E+10	
14119336	Pu-240			6.54E+03	y		3.21E+10	
13982633	Ra-226+D			1.60E+03	y		3.21E+10	
14859677	Rn-222+D			3.82E+00	d		3.21E+10	
10098972	Sr-90+D			2.91E+01	y		3.21E+10	
14133767	Tc-99			2.13E+05	y		3.21E+10	
14274829	Th-228+D			1.91E+00	y		3.21E+10	
14269637	Th-230			7.70E+04	y		3.21E+10	
N2608	Th-232			1.41E+10	y		3.21E+10	
13966295	U-234			2.45E+05	y		3.21E+10	
15117961	U-235+D			7.04E+08	y		3.21E+10	
24678828	U-238+D			4.47E+09	y		3.21E+10	

See Note at end of tables for references and explanations.

Table B.5. Toxicity Values and Information Used in PRG Derivation

(Material compiled on December 12, 2001 and is based on best available information.)

Chemical Abstract Number	Analyte	City of Basis for PEF and VF	EPA Default ABS (Unitless)	Reference for EPA ABS	KY Default ABS (Unitless)	Reference for KY ABS	Pemeability Constant (cm/hr)
127184	Tetrachloroethylene	Little Rock, AK	0.01	ac	0.25	k	3.70E-01
79016	Trichloroethylene	Little Rock, AK	0.01	ac	0.25	k	1.60E-02
75014	Vinyl Chloride	Little Rock, AK	0.01	ac	0.25	k	7.30E-03
1330207	Xylene, Mixture	Little Rock, AK	0.01	ac	0.1	c	9.50E-02
108383	Xylene, m-	Little Rock, AK	0.01	ac	0.1	c	8.00E-02
95476	Xylene, o-	Little Rock, AK	0.01	ac	0.1	c	8.00E-02
106423	Xylene, p-	Little Rock, AK	0.01	ac	0.1	c	8.00E-02
14596102	Am-241	Little Rock, AK					
10198400	Co-60	Little Rock, AK					
10045973	Cs-137+D	Little Rock, AK					
13994202	Np-237+D	Little Rock, AK					
13981163	Pu-238	Little Rock, AK					
15117483	Pu-239	Little Rock, AK					
14119336	Pu-240	Little Rock, AK					
13982633	Ra-226+D	Little Rock, AK					
14859677	Rn-222+D	Little Rock, AK					
10098972	Sr-90+D	Little Rock, AK					
14133767	Tc-99	Little Rock, AK					
14274829	Th-228+D	Little Rock, AK					
14269637	Th-230	Little Rock, AK					
N2608	Th-232	Little Rock, AK					
13966295	U-234	Little Rock, AK					
15117961	U-235+D	Little Rock, AK					
24678828	U-238+D	Little Rock, AK					

Notes on Table B.5

1. Only information used to derive PRGs for significant COPCs at the PGDP is shown.
2. "Primary" is a flag used to identify the significant COPCs for the PGDP.
3. "Tier" indicates the "risk level" used for PCB mixtures. The "high" risk level is used to derive action and no action levels for the PGDP.
4. "Used for Soil?", "Used for Water?", and "Used for Food?" are flags describing how individual values reported in later columns are used in risk analyses.
5. The "GI Absorption Factor" is a unitless value that is an estimate of the fraction of chemical absorbed from the gastrointestinal tract. This value is used with the Oral RfD and Oral Slope Factor to develop absorbed dose RFDs and Slope factors, respectively.
6. The "Oral RfD" is the chronic oral reference dose used for ingestion routes of exposure.
7. The references for the Oral RfDs are as follows:
   a – Value taken from EPA's IRIS database.
   b – Value taken from EPA's HEAST database.
   c – The toxicity values for Chromium (Total) are the Chromium (III) values for all but inhalation slope factor. The inhalation slope factor is that for Chromium (VI).
   j – As discussed in EPA's IRIS, the oral toxicity values for "Cadmium (Diet)" are to be used for soil and food and the oral toxicity values for "Cadmium (Water)" are to be used for water.
   m – The RfD contained in EPA's IRIS database includes manganese from all sources, including diet. The explanatory text in IRIS recommends using a modifying factor of 3 when calculating risks associated with non-food sources. IRIS also recommends subtracting dietary exposure (default assumption in IRIS is 5 mg). Thus, the RfD reported here has been lowered by a factor of 2 x 3, or 6. The RfD reflects manganese for "non-food" sources only.t – This value was formerly listed as Nickel (metallic) with the Chemical Abstract Number of 7440-02-0.
   v – The DOE-ORO Risk Assessment Program contacted EPA's Superfund Health Risk Technical Support Center and received this provisional value for use in ORO projects. If used at non-ORO sites, the aforementioned office should be contacted.
   w – This value has been withdrawn from IRIS or HEAST. The date withdrawn is provided later in the table.
   x – Provisional toxicity value provided by EPA's National Center for Environmental Assessment (NCEA).
8. The "Absorbed Dose RfD" calculated by multiplying the Oral RfD by the GI Absorption factor. This value is only applicable to chemical exposures.
9. The "Inhalation RfC" is the chronic inhalation concentration used for inhalation routes of exposure.
10. The references for the Inhalation RfCs are as follows:
    a – Value taken from EPA's IRIS database.
    b – Value taken from EPA's HEAST database.
    c – The toxicity values for Chromium (Total) are the Chromium (III) values for all but inhalation slope factor. The inhalation slope factor is that for Chromium (VI).
    ex – Value is extrapolated from Oral RfD consistent with methods used by EPA's Region 9.
    w – This value has been withdrawn from IRIS or HEAST. The date withdrawn is provided later in the table.
    v – The DOE-ORO Risk Assessment Program contacted EPA's Superfund Health Risk Technical Support Center and received this provisional value for use in ORO projects. If used at non-ORO sites, the aforementioned office should be contacted.
    x – Provisional toxicity value provided by EPA's National Center for Environmental Assessment (NCEA).
11. The "Inhalation RfD" is the chronic inhalation reference dose derived from the Inhalation RfC using the following formula.

$$\mathbf{RfD\,[mg/(kg \times day)]} = \frac{\mathbf{RfC\,(mg/m^3) \times 20\,m^3\,/\,day}}{\mathbf{70\,kg}}$$

12. The "Oral Slope Factor" is the chronic oral slope factor used for the ingestion routes of exposure. The units on this value for chemicals is $[mg/(kg \times day)]^{-1}$. The units on this value for radionuclides is $(pCi)^{-1}$.
13. The references for the Oral Slope Factor are as follows:
    a – Value taken from EPA's IRIS database.
    b – Value taken from EPA's HEAST database.
    c – The toxicity values for Chromium (Total) are the Chromium (III) values for all but inhalation slope factor. The inhalation cancer slope factor reported is the inhalation slope factor for Chromium VI reported in EPA's IRIS data base. This inhalation slope factor is used here because a cancer slope factor for total chromium does not exist and because its use is consistent with the Commonwealth of Kentucky's interpretation of the study upon which the inhalation slope factor is based.
    c1 - The inhalation cancer slope factor reported for Chromium VI is seven times the value reported in EPA's IRIS data base. The inhalation cancer slope factor was multiplied by seven to remain consistent with the Commonwealth of Kentucky's interpretation of the study upon which the inhalation cancer slope factor is based.
    n – The cancer potency of PCB mixtures is determined using a tiered approach. The value to be used depends on the information available. Criteria for use of the High Risk and Persistence Tier (i.e., the tier used in PRG calculation) include potential for: food chain exposure; sediment or soil ingestion; dust or aerosol inhalation; dermal exposure (if no GI absorption factor applied); early-life exposure; and presence of dioxin-like, tumor-promoting congeners.
    o – The cancer potency of PCB mixtures is determined using a tiered approach. The value to be used depends on the information available. Criteria for use of the Low Risk and Persistence Tier (not used in PRG calculation) include potential for: ingestion of water-soluble congeners; inhalation of evaporated congeners; and dermal exposure (if no GI absorption factor applied).
    p - This value is the upper-bound Oral Slope Factor for the Lowest Risk and Persistence Tier. Criteria for use of this tier include situations in which congener or isomer analyses verify that congeners with more than 4 chlorines comprise less than 0.5% of the total PCBs. This value was not used in PRG calculation.
    r – EPA's Region 4 uses a Toxicity Equivalence Factor (TEF) for adjustment of carcinogenic polynuclear hydrocarbon (PAH) and dioxin/furan concentrations to common base compounds (i.e., benzo(a)pyrene and 2,3,7,8-TCDD, respectively). The TEFs are provided in Section 3 of the Methods Document. However ,the TEFs can also be used to adjust the toxicity values of individual compounds. The toxicity value provided here was derived using the appropriate TEF.
    u – The Inhalation Slope Factor was calculated from inhalation unit risk as described in Supplemental Guidance from *RAGS: Region 4 Bulletins, Human Health Risk Assessment* (Interim Guidance) (November 1995).
    v – The DOE-ORO Risk Assessment Program contacted EPA's Superfund Health Risk Technical Support Center and received this provisional value for use in ORO projects. If used at non-ORO sites, the aforementioned office should be contacted.
    x – Provisional toxicity value provided by EPA's National Center for Environmental Assessment (NCEA).
    ae – Source: Federal Register, Thursday December 7, 2000. Part II, Environmental Protection Agency. 40 CFR Parts 9, 141, and 142 - National Primary Drinking Water Regulations; Radionuclides; Final Rule. p 76713. Also see Soil Screening Guidance for Radionuclides: User's Guide pg 1-6. HEAST – Value taken from EPA's HEAST website.
14. "Oral Slope Factor for Water," "Oral Slope Factor for Soil," and "Oral Slope Factor for Food" are the indicated values for radionuclides. These medium-specific values were introduced for use since the last iteration of this table.
15. The "Absorbed Dose Slope Factor" calculated by dividing the Oral Slope Factor by the GI Absorption factor. This value is only applicable to chemical exposures.
16. The "Inhalation Slop Factor" is the chronic inhalation slope factor used for inhalation routes of exposure. The units on this value for chemicals is $[mg/(kg \times day)]^{-1}$. The units on this value for radionuclides is $(pCi)^{-1}$. For chemicals, this value was calculated from the inhalation unit risks (when required) using the following formula:

$$\mathbf{SFI\ [(mg/kg \times day)]^{-1}} = \frac{\mathbf{Unit\ Risk\ (\mu g/m^3)^{-1} \times 70\ kg \times 1000\ \mu g/mg}}{\mathbf{20\ m^3\ /day}}$$

17. The "External Exposure Slope Factor" is the slope factor used for external exposure to ionizing radiation emitted by radioactive chemicals.
18. The references for the External Exposure Slope Factor are as follows:
    HEAST – Value taken from EPA's HEAST website.
19. The "EPA Cancer Class" is the classification into which EPA has placed the chemical. These classes are defined as follows:
    A – human carcinogen.
    B – probable human carcinogen. There are two subclassification.
        B1 – agents for which there is limited human data from epidemiologic studies.
        B2 – agents for which there is sufficient evidence from animal studies and for which there is inadequate or no evidence from human epidemiologic studies.
    C – possible human carcinogen.
    D – not classifiable as to human carcinogenicity.
    E – evidence of noncarcinogenicity for humans.
    NA – No classification available.
20. The references for the EPA Cancer Class are as follows:
    a – Value taken from EPA's IRIS database.
    b – Value taken from EPA's HEAST database.
    r – The cancer class is "extrapolated" from that for the 2,3,7,8-TCDD base chemical.
    All radionuclides are assumed to be Class A carcinogens as discussed in HEAST.
21. "Date Withdrawn" is the date on which the specified value was withdrawn from an EPA database.
22. "Radionuclide Half-life" and "Radionuclide Half-life Units" are the indicated physical properties for the radionclides listed.
23. "Volatile Organic?" is a flag used to specify if the chemical should be assessed as a vapor.
24. The "Particle Emission Factor" is a value used to assess inhalation routes of exposure. The value listed here is a default value for Little Rock, AK. It is a location-specific and not a chemical-specific value.
25. The "Volatilization Factor" is a value used to assess inhalation routes of exposure. The chemical-specific values listed here are for Little Rock AK. This value is both location- and chemical-specific.
26. The "EPA Default ABS" is the dermal absorption value recommended by EPA Region 4 in their guidance material. This value was used to derive dose from dermal absorption from soil used in calculation of Action PRGs.
27. The references for EPA Default ABS are as follows:
    ab – Value consistent with material in EPA's *Dermal Exposure Assessment: Principles and Applications.* Interim Report. EPA/600/8-91/011B.
    ac - Chemical-specific information is not available. Therefore, ABS is the default value in EPA Region 4 guidance material. These values are 1.0% for organics and 0.1% for inorganics.
    c – Dermal ABS value from EPA Region 9.
28. The "KY Default ABS" is the dermal absorption value recommended by the Commonwealth of Kentucky in their guidance material. This value was used to derive dose from dermal absorption from soil used in calculation of No Action PRGs.
29. The references for KY Default ABS are as follows:
    c – Default dermal ABS value from EPA Region 9.
    k – Default dermal ABS value from KYDEP.
30. The "Permeability Constant" is a chemical-specific value used to estimate dermal absorption of chemicals in water.

APPENDIX C

OUTLINE FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS AND FORMAT USED FOR BINNING PACKAGES PREPARED FOR SITE SCOPING

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OUTLINE FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS AND FORMAT USED FOR BINNING PACKAGES PREPARED FOR SITE SCOPING

This appendix is presented in two parts. Part 1 contains the suggested outline for baseline human health risk assessments prepared for the PGDP. Part 2 contains a description of the binning packages currently prepared for site scoping at the PGDP.

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PART 1: OUTLINE FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS

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OUTLINE FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS

*** Although the following outline can be used for baseline human health risk assessments for both source units and integrator units, not all sections may be relevant to all assessments and additional sections may be needed for some assessments. However, all baseline risk assessments completed for PGDP should include each of the first and second level headers listed below.

*** The document should begin with an introduction that presents the scope and objectives of the baseline human health risk assessment. This should include a description of the general problem at the site and an overview of the design of the baseline human health risk assessment.

1. Results of Previous Studies

   *** The section should begin with a brief summary of the previous studies that are relevant to the baseline human health risk assessment. All relevant previous risk evaluations should be summarized.

   1.1 Study #1
   1.2 Study #2

   .

   Etc.

2. Identification of Chemicals of Potential Concern

   *** The section should begin with an introduction that describes the purpose of the section and the order in which the material is presented.

   2.1 Sources of Data
   *** The sources of all data should be listed, and the projects in which the data were collected should be described.

   2.2 General Data Evaluation Considerations
   *** The eight steps of data evaluation as applied to the baseline risk assessment should be discussed.

   2.2.1 Evaluation of Sampling
   2.2.2 Evaluation of Analytical Methods
   2.2.3 Evaluation of Sample Quantitation Limits
   2.2.4 Evaluation of Data Qualifiers and Codes
   2.2.5 Elimination of Chemicals not Detected
   2.2.6 Examination of Toxicity of Detected Analytes
   2.2.7 Comparison of Analyte Concentrations and Activities Detected in Site Samples to Analyte Concentrations and Activities in Background Samples
   2.2.8 Examination of Essential Nutrients

   2.3 Risk Assessment Specific Data Evaluation
   *** This section should discuss in detail how the eight steps were applied to identify the chemicals of potential concern under both current and future conditions.

   2.3.1 Current Conditions
   *** This section should discuss the evaluation of the data set.

2.3.2 Future Conditions

*** This section should discuss any modeling performed to address potential future changes in the identity or concentration of contaminants.

2.4 Evaluation of Data from Other Sources

*** The section should introduce any "special data," especially data used to develop the exposure assessment, that are not used quantitatively in the baseline human health risk assessment.

2.4.1 Other Source #1

2.4.2 Other Source #2

.

Etc.

2.5 Summary of Chemicals of Potential Concern

*** This section should present a summary of the quantitative data evaluation and its results.

3. Exposure Assessment

*** This section should begin with a description of the process used in exposure assessment, and the goal of the specific exposure assessment being performed.

3.1 Characterization of Exposure Setting

*** This section should describe either by reference or directly the following:

3.1.1 Surface Features

3.1.2 Meteorology

3.1.3 Geology

3.1.4 Demography and Land Use

3.1.5 Ecology

3.1.6 Hydrology

3.1.7 Hydrogeology

3.2 Identification of Exposure Pathways

*** This section should begin by describing what a pathway is and how a pathway can be complete or incomplete.

3.2.1 Land Use Considerations

*** The land use under current and expected and potential future conditions should be described.

3.2.2 Potential Receptor Populations

*** The potential receptors under both current and future uses should be described and justified.

3.2.3 Delineation of Exposure Points/Exposure Routes

*** All possible exposure routes should be presented and justified. The number of possible exposure routes should be reduced, if possible, so that only probable exposure routes with significant risk or hazard are quantified. The exposure equations used in the assessment to quantify exposure should be presented. Justification for not quantifying a possible route should be presented.

3.2.4 Development of Conceptual Site Models

*** Figures illustrating the pathways of exposure should be presented for each site under investigation. The model for each site should be justified.

3.3 Quantification of Exposure

*** The methods used to quantify exposure (i.e., estimate dose) should be described for each receptor. If modeling is used to determine concentration or activities of chemicals of potential concern in biota, the models should be presented.

3.4 Summary of Exposure Assessment

4. Toxicity Assessment

*** This section should begin by describing the goal and methods used for exposure assessment. The source of all toxicity values should be discussed. Tables presenting the toxicity information should be presented.

4.1 Inorganics

*** The toxicity of each chemical of potential concern should be profiled. Each profile should include a listing of the carcinogenic and noncarcinogenic toxicity values used in the baseline human health risk assessment.

4.1.1 Chemical 1
4.1.2 Chemical 2

.

Etc.

4.2 Organics

*** The toxicity of each chemical of potential concern should be profiled. Each profile should include a listing of the toxicity values used in the baseline human health risk assessment.

4.2.1 Chemical 1
4.2.2 Chemical 2

.

Etc.

4.3 Radionuclides

*** The toxicity of each chemical of potential concern should be profiled. Each profile should include a listing of the toxicity values used in the baseline human health risk assessment.

4.3.1 Radionuclide 1
4.3.2 Radionuclide 2

.

Etc.

4.4 Chemicals for Which No EPA Toxicity Values Are Available

*** The chemicals of potential concern which fall in this class should be listed. If the baseline human health risk assessment is evaluating multiple units or areas, these chemicals should be listed by unit or area.

4.5 Uncertainties Related to Toxicity Assessment

*** A brief presentation of the uncertainties related to all toxicity assessments and toxicity values should be made.

4.6 Summary

*** The amount of toxicity information for the chemicals of potential concern should be discussed. If the baseline human health risk assessment is evaluating multiple units or areas, this information should be presented by unit or area.

5. Risk Characterization

*** The section should begin with a brief discussion of the purpose and goals of risk characterization and what will result from this step of the assessment.

5.1 Determination of Noncancer Effects

*** The methods used to quantify systemic toxicity for each chemical, both within and across pathways should be presented. If exposure over multiple scenarios or areas is possible, this should be noted.

5.2 Determination of Excess Cancer Risk

*** The methods used to quantify excess lifetime cancer risk for each chemical, both within and across pathways should be presented. If exposure over multiple scenarios or areas is possible, this should be noted.

5.3 Risk Characterization for Current Use Scenario(s)

*** Risk results for each unit or area should be presented in two-way tables and in a narrative summary. If subchronic effects are characterized, they should be presented separately from the chronic effects.

5.3.1 Systemic Toxicity

5.3.2 Excess Lifetime Cancer Risk

5.4 Risk Characterization for Future Use Scenario(s)

*** Risk results for each unit or area should be presented in two-way tables and in a narrative summary. If more than one future time is quantitatively evaluated, the results should be presented for each time period. If subchronic effects are characterized, they should be presented separately from the chronic effects.

5.4.1 Systemic Toxicity

5.4.2 Excess Lifetime Cancer Risk

5.5 Risk Characterization for Lead (if needed)

*** The special problems associated with risk characterization for lead should be discussed. Results from lead modeling and from comparisons against EPA and Kentucky screening values should be presented by unit or area.

5.6 Identification of Use Scenarios, Contaminants, Pathways, and Media of Concern

*** The section should begin with a listing of the rules used to identify use scenarios, contaminants, pathways and media of concern.

5.6.1 Use Scenarios of Concern

*** These should be listed within area or unit under investigation.

5.6.2 Contaminants of Concern
*** These should be listed within area or unit under investigation.

5.6.3 Pathways of Concern
*** These should be listed within area or unit under investigation.

5.6.4 Media of Concern
*** These should be listed within area or unit under investigation

5.7 Summary of Risk Characterization
*** This section should describe and present the risk characterization summary tables.

6. Uncertainty in the Risk Assessment

*** This section should begin with a general discussion of uncertainty. If a qualitative uncertainty analysis is being performed, "small," "moderate," and "large" uncertainties should be defined and the following subsections should be included. If a quantitative uncertainty analysis is being performed, the methods and results should be described in detail. Normally, a qualitative analysis, including sensitivity analyses, will be sufficient. Regardless, this section should continue with a discussion of each of the uncertainties affecting the major portions of the risk assessment. (Note, the uncertainties listed below are some of those found in past assessments. The uncertainties to be addressed in future assessments must be determined on a case-by-case basis.)

6.1 Uncertainties Associated with Data
*** The uncertainties to be discussed should be summarized in the introduction of this section. Categories of uncertainties to discuss are presented in the following.

6.1.1 Selection of Chemicals of Potential Concern
6.1.2 Determination of Exposure Point Concentrations—Current Conditions
6.1.3 Determination of Exposure Point Concentrations—Future Conditions
6.1.4 Use of Unfiltered versus Filtered Water Samples

6.2 Uncertainties Associated with Exposure Assessment
*** The uncertainties to be discussed should be summarized in the introduction of this section. Categories of uncertainties to discuss are presented in the following.

6.2.1 Uncertainties in Fate and Transport Modeling
6.2.2 Uncertainties in Use of Reasonable Maximum Exposure (RME) Scenarios
6.2.3 Uncertainties Related to Development of Conceptual Site Models
6.2.4 Uncertainties Related to Use of Default Values When Estimating Dermal Absorbed Dose

6.3 Uncertainties Associated with Toxicity Assessment
*** The uncertainties to be discussed should be summarized in the introduction of this section. Categories of uncertainties to discuss are presented in the following.

6.3.1 Uncertainties Due to Lack of Toxicity Values for Some Chemicals
6.3.2 Uncertainties in Deriving Toxicity Values
6.3.3 Uncertainties Due to Calculation of Absorbed Dose Toxicity Values from Administered Toxicity Values
6.3.4 Uncertainties Due to Use of Toxicity Values for Chronic Exposure for Subchronic Exposure Times

6.4 Uncertainties Associated with Risk Characterization

*** The uncertainties to be discussed should be summarized in the introduction of this section. Categories of uncertainties to discuss are presented in the following.

6.4.1 Uncertainties in Combining Chemical-Specific Risk and Hazard Estimates and Pathway-Specific Risk and Hazard Estimates

6.4.2 Uncertainties in Combining Risk Estimated for Chemical Exposure to those for Risk Estimated for Radioisotope Exposure

6.5 Summary of Uncertainties

*** This section should summarize the uncertainties discussed earlier in the section and present a table reviewing all uncertainties.

7. Conclusions and Summary

*** The purpose of this section is to review the results of the risk assessment without the use of tables and explanations and provide significant observations interpreting the results of the assessment for use by risk managers. When properly presented, it should be possible to insert this section as written into the feasibility study.

7.1 Chemicals of Potential Concern

*** A brief description of the screening process should be provided, and the chemicals of potential concern for each area or unit listed either by name (if the list is short) or by class .

7.2 Exposure Assessment

*** The exposure pathways quantitatively evaluated should be listed for each use scenario

7.3 Toxicity Assessment

*** The amount of available toxicity data for the chemicals of potential concern for each area should be listed. Chemicals of potential concern lacking toxicity values should be highlighted.

7.4 Risk Characterization

*** The use scenarios, contaminants, pathways, and media of concern should be listed for each area or unit, and the rules used to delineate the use scenarios, contaminants, pathways, and media of concern should be presented.

7.5 Observations

*** This section should integrate the risk estimates and the uncertainties to develop a list of salient issues to be considered by risk managers when making decisions in risk management documents. This includes a discussion for each of the chemicals of concern identified in the risk assessment. In addition, the results of the baseline human health risk assessment should be compared to results of previous risk evaluations, if any.

8 Remedial Goal Options

*** This section should present the methods used to derive the remedial goal options and list the remedial goal options for each chemical of concern. Because remedial goal options are medium- and scenario-specific, a separate list should be presented for each area (or unit), scenario, and medium combination.

8.1 Derivation of RGOs

*** This presentation should be as brief as possible.

8.2 Presentation of RGOs

*** These should be presented in tables. Very little narrative beyond directing the reader to the appropriate tables is needed.

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PART 2: FORMAT USED FOR BINNING PACKAGES PREPARED FOR SITE SCOPING

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FORMAT USED FOR BINNING PACKAGES PREPARED FOR SITE SCOPING

Binning packages are composed of a series of data summary and comparison tables and a user's guide. In the evaluation of potential risk and hazard, these are ordered as follows:

Table 1 – Analytes Never Detected in [MEDIUM]
Table 2 – Summary Statistics for Analytes Detected in [MEDIUM]
Table 3 – Comparison of Max. Detects to Risk-Based Action Levels
Table 4 – Comparison of Max. Detects to Risk-Based No Action Levels
Table 5 – Stations with Concentrations in [MEDIUM] Samples that Are Greater than Human Health Risk-Based Action Levels (Listed by Scenario and Sample Station)
Table 6 – Stations with Concentrations in [MEDIUM] Samples that Are Greater than the Human Health Risk-Based No Action Levels but Less than the Human Health Risk-Based Action Levels (Listed by Scenario and Sample Station)
User's Guide

In the evaluation of radiation dose, these are ordered as follows:

Table 1 - Analytes Never Detected in [MEDIUM]
Table 2 - Summary Statistics for Analytes Detected in [MEDIUM]
Table 3 - Comparison of Max. Detects to Dose-Based Action Levels
Table 4 – Comparison of Max. Detects to Dose-Based No Action Levels
Table 5 - Stations with Concentrations in [MEDIUM] Samples that Are Greater than Human Health Dose-Based Action Levels (Listed by Scenario and Sample Station)
Table 6 - Stations with Concentrations in [MEDIUM] Samples that Are Greater than the Human Health Dose-Based No Action Levels but Less than the Human Health Dose-Based Action Levels (Listed by Scenario and Sample Station)
User's Guide

The format for these tables (adapted from the User's Guide appearing in the binning package) is as follows:

Table	Column Heading	Explanation
Table 1 – Analytes Never Detected	General Explanation	This table identifies compounds/analytes within the data set that have been analyzed but never detected. These compounds/ analytes are not evaluated further in the following tables.
	Analysis Type	This column identifies the manner in which the data is sorted. Choices include inorganics, metals, volatiles, semivolatiles, other organics (PCBs and pesticides), and radionuclides.
	Analyte	This column contains the name of the compound/analyte.
	Units	This column identifies the units of the concentrations that are presented in subsequent columns for the analyte in this row.
	Number of Measurements	This value identifies the number of times the analyte was analyzed within the data set.
	Minimum SQL	This value represents the minimum sample quantitation limit (SQL) reported in the data set for the respective compound/analyte.
	Average SQL	This value represents the calculated average sample quantitation limit (SQL) using the SQLs reported in the data set for the respective compound/analyte.
	Maximum SQL	This value represents the maximum sample quantitation limit (SQL) reported in the data set for the respective compound/analyte.

Table	Column Heading	Explanation
Table 2 – Summary Statistics	General Explanation	This table identifies compounds/analytes within the data set that have been analyzed and detected. Summary statistics are calculated and presented to provide the decision-maker with a feel for the quality and extensiveness of the data set, and the detections are them compared to background values.
	Analysis Type	This column identifies the manner in which the data is sorted. Choices include inorganics, metals, volatiles, semivolatiles, other organics (PCBs and pesticides), and radionuclides.
	Analyte	This column contains the name of the compound/analyte.
	Units	This column identifies the units of the concentrations that are presented in subsequent columns for the analyte in this row.
	Proportion Detected	Presented as a ratio, the first value identifies the number of times the analyte was detected, and the second value identifies the total number of times the analyte was analyzed.
	Prop. "J" Det.	Presented as a ratio, the first value identifies the number of times the analytical results were flagged with a "J" qualifier indicating estimated values, and the second value identifies the total number of times the analyte was analyzed.
	Min Detect	This value represents the minimum single detected concentration of the analyte. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	Arithmetic Mean	This value represents the calculated mathematical mean, or average, of the detected concentrations. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	Std. Dev.	This value represents the calculated standard deviation of the detected concentrations. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	Median Result	This value represents the median (i.e., midpoint between minimum and maximum detects) of the detected concentrations. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	Freq. of MDL	Presented as a ratio, the first value identifies the number of times that the analyses in the database contain a method detection limit (MDL) value, and the second value identifies the total number of times the analyte was analyzed. (The OREIS database generally does not contain MDLs for data generated prior to circa 1993.)
	Min. MDL	This value represents the minimum method detection limit (MDL) reported for all analyses. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	Avg. MDL	This value represents the calculated average method detection limit (MDL) reported for all analyses. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	Max. MDL	This value represents the maximum method detection limit (MDL) reported for all analyses. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	Max. Detect	This value represents the maximum single detected concentration of the analyte. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	FOD above 1X Bkgd.	Presented as a ratio, the first value identifies the number of times the detected analyte exceeded the background value, and the second value identifies the total number of times the analyte was analyzed.

Table	Column Heading	Explanation
	FOD above 2X Bkgd.	Presented as a ratio, the first value identifies the number of times the detected analyte exceeded the background value by a factor of 2, and the second value identifies the total number of times the analyte was analyzed. Note that the exceedences represented by the first number are also counted in the previous column (i.e., "FOD above 1X Bkgd.").
	FOD above 10X Bkgd.	Presented as a ratio, the first value identifies the number of times the detected analyte exceeded the background value by a factor of 10, and the second value identifies the total number of times the analyte was analyzed. Note that the exceedences represented by the first number are also counted in the previous two columns (i.e., "FOD above 1X Bkgd." and "FOD above 2X Bkgd.").
Table 3 – Comparison of Max. Detects to Risk-Based Levels or	General Explanation	These tables identify compounds/analytes within the data set that exceed screening values developed by the Core Team's Risk Workgroup specifically for the scoping/binning process. Each table represents a different risk range (i.e., $>10^{-4}$, 10^{-4} to 10^{-6}). Each table may contain multiple risk scenarios (e.g., industrial worker, child resident) that correspond with different land uses.
Table 3 – Comparison of Max. Detects to Dose-Based Action Levels	Analysis Type	This column identifies the manner in which the data is sorted. Choices include inorganics, metals, volatiles, semivolatiles, other organics (PCBs and pesticides), and radionuclides.
	Analyte	This column contains the name of the compound/analyte.
	Units	This column identifies the units of the concentrations that are presented in subsequent columns for the analyte in this row.
	Maximum Detect	This value represents the maximum single detected concentration of the analyte. The concentration is reported in the units (e.g., mg/kg, pCi/l) specified in the "Units" column.
	FOD above ... Action	Presented as a ratio, the first value identifies the number of times that the detected analyte exceeded the risk-based screening value calculated for the given risk level (i.e., $>10^{-4}$, 10^{-4} to 10^{-6}) and exposure scenario (e.g., industrial worker, child resident), and the second value identifies the total number of times the analyte was analyzed.
Table 4 – Comparison of Max. Detects to Risk-Based No Action Levels or Table 4 – Comparison of Max. Detects to Dose-Based No Action Levels	General Explanation	These tables identify specific samples within the data set that exceed screening values developed by the Core Team's Risk Workgroup for the scoping/binning process. Each table represents a different risk range (i.e., $>10^{-4}$, 10^{-4} to 10^{-6}). Each table contains multiple risk scenarios (e.g., industrial worker, child resident) that correspond with different land uses. The data points that appear in these tables are graphically represented on the accompanying site maps.
	Area	This column clarifies the location of the data. (The information in this column may be considered redundant with the title of the data package.)
	Station	These stations signify the sample location.
	Depth	This column identifies the depth(s) from which the sample was collected.
	Chemical	This column identifies the chemical that exceeded the risk-based screening level.
	Frequency	This column identifies the number of times that the compound/analyte exceeded the respective screening level at a particular station. (For example, split and duplicate samples collected from the same station would cause this value to be greater than one.)

Table	Column Heading	Explanation
Table 5 – Stations with Concentrations in [MEDIUM] Samples that Are Greater than Human Health Risk-Based Action Levels (Listed by Scenario and Sample Station) or Table 5 – Stations with Concentrations in [MEDIUM] Samples that Are Greater than Human Health Dose-Based Action Levels (Listed by Scenario and Sample Station)	General Explanation	These tables list the stations that have a detected analyte concentration that exceeds the action screening levels. Within these tables, each detect is listed by station and analyte. Other information presented includes the depth of sampling, the number of detects at the station-depth combination exceeding the action level versus the total number of samples at that depth, the action level used for the analyte, and the units of measure.
Table 6 – Stations with Concentrations in [MEDIUM] Samples that Are Greater than the Human Health Risk-Based No Action Levels but Less than the Human Health Risk-Based Action Levels (Listed by Scenario and Sample Station) or Table 6 – Stations with Concentrations in [MEDIUM] Samples that Are Greater than the Human Health Dose-Based No Action Levels but Less than the Human Health Dose-Based Action Levels (Listed by Scenario and Sample Station)	General Explanation	These tables list the stations that have a detected analyte concentration that exceeds the no action screening levels but are less than the action screening levels. Within these tables, each detect is listed by station and analyte. Other information presented includes the depth of sampling, the number of detects at the station-depth combination exceeding the action level versus the total number of samples at that depth, the action level used for the analyte, and the units of measure.

APPENDIX D

EXPOSURE EQUATIONS AND SELECTED CHEMICAL-SPECIFIC VALUES

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EXPOSURE EQUATIONS AND SELECTED CHEMICAL-SPECIFIC VALUES

This appendix is presented in two parts. Part 1 contains the exposure equations used in environmental human health risk assessments for Department of Energy sites located in Oak Ridge, Tennessee, and at the Paducah Gaseous Diffusion Plant (PGDP) located in Paducah, Kentucky. Part 2 contains a table presenting selected chemical-specific values used in the calculation of chemical and radionuclide concentrations in biota and calculation of chemical and radionuclide intakes.

The equations in Part 1 are consistent with all Region 4 U.S. Environmental Protection Agency (EPA), State of Tennessee, and Commonwealth of Kentucky guidance materials. However, the exposure parameters shown are those used to produce daily intakes and absorbed doses used to complete environmental risk assessments performed for the PGDP only. While these exposure parameters are generally consistent with the exposure parameters recommended by Region 4 EPA, they do differ in some cases. For example, throughout the following presentation the total time in a single home for a residential user is 40 years, as recommended by the Commonwealth of Kentucky, versus 30 years, as recommended by Region 4 EPA and the State of Tennessee. Equations to complete dose assessments and to derive dose conversion factors are not presented. However, these can be derived from the information provided here.

The chemical-specific values presented in the table in Part 2 are based upon the best available information. However, these values are subject to change as better or additional information becomes available.

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Part 1: Exposure Equations

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Table D-1. Reasonable maximum exposure assumptions and human intake factors for ingestion of water by a rural resident[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_w \times IR \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_w \times IR \times EF \times ED$$

Parameter	Units	Value used	References[b]
Chemical concentration in water = C_w	mg/L	Chemical-specific	-----
Radiological activity = A_w	pCi/L	Chemical-specific	-----
Ingestion Rate = **IR**	L/d	2 (adult)	[14]
		1 (child)	
Exposure frequency = **EF**	d/year	350	[14]
Exposure duration = **ED**	years	34 (adult)	[14]
		6 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		14.5 (child)	
Averaging time = **AT**	yr × day/yr.	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Ingestion of Water by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	1.33×10^{-2}	2.74×10^{-2}	2.38×10^{4}
Child	5.67×10^{-3}	6.61×10^{-2}	2.10×10^{3}

[a] Chemical concentration in water (mg/L) times intake factor [L/(kg • day)] yields the default RME dose for the associated endpoint.
[b] Radionuclide concentration in water (pCi/L) times the intake factor (L) yields the default RME dose.

Table D-2. Reasonable maximum exposure assumptions and human intake factors for inhalation of volatile organic compounds in water while showering by a rural resident[a]

Equations:

$$\text{Chemical Intake}\,[\text{mg/(kg}\times\text{day)}] = \frac{C_{shower} \times IR_{air} \times EF \times ED \times ET}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{gw} \times IR_{air} \times EF \times ED \times IEF$$

$$C_{shower}\ (\text{mg/m}^3) = \frac{[(C_{a\,max}/2)\times t_1] + [C_{a\,max} \times t_2]}{t_1 + t_2} \qquad C_{a\,max}\ (\text{mg/m}^3) = \frac{C_{gw} \times f \times F_w \times t_1}{V_a}$$

Parameter	Units	Value used	References[b]
Time-adjusted concentration in shower = C_{shower}	mg/m^3	Chemical-specific	Calculated
Indoor inhalation rate = IR_{air}	m^3/hour	0.6	[14]
Exposure frequency = **EF**	day/year	350	[14]
Exposure duration = **ED**	years	34 (adult)	[14]
		6 (child)	
Exposure Time = **ET**	hours/day	0.2	[14]
Body weight = **BW**	kg	70 (adult)	[14]
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	
Activity in groundwater = A_{gw}	pCi/L	Chemical-specific	-----
Inhalation exposure factor = **IEF**[c]	(L-hr)/(m^3-day)	Chemical-specific	[15]
Maximum air concentration = C_{amax}	mg/m^3	Chemical-specific	Calculated
Time of shower = t_1	hour	0.1	[14]
Time after shower = t_2	hour	0.1	[14]
Concentration in groundwater = C_{gw}	mg/L	Chemical-specific	-----
Fraction volatilized = **f**	unitless	0.75	[14]
Water flow rate = F_w	L/h	890	[14]
Bathroom volume = V_a	m^3	11	[14]

[a] Equation from [1].
[b] References follow Table D-50.
[c] Default value is 0. Values for tritium and radon are 0.2064 and 5.6, respectively.

Notes:

Human Intake Factors for Inhalation of Volatile Organic Compounds in Water

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	3.63×10^{-3}	7.48×10^{-3}	7.14×10^{3}
Child	3.10×10^{-3}	3.61×10^{-2}	1.26×10^{3}

[a] Chemical concentration in water (mg/L) times intake factor [L/(kg • day)] yields default RME dose for the associated endpoint.
[b] Radionuclide concentration in water (pCi/L) times "IEF" [(L • hr/(m^3 • day)] times intake factor [(m^3 • day)/hr] yields default RME dose.

Table D-3. Reasonable maximum exposure assumptions and human intake factors for inhalation of volatile organic compounds in water during household use by a rural resident[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{house} \times IR_{air} \times EF \times ED \times ET}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{gw} \times IR_{air} \times EF \times ED \times IEF$$

$$C_{house}\ (mg/m^3) = \frac{C_{gw} \times WHF \times f}{HV \times ER \times MC}$$

Parameter	Units	Value used	References[b]
Concentration in household air = C_{house}	mg/m^3	Chemical-specific	Calculated
Indoor inhalation rate = IR_{air}	m^3/hour	0.833	[14]
Exposure frequency = **EF**	day/year	350	[14]
Exposure duration = **ED**	years	34 (adult)	[14]
		6 (child)	
Exposure time = **ET**	hours/day	16	[14]
Body weight = **BW**	kg	70 (adult)	[14]
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	
Activity in groundwater = A_{gw}	pCi/L	Chemical-specific	-----
Inhalation exposure factor = **IEF**[c]	(L-hr)(m^3-day)	Chemical-specific	[15]
Concentration in groundwater = C_{gw}	mg/L	Chemical-specific	-----
Water flow rate = **WHF**	L/day	890	[14]
Fraction volatilized = **f**	unitless	0.75	[14]
House volume = **HV**	m^3/change	450	[14]
Exchange rate = **ER**	changes/day	10	[14]
Mixing coefficient = **MC**	unitless	0.5	[14]

[a] Equation from [1] and [14].
[b] References follow Table D-50.
[c] Default value is 0. Values for tritium and radon are 0.2064 and 5.6, respectively.

Notes:

Human Intake Factors for Inhalation of Volatile Organic Compounds in Water during Household Use by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	2.63×10^{-2}	5.42×10^{-2}	9.91×10^{3}
Child	2.24×10^{-2}	2.61×10^{-1}	1.75×10^{3}

[a] Chemical concentration in water (mg/L) times intake factor [m^3/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in water (pCi/L) times "IEF" [(L • hr)/(m^3 • day)] times intake factor [(m^3 • day)/hr] yields default RME dose.

Table D-4. Reasonable maximum exposure assumptions and human intake factors for dermal contact with water while showering by a rural resident[a]

Equation:

$$\text{Absorbed Dose } [\text{mg/(kg} \times \text{day)}] = \frac{C_w \times SA \times P_c \times CF \times ED \times EF \times ET}{BW \times AT}$$

Parameter	Units	Value used	Referencesb
Concentration in water = C_w	mg/L	Chemical-specific	-----
Skin surface area exposedc = **SA**	m^2	1.815 (adult)	[14]
		0.72 (child)	
Skin permeability constant = P_c	cm/hr	Chemical-specific	-----
Conversion Factor = **CF**	(L-m)/(cm-m^3)	10	-----
Exposure duration = **ED**	years	34 (adult)	[14]
		6 (child)	
Exposure frequency = **EF**	baths/yr	350	[14]
Exposure time = **ET**	hrs/bath	0.2	[14]
Body weight = **BW**	kg	70 (adult)	[14]
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Entire surface area of body for both adult and child.

Notes:

Human Intake Factors for Dermal Contact with Groundwater during Showering by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	2.42×10^{-2}	4.97×10^{-2}	Not applicable
Child	8.16×10^{-3}	9.52×10^{-2}	Not applicable

[a] Chemical concentration in water (mg/L) times chemical "P_c" (cm/hr) times intake factor [(L • hr)/(cm • kg • day] yields default RME dose for associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-5. Reasonable maximum exposure assumptions and human intake factors for incidental ingestion of soil by a rural resident[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_s \times CF \times EF \times FI \times ED \times IR}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_s \times CF_{rad} \times EF \times FI \times ED \times IR$$

Parameter	Units	Value used	References[b]
Chemical concentration in soil = C_s	mg/kg	Chemical-specific	-----
Radiological activity = A_s	pCi/g	Chemical-specific	-----
Conversion factor = **CF**	kg/mg	10^{-6}	-----
Conversion factor = CF_{rad}	g/mg	10^{-3}	-----
Exposure frequency = **EF**	days/yr	350	[14]
Fraction ingested = **FI**	unitless	1	[14]
Exposure duration = **ED**	years	34 (adult)	[14]
		6 (child)	
Ingestion rate of soil = **IR**	mg/d	100 (adult)	[14]
		200 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Incidental Ingestion of Soil by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	6.65×10^{-7}	1.37×10^{-6}	1.19×10^{3}
Child	1.13×10^{-6}	1.32×10^{-5}	4.20×10^{2}

[a] Chemical concentration in soil (mg/kg) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration is soil (pCi/g) times intake factor (g) yields default RME dose.

Table D-6. Reasonable maximum exposure assumptions and human intake factors for dermal contact with soil by a rural resident[a]

Equation:

$$\text{Absorbed Dose } [(\text{mg}/(\text{kg} \times \text{day})] = \frac{C_s \times CF_d \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Parameter	Units	Value used	References[b]
Concentration in soil = C_s	mg/kg	Chemical-specific	-----
Conversion factor = CF_d	$(kg\text{-}cm^2)/(mg\text{-}m^2)$	0.01	-----
Surface area[c] = **SA**	m^2/day	0.350 (adult)	[14]
		0.373 (child)	
Adherence factor = **AF**	mg/cm^2	1	[14]
Absorption factor[d] = **ABS**	unitless	Chemical-specific	[14]
Exposure frequency = **EF**	day/yr	350	[14]
Exposure duration = **ED**	years	34 (adult)	[14]
		6 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Includes hands and arms for adults and arms, hands, feet, and legs for children.
[d] The default factors are used unless chemical-specific absorption factors are available. These defaults are 0.25 (volatile organic compound), 0.1 (semivolatile organic compound), and 0.05 (inorganic chemical). Chemical-specific absorption factors available are 0.03 for dioxins[16], [17], 0.06 for polychlorinated biphenyls[16], [17], 0.01 for cadmium[16], [17], and 0.25 for carbon disulfide[18].

Notes:

Human Intake Factors for Dermal Contact with Soil by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	2.33×10^{-5}	4.79×10^{-5}	Not Applicable
Child	2.11×10^{-5}	2.47×10^{-4}	Not Applicable

[a] Chemical concentration in soil (mg/kg) times chemical "ABS" (unit-less) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-7. Reasonable maximum exposure assumptions and human intake factors for inhalation of vapors and particulates emitted from soil by a rural resident[a]

Equations:

$$\textbf{Chemical Intake [mg/(kg} \times \textbf{day)]} = \frac{\mathbf{C_s \times EF \times ED \times ET \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}}}{\mathbf{BW \times AT}}$$

$$\textbf{Radionuclide Intake (pCi)} = \mathbf{A_s \times EF \times ED \times ET \times CF \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}}$$

Parameter	Units	Value used	References[b]
Concentration in soil = C_s	mg/kg	Chemical-specific	-----
Activity in soil = A_s	pCi/g	Chemical-specific	-----
Exposure frequency = **EF**	day/year	350	[14]
Exposure duration = **ED**	years	34 (adult)	[14]
		6 (child)	
Exposure time = **ET**	hours/day	24	[14]
Conversion factor = **CF**	g/kg	10^3	-----
Volatilization factor = **VF**	m^3/kg	Chemical-specific	[19]
Particulate emission factor = **PEF**	m^3/kg	3.21×10^{10}	[19]
Total inhalation rate = IR_{air}	m^3/hour	0.833	[14]
Body weight = **BW**	kg	70 (adult)	[14]
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [20].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Inhalation of Vapors and Particulates Emitted from Soil by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	1.33×10^{-1}	2.74×10^{-1}	2.38×10^{8}
Child	1.13×10^{-1}	1.32×10^{0}	4.20×10^{7}

[a] Chemical concentration in soil (mg/kg) times "1/VF + 1/PEF" [$(m^3/kg)^{-1}$] times intake factor [m^3/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide activity in soil (pCi/g) times "1/VF + 1/PEF" [$(m^3/kg)^{-1}$] times intake factor [(g • m^3)/kg] yields default RME dose.

Table D-8. Reasonable maximum exposure assumptions and human intake factors for external exposure to ionizing radiation from soil by a rural resident[a]

Equation:

$$\textbf{Absorbed Dose } [(\text{pCi} \times \text{year})/\text{g}] = A_s \times ED \times EF \times (1 - S_e) \times T_e$$

Parameter	Units	Value used	References[b]
Activity in soil = A_s	pCi/g	Chemical-specific	-----
Exposure duration = **ED**	year	34 (adult)	[14]
		6 (child)	
Exposure frequency = **EF**	day/day	350/365	[14]
Gamma shielding factor = S_e	unitless	0.2	[20]
Gamma exposure time factor = T_e	hr/hr	24/24	[20]

[a] Equation from [20].
[b] References follow Table D-50.
[c] AC cannot be greater than 1.

Notes:

Human Intake Factors for External Exposure to Ionizing Radiation from Soil by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	Not Applicable	Not Applicable	2.61×10^{1}
Child	Not Applicable	Not Applicable	4.60×10^{0}

[a] Exposure route is not applicable to chemicals not emitting ionizing radiation.
[b] Radionuclide activity in soil (pCi/g) times intake factor (yr) yields default RME dose.

Table D-9. Reasonable maximum exposure assumptions and human intake factors for consumption of home-grown vegetables by a rural resident[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{\text{vegetables}} \times FI_v \times IR_v \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{\text{vegetables}} \times FI_v \times IR_v \times EF \times ED \times CF$$

Parameter	Units	Value used	References[b]
Chemical concentration in vegetables = $C_{vegetables}$	mg/kg	Chemical-specific	See Table D-42
Radiological activity = $A_{vegetables}$	pCi/g	Chemical-specific	See Table D-42
Diet fraction = FI_v	unitless	0.4	[21]
Ingestion rate = IR_v	kg/d	0.130 (child 1-7)	[23]
		0.1995 (adult 8 – 41)	
Exposure frequency = **EF**	d/year	350	[14]
Exposure duration = **ED**	years	6(child)	[14]
		34 (adult)	
Body weight (adult) = **BW**	kg	14.5 (child)	[14]
		70 (adult)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	
Conversion factor = **CF**	g/kg	1000	-----

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Consumption of Home-grown Vegetables by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	5.31×10^{-4}	1.09×10^{-3}	9.50×10^{5}
Child	2.95×10^{-4}	3.44×10^{-3}	1.09×10^{5}

[a] Chemical concentration in vegetables (mg/kg) (see Table D-42) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide activity in soil (pCi/g) (see Table D-42) times intake factor (g) yields default RME dose.

Table D-10. Reasonable maximum exposure assumptions and human intake factors for consumption of beef by a rural resident[a]

Equations:

$$\text{Chemical Intake}[\text{mg/(kg} \times \text{day)}] = \frac{C_{beef} \times FI_b \times IR_b \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{beef} \times FI_b \times IR_b \times EF \times ED$$

Parameter	Units	Value used	References[b]
Chemical concentration in beef = C_{beef}	mg/kg	Chemical-specific	See Table D-46
Radiological activity in beef = A_{beef}	pCi/kg	Chemical-specific	See Table D-46
Beef ingestion rate = IR_b	kg/day	0.040 (child 1 –7)	[23]
		0.075 (adult 8 – 41)	
Diet fraction = FI_b	unitless	1	[21]
Exposure frequency = **EF**	d/year	350	[14]
Exposure duration = **ED**	years	6 (child)	[14]
		34 (adult)	
Body weight (adult) = **BW**	kg	14.5 (child)	[14]
		70 (adult)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Consumption of Beef by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	4.99×10^{-4}	1.03×10^{-3}	8.93×10^{2}
Child	2.27×10^{-4}	2.65×10^{-3}	8.40×10^{1}

[a] Chemical concentration in beef (mg/kg) (see Table D-46) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in beef (pCi/kg) (see Table D-46) times intake factor (kg) yields default RME dose.

Table D-11. Reasonable maximum exposure assumptions and human intake factors for consumption of milk by a rural resident[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{milk} \times FI_m \times IR_m \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{milk} \times FI_m \times IR_m \times EF \times ED$$

Parameter	Units	Value used	References[b]
Chemical concentration in milk = C_{milk}	mg/kg	Chemical-specific	See Table D-47
Radiological activity in milk = A_{milk}	pCi/kg	Chemical-specific	See Table D-47
Milk ingestion rate = IR_m	kg/day	0.435 (child 1 – 7)	[23]
		0.266 (adult 8 – 41)	
Diet fraction = FI_m	unitless	1	[21]
Exposure frequency = **EF**	d/year	350	[14]
Exposure duration = **ED**	years	6 (child)	[14]
		34 (adult)	
Body weight (adult) = **BW**	kg	14.5 (child)	[14]
		70 (adult)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Consumption of Milk by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	1.77×10^{-3}	3.64×10^{-3}	3.17×10^{3}
Child	2.47×10^{-3}	2.88×10^{-2}	9.14×10^{2}

[a] Chemical concentration in milk (mg/kg) (see Table D-47) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in milk (pCi/kg) (see Table D-47) times intake factor (kg) yields default RME dose.

Table D-12. Reasonable maximum exposure assumptions and human intake factors for consumption of poultry by a rural resident[a]

Equations:

$$\text{Chemical Intake}[\text{mg/(kg} \times \text{day)}] = \frac{C_{poultry} \times FI_p \times IR_p \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{poultry} \times FI_p \times IR_p \times EF \times ED$$

Parameter	Units	Value used	References[b]
Chemical concentration in poultry = $C_{poultry}$	mg/kg	Chemical-specific	See Table D-48
Radiological activity in poultry = $A_{poultry}$	pCi/kg	Chemical-specific	See Table D-48
Ingestion rate = IR_p	kg/day	0.0377 (child 1 – 7)	[23]
		0.0615 (adult 8 – 41)	
Diet fraction = FI_p	unitless	1	[5]
Exposure frequency = **EF**	day/year	350	
Exposure duration = **ED**	years	6 (child)	[14]
		34 (adult)	
Body weight = **BW**	kg	14.5 (child)	[14]
		70 (adult)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Consumption of Poultry by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	4.09×10^{-4}	8.42×10^{-4}	7.32×10^{2}
Child	2.14×10^{-4}	2.49×10^{-3}	7.92×10^{1}

[a] Chemical concentration in poultry (mg/kg) (see Table D-48) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in poultry (pCi/kg) (see Table D-48) times intake factor (kg) yields default RME dose.

Table D-13. Reasonable maximum exposure assumptions and human intake factors for consumption of pork by a rural resident[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{pork} \times FI_{pork} \times IR_{pork} \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{pork} \times FI_{pork} \times IR_{pork} \times EF \times ED$$

Parameter	Units	Value used	References[b]
Chemical concentration in pork = C_{pork}	mg/kg	Chemical-specific	See Table D-49
Radiological activity in pork = A_{pork}	pCi/kg	Chemical-specific	See Table D-49
Pork ingestion rate = IR_{pork}	kg/day	0.0248 (child 1 –7)	[23]
		0.0437 (adult 8 – 41)	
Diet fraction = FI_{pork}	unitless	1	[21]
Exposure frequency = **EF**	d/year	350	[14]
Exposure duration = **ED**	years	6 (child)	[14]
		34 (adult)	
Body weight (adult) = **BW**	kg	14.5 (child)	[14]
		70 (adult)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Consumption of Pork by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	2.91×10^{-4}	5.99×10^{-4}	5.20×10^{2}
Child	1.41×10^{-4}	1.64×10^{-3}	5.21×10^{1}

[a] Chemical concentration in pork (mg/kg) (see Table D-49) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in pork (pCi/kg) (see Table D-49) times intake factor (kg) yields default RME dose.

Table D-14. Reasonable maximum exposure assumptions and human intake factors for consumption of eggs by a rural resident[a]

Equations:

$$\text{Chemical Intake}\,[\text{mg/(kg} \times \text{day)}] = \frac{C_{egg} \times FI_e \times IR_e \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{egg} \times FI_e \times IR_e \times EF \times ED$$

Parameter	Units	Value used	References[b]
Chemical concentration in egg = C_{egg}	mg/kg	Chemical-specific	See Table D-50
Radiological activity in egg = A_{egg}	pCi/kg	Chemical-specific	See Table D-50
Egg ingestion rate = IR_e	kg/day	0.0173 (child 1 –7)	[23]
		0.0252 (adult 8 - 41)	
Diet fraction = FI_e	unitless	1	[21]
Exposure frequency = **EF**	d/year	350	[14]
Exposure duration = **ED**	years	6 (child)	[14]
		34 (adult)	
Body weight (adult) = **BW**	kg	14.5 (child)	[14]
		70 (adult)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Consumption of Eggs by a Rural Resident

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	1.68×10^{-4}	3.45×10^{-4}	3.00×10^{2}
Child	9.81×10^{-5}	1.14×10^{-3}	3.63×10^{1}

[a] Chemical concentration in eggs (mg/kg) (see Table D-50) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in eggs (pCi/kg) (see Table D-50) times intake factor (kg) yields default RME dose.

Table D-15. Reasonable maximum exposure assumptions and human intake factors for incidental ingestion of sediment by a recreational user[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{sed} \times CF \times EF \times ED \times ET \times CF_2 \times IR \times FI}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{sed} \times CF_{rad} \times EF \times ED \times ET \times CF_2 \times IR \times FI$$

Parameter	Units	Value used	References[b]
Concentration in sediment = C_{sed}	mg/kg	Chemical-specific	-----
Conversion factor = **CF**	kg/mg	10^{-6}	-----
Activity in soil = A_{sed}	pCi/g	Chemical-specific	-----
Conversion factor = CF_{rad}	g/mg	10^{-3}	-----
Exposure frequency = **EF**	day/yr	104 (adult)	[14]
		140 (child and teen)	
Exposure duration = **ED**	year	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Exposure time = **ET**	hr/day	5	[14]
Conversion factor = CF_2	day/hr	1/24	-----
Ingestion rate = **IR**	mg/day	100 (adult)	[14]
		100 (teen)	
		200 (child)	
Fraction ingested = **FI**	unitless	1	[14]
Body weight = **BW**	kg	70 (adult)	[14]
		43 (teen)	
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation after [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Incidental Ingestion of Sediment by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	2.67×10^{-8}	8.48×10^{-8}	4.77×10^{1}
Teen	3.19×10^{-8}	1.86×10^{-7}	3.50×10^{1}
Child	9.45×10^{-8}	1.10×10^{-6}	3.50×10^{1}

[a] Chemical concentration in sediment (mg/kg) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration (pCi/g) in sediment times intake factor (g) yields default RME dose.

Table D-16. Reasonable maximum exposure assumptions and human intake factors for dermal contact with sediment by a recreational user[a]

Equation:

$$\text{Absorbed Dose } [(\text{mg}/(\text{kg} \times \text{day})] = \frac{C_{sed} \times CF_d \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Parameter	Units	Value used	References[b]
Concentration in sediment = C_{sed}	mg/kg	Chemical-specific	-----
Conversion factor-dermal = CF_d	$(kg\text{-}cm^2)/(mg\text{-}m^2)$	0.01	-----
Surface area[c] = **SA**	m^2/day	0.350 (adult)	[14]
		0.740 (teen)	
		0.373 (child)	
Adherence factor = **AF**	mg/cm^2	1	[14]
Absorption factor[d] = **ABS**	unitless	Chemical-specific	[14]
Exposure frequency = **EF**	day/yr	104 (adult)	[14]
		140 (teen)	
		140 (child)	
Exposure duration = **ED**	years	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		43 (teen)	
		14.5 (child	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Includes arms and hands for adults; arms, hands, legs, and feet for teens; and arms, hands, legs, and feet for children.
[d] The default factors are used unless chemical-specific absorption factors are available. These defaults are 0.25 (volatile organic compound), 0.1 (semivolatile organic compound), and 0.05 (inorganic chemical). Chemical-specific absorption factors available are 0.03 for dioxins[16], [17], 0.06 for polychlorinated biphenyls[16], [17], 0.01 for cadmium[16], [17], and 0.25 for carbon disulfide[18].

Notes:

Human Intake Factors for Dermal Contact with Sediment by a Recreational User

	Endpoint		
Cohort	**Chemical Carcinogen[a]**	**Chemical Noncarcinogen[a]**	**Radionuclide Carcinogen[b]**
Adult	4.48×10^{-6}	1.42×10^{-5}	Not Applicable
Teen	1.13×10^{-5}	6.60×10^{-5}	Not Applicable
Child	8.46×10^{-6}	9.87×10^{-5}	Not Applicable

[a] Chemical concentration in sediment (mg/kg) times chemical "ABS" (unitless) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-17. Reasonable maximum exposure assumptions and human intake factors for inhalation of vapors or particulates emitted from sediment by a recreational user[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{sed} \times EF \times ED \times ET \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{sed} \times EF \times ED \times ET \times CF \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}$$

Parameter	Units	Value used	References[b]
Concentration in sediment = C_{sed}	mg/kg	Chemical-specific	-----
Activity in sediment = A_{sed}	pCi/g	Chemical-specific	-----
Exposure frequency = **EF**	day/year	104 (adult)	[14]
		140 (teen)	
		140 (child)	
Exposure duration = **ED**	years	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Exposure time = **ET**	hour/day	5	[14]
Conversion factor = **CF**	g/kg	10^3	-----
Volatilization factor = **VF**	m^3/kg	Chemical-specific	-----
Particulate emission factor = **PEF**	m^3/kg	3.21×10^{10}	[19]
Total inhalation rate = IR_{air}	m^3/hour	2.5	[14]
Body weight = **BW**	kg	70 (adult)	[14]
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation after [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Inhalation of Vapors or Particulates Emitted from Sediment by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[a]
Adult	1.60×10^{-2}	5.09×10^{-2}	2.86×10^{7}
Teen	1.91×10^{-2}	1.12×10^{-1}	2.10×10^{7}
Child	2.83×10^{-2}	3.31×10^{-1}	1.05×10^{7}

[a] Chemical concentration in sediment (mg/kg) times "1/VF + 1/PEF" [$(m^3/kg)^{-1}$] times intake factor [$m^3/(kg \bullet day)$] yields default RME dose for associated endpoint.
[b] Radionuclide activity in sediment (pCi/g) times "1/VF + 1/PEF" [$(m^3/kg)^{-1}$] times intake factor [$(g \bullet m^3)/kg$] yields default RME dose.

Table D-18. Reasonable maximum exposure assumptions and human intake factors for external exposure to ionizing radiation from sediment by a recreational user[a]

Equation:

$$\text{Absorbed Dose } [(\text{pCi} \times \text{year})/\text{g}] = A_{sed} \times ED \times EF \times (1 - S_e) \times T_e$$

Parameter	Units	Value used	References[b]
Activity in soil = A_{sed}	pCi/g	Chemical-specific	-----
Exposure duration = **ED**	year	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Exposure frequency = **EF**	day/day	104/365 (adult)	[14]
		140/365 (teen)	
		140/365 (child)	
Gamma shielding factor = S_e	unitless	0.2	[20]
Gamma exposure time factor = T_e	hr/hr	5/24	[20]

[a] Equation from [20].
[b] References follow Table D-50.

Notes:

Human Intake Factors for External Exposure to Ionizing Radiation from Sediment by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	Not Applicable	Not Applicable	1.04×10^{0}
Teen	Not Applicable	Not Applicable	7.67×10^{-1}
Child	Not Applicable	Not Applicable	3.84×10^{-1}

[a] Exposure route is not applicable to chemicals not emitting ionizing radiation.
[b] Radionuclide activity in sediment (pCi/g) times intake factor (g) yields default RME dose.

Table D-19. Reasonable maximum exposure assumptions and human intake factors for incidental ingestion of surface water while swimming by a recreational user[a]

Equations:

$$\text{Chemical Intake}\,[\text{mg/(kg} \times \text{day)}] = \frac{C_{sw} \times IR \times ET \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{sw} \times IR \times ET \times EF \times ED$$

Parameter	Units	Value used	References[b]
Chemical concentration in water = C_{sw}	mg/L	Chemical-specific	-----
Radiological activity = A_{sw}	pCi/L	Chemical-specific	-----
Ingestion Rate = **IR**	L/hr	0.05	[14]
Exposure time = **ET**	hr/day	2.6	[14]
Exposure frequency = **EF**	d/year	45	[14]
Exposure duration = **ED**	years	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		43 (teen)	
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Incidental Ingestion of Surface Water by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	7.20×10^{-5}	2.29×10^{-4}	1.29×10^{2}
Teen	6.39×10^{-5}	3.73×10^{-4}	7.02×10^{1}
Child	9.47×10^{-5}	1.11×10^{-3}	3.51×10^{1}

[a] Chemical concentration in surface water (mg/L) times intake factor [L/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide activity in surface water (pCi/L) times intake factor (L) yields default RME dose.

Table D-20. Reasonable maximum exposure assumptions and human intake factors for dermal contact with surface water (wading) by a recreational user[a]

Equation:

$$\textbf{Absorbed Dose } [\text{mg/(kg} \times \text{day})] = \frac{C_{sw} \times SA \times P_c \times CF \times ED \times EF \times ET}{BW \times AT}$$

Parameter	Units	Value used	References[b]
Concentration in surface water = C_{sw}	mg/L	Chemical-specific	-----
Adult surface area[c] = **SA**	m^2	0.930 (adult)	[14]
		0.740 (teen)	
		0.373 (child)	
Conversion factor = **CF**	L/(cm - m^2)	10	-----
Permeability constant = P_c	cm/hr	Chemical Specific	-----
Exposure frequency = **EF**	day/yr	52 (adult)	[14]
		140 (teen)	
		140 (child)	
Exposure duration = **ED**	years	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Exposure time = **ET**	hr/day	2.6	[14]
Body weight = **BW**	kg	70 (adult)	[14]
		43 (teen)	
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Includes arms, hands, legs, and feet for adult, teen, and child.

Notes:

Human Intake Factors for Dermal Contact with Surface Water (Wading) by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	1.55×10^{-2}	4.92×10^{-2}	Not Applicable
Teen	2.94×10^{-2}	1.72×10^{-1}	Not Applicable
Child	2.20×10^{-2}	2.57×10^{-1}	Not Applicable

[a] Chemical concentration in surface water (mg/L) times chemical "P_c" (cm/hr) times intake factor [(hr • L)/(cm • kg • day)] yields default RME dose for associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-21. Reasonable maximum exposure assumptions and human intake factors for dermal contact with surface water (swimming) by a recreational user[a]

Equation:

$$\text{Absorbed Dose } [\text{mg/(kg} \times \text{day)}] = \frac{C_{sw} \times SA \times P_c \times CF \times ED \times EF \times ET}{BW \times AT}$$

Parameter	Units	Value used	References[b]
Concentration in surface water = C_{sw}	mg/L	Chemical-specific	-----
Surface area[c] = **SA**	m^2	1.815 (adult) 1.350 (teen) 0.720 (child)	[14]
Conversion factor = **CF**	L/(cm - m^2)	10	-----
Permeability constant = P_c	cm/hr	Chemical Specific	-----
Exposure frequency = **EF**	day/yr	45 (adult, teen, and child)	[14]
Exposure duration = **ED**	years	22 (adult) 12 (teen) 6 (child)	[14]
Exposure time = **ET**	hr/day	2.6	[14]
Body weight = **BW**	kg	70 (adult) 43 (teen) 14.5 (child)	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen) ED × 365 (noncarcinogen)	[14]

[a] Equation from [1].
[b] References follow Table D-50.
[c] Includes whole body for adult, teen, and child.

Notes:

Human Intake Factors for Dermal Contact with Surface Water (Swimming) by a Recreational User

	Endpoint		
Cohort	**Chemical Carcinogen[a]**	**Chemical Noncarcinogen[a]**	**Radionuclide Carcinogen[b]**
Adult	2.61×10^{-2}	8.31×10^{-2}	Not Applicable
Teen	1.73×10^{-2}	1.00×10^{-1}	Not Applicable
Child	1.36×10^{-2}	1.59×10^{-1}	Not Applicable

[a] Chemical concentration in surface water (mg/L) times chemical "P_c" (cm/hr) times intake factor [(hr • L)/(cm • kg • day)] yields default RME dose for associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-22. Reasonable maximum exposure assumptions and human intake factors for consumption of fish by a recreational user[a]

Equations:

$$\text{Chemical Intake}[\text{mg/(kg} \times \text{day)}] = \frac{C_{fish} \times FI_f \times IR_f \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{fish} \times FI_f \times IR_f \times EF \times ED$$

Parameter	Units	Value used	References[b]
Chemical concentration in fish = C_{fish}	mg/kg	Chemical-specific	See Table D-43
Radiological activity = A_{fish}	pCi/kg	Chemical-specific	See Table D-43
Ingestion ratec = IR_f	kg/meal	0.284 (adult)	[22]
		0.284 (teen)	
		0.059 (child)	
Diet fraction = FI_f	unitless	1	[5]
Exposure frequency = **EF**	meals/yr	64	
Exposure duration = **ED**	years	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		43 (teen)	
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Professional judgment was used to adjust child intake rate to 20% of adult intake rate.

Notes:

Human Intake Factors for Consumption of Fish by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	2.24×10^{-4}	7.11×10^{-4}	4.00×10^{2}
Teen	1.99×10^{-4}	1.16×10^{-3}	2.18×10^{2}
Child	6.12×10^{-5}	7.13×10^{-4}	2.27×10^{1}

[a] Chemical concentration in fish (mg/kg) (see Table D-43) times intake factor [kg/(kg • day)] yields default RME dose for the associated endpoint.
[b] Radionuclide activity in fish (see Table D-43) times intake factor yields default RME dose.

Table D-23. Reasonable maximum exposure assumptions and human intake factors for consumption of venison by a recreational user[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{deer} \times FI_d \times IR_d \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{deer} \times FI_d \times IR_d \times EF \times ED \times CF$$

Parameter	Units	Value used	References[b]
Chemical concentration in venison = C_{deer}	mg/kg	Chemical-specific	See Table D-41
Radiological activity in venison = A_{deer}	pCi/g	Chemical-specific	See Table D-41
Ingestion ratec = IR_d	kg/day	0.032 (adult)	See footnote c
		0.032 (teen)	
		0.007 (child)	
Conversion factor = **CF**	g/kg	1000	-----
Diet fraction = FI_d	unitless	1	[5]
Exposure frequency = **EF**	day/yr	350	See footnote c
Exposure duration = **ED**	years	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		43 (teen)	
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Based on taking 2 deer per year (consistent with regulation in the state of Kentucky), a 50% success rate (Kentucky Department of Fish and Wildlife. 1992. Deer Surveys. Project No: W-45-24.), a dressed weight averaging 108.5 pounds per deer for Ballard and McCracken counties, 60% of venison recovered per deer carcass, 2.5 persons per household in Ballard and McCracken counties, and a child consumption rate 20% of that for adults.

Notes:

Human Intake Factors for Consumption of Venison by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	1.38×10^{-4}	4.38×10^{-4}	2.46×10^{5}
Teen	1.22×10^{-4}	7.14×10^{-4}	1.34×10^{5}
Child	3.97×10^{-5}	4.63×10^{-4}	1.47×10^{4}

[a] Chemical concentration in venison (mg/kg) (see Table D-41) times human intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in venison (pCi/g) (see Table D-41) times human intake factor (g) yields RMS dose.

Table D-24. Reasonable maximum exposure assumptions and human intake factors for consumption of rabbit by a recreational user[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{rabbit} \times FI_r \times IR_r \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{rabbit} \times FI_r \times IR_r \times EF \times ED \times CF$$

Parameter	Units	Value used	References[b]
Chemical concentration in rabbit = C_{rabbit}	mg/kg	Chemical-specific	See Table D-45
Radiological activity in rabbit = A_{rabbit}	pCi/g	Chemical-specific	See Table D-45
Ingestion ratec = IR_r	kg/meal	0.0165 (adult)	See footnote c
		0.0082 (teen)	
		0.0033 (child)	
Conversion factor = **CF**	g/kg	1000	-----
Diet fraction = FI_r	unitless	1	[5]
Exposure frequency = **EF**	meals/yr	350	See footnote c
Exposure duration = **ED**	years	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		43 (teen)	
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Based on 20 rabbits bagged per year at WKWMA, a personal communication stating that dressed weight equals 60% of average 1.2 kg rabbit, 2.5 persons per household in Ballard and McCracken counties, a child consumption rate 20% of that for adults, and a teen consumption rate 50% of that for adults.

Notes:

Human Intake Factors for Consumption of Rabbit by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	7.10×10^{-5}	2.26×10^{-4}	1.27×10^{5}
Teen	3.13×10^{-5}	1.83×10^{-4}	3.44×10^{4}
Child	1.87×10^{-5}	2.18×10^{-4}	6.93×10^{3}

[a] Chemical concentration in rabbit (mg/kg) (see Table D-45) times human intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in rabbit (pCi/g) (see Table D-45) times human intake factor (g) yields RMS dose.

Table D-25. Reasonable maximum exposure assumptions and human intake factors for consumption of quail by a recreational user[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{quail} \times FI_q \times IR_q \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{quail} \times FI_q \times IR_q \times EF \times ED \times CF$$

Parameter	Units	Value used	References[b]
Chemical concentration in quail = C_{quail}	mg/kg	Chemical-specific	See Table D-44
Radiological activity in quail = A_{quail}	pCi/g	Chemical-specific	See Table D-44
Ingestion ratec = IR_q	kg/meal	0.0047 (adult)	See footnote c
		0.0024 (teen)	
		0.00094 (child)	
Conversion factor = **CF**	g/kg	1000	-----
Diet fraction = FI_q	unitless	1	[5]
Exposure frequency = **EF**	meals/yr	350	See footnote c
Exposure duration = **ED**	years	22 (adult)	[14]
		12 (teen)	
		6 (child)	
Body weight = **BW**	kg	70 (adult)	[14]
		43 (teen)	
		14.5 (child)	
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Based on 20 quail bagged per year at WKWMA, personal communication stating dressed weight equals 75% of average 0.183 kg quail, 2.5 persons per household in Ballard and McCracken counties, a child consumption rate 20% of that for adults, and a teen consumption rate 50% of that for adults.

Notes:

Human Intake Factors for Consumption of Quail by a Recreational User

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Adult	2.02×10^{-5}	6.44×10^{-5}	3.62×10^{-4}
Teen	9.17×10^{-6}	5.35×10^{-5}	1.01×10^{-4}
Child	5.33×10^{-6}	6.22×10^{-5}	1.97×10^{-3}

[a] Chemical concentration in quail (mg/kg) (see Table D-44) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in quail (pCi/g) (see Table D-44) times intake factor (g) yields default RME dose for associated endpoint.

Table D-26. Reasonable maximum exposure assumptions and human intake factors for ingestion of water by an industrial worker[a]

Equations:

$$\text{Chemical Intake}\,[\text{mg}/(\text{kg}\times\text{day})] = \frac{C_w \times IR_w \times EF \times ED}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_w \times IR_w \times EF \times ED$$

Parameter	Units	Value used	References[b]
Concentration in groundwater = C_w	mg/L	Chemical-specific	-----
Activity in groundwater = A_w	pCi/L	Chemical-specific	-----
Ingestion rate = IR_w	L/day	1	[14]
Exposure frequency = **EF**	day/yr	250	[14]
Exposure duration = **ED**	year	25	[14]
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Ingestion of Water by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	3.49×10^{-3}	9.78×10^{-3}	6.25×10^{3}

[a] Chemical concentration in water (mg/L) times intake factor [L/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in water (pCi/L) times intake factor (L) yields default RME dose.

Table D-27. Reasonable maximum exposure assumptions and human intake factors for inhalation of volatile organic compounds in water while showering by an industrial worker[a]

Equations:

$$\text{Chemical Intake}\,[\text{mg/(kg}\times\text{day)}] = \frac{C_{shower}\times IR_{air}\times EF\times ED\times ET}{BW\times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{gw}\times IR_{air}\times EF\times ED\times IEF$$

$$C_{shower}\ (\text{mg/m}^3) = \frac{[(C_{a\,max}/2)\times t_1]+[C_{a\,max}\times t_2]}{t_1+t_2} \qquad C_{a\,max}\ (\text{mg/m}^3) = \frac{C_{gw}\times f\times F_w\times t_1}{V_a}$$

Parameter	Units	Value used	References[b]
Concentration in shower = C_{shower}	mg/m^3	Chemical-specific	Calculated
Indoor inhalation rate = IR_{air}	m^3/hour	0.6	[14]
Exposure frequency = **EF**	day/year	250	[14]
Exposure duration = **ED**	years	25	[14]
Exposure time = **ET**	hours/day	0.2	[14]
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	
Activity in groundwater = A_{gw}	pCi/L	Chemical-specific	-----
Inhalation exposure factor = **IEF**[c]	(L-hr)/(m^3-day)	Chemical-specific	[15]
Maximum concentration = C_{amax}	mg/m^3	Chemical-specific	
Time of shower = t_1	hours	0.1	[14]
Time after shower = t_2	hours	0.1	[14]
Concentration in groundwater = C_{gw}	mg/L	Chemical-specific	
Fraction volatilized = f	unitless	0.75	[14]
Water flow rate = F_w	L/h	890	[14]
Bathroom volume = V_a	m^3	11	[14]

[a] Equation after [1] and [14].
[b] References follow Table D-50.
[c] Default value is 0. Values for tritium and radon are 0.2064 and 5.6, respectively.

Notes:

Human Intake Factors for Inhalation of Volatile Organic Compounds in Water while Showering by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	1.91×10^{-3}	5.34×10^{-3}	3.75×10^{3}

[a] Chemical concentration in water (mg/L) times intake factor [L/(kg • day)] yields default RME dose for the associated endpoint.
[b] Radionuclide concentration in water (pCi/L) times "IEF" [(L • hr)/(m^3 • day)] times intake factor [(m^3 • day)/hr] yields default RME dose.

Table D-28. Reasonable maximum exposure assumptions and human intake factors for dermal contact with water while showering by an industrial worker[a]

Equation:

$$\text{Absorbed Dose } [\text{mg/(kg} \times \text{day)}] = \frac{C_w \times SA \times P_c \times CF \times ED \times EF \times ET}{BW \times AT}$$

Parameter	Units	Value used	References[b]
Concentration in water = C_w	mg/L	Chemical-specific	-----
Skin permeability constant = P_c	cm/hr	Chemical-specific	-----
Skin surface area exposed[c] = **SA**	m^2	1.815	[14]
Exposure frequency = **EF**	baths/yr	250	[14]
Exposure duration = **ED**	years	25	[14]
Exposure time = **ET**	hrs/bath	0.2	[14]
Conversion factor = **CF**	(L-m)/(cm-m^3)	10	-----
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen) ED × 365 (noncarcinogen)	[14]

[a] Equation from [1].
[b] References follow Table D-50.
[c] Entire surface area of body.

Notes:

Human Intake Factors for Dermal Contact with Water while Showering by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	1.27×10^{-2}	3.55×10^{-2}	Not Applicable

[a] Chemical concentration (mg/L) times chemical "P_c" (cm/hr) times intake factor [(L • hr)/(cm • kg • day)] yields default RME dose for associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-29. Reasonable maximum exposure assumptions and human intake factors for incidental ingestion of soil by an industrial worker[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_s \times CF \times EF \times FI \times ED \times IR}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_s \times CF_{rad} \times EF \times FI \times ED \times IR$$

Parameter	Units	Value used	References[b]
Concentration in soil = C_s	mg/kg	Chemical-specific	-----
Activity in soil = A_s	pCi/g	Chemical-specific	-----
Ingestion rate = **IR**	mg/day	50	[14]
Fraction ingested = **FI**	unitless	1	[14]
Exposure frequency = **EF**	day/yr	250	[14]
Exposure duration = **ED**	year	25	[14]
Conversion factor = **CF**	kg/mg	10^{-6}	-----
Conversion factor = CF_{rad}	g/mg	10^{-3}	-----
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Incidental Ingestion of Soil by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	1.75×10^{-7}	4.89×10^{-7}	3.13×10^{2}

[a] Chemical concentration in soil (mg/kg) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration (pCi/g) times intake factor (g) yields default RME dose.

Table D-30. Reasonable maximum exposure assumptions and human intake factors for incidental ingestion of sediment by an industrial worker[a]

Equations:

$$\text{Chemical Intake}\,[\text{mg}/(\text{kg}\times\text{day}] = \frac{C_{sed}\times CF\times IR\times EF\times ED\times ET\times CF_2}{BW\times AT}$$

$$\text{Radionuclide Intake}\,(\text{pCi}) = A_{sed}\times CF_{rad}\times IR\times EF\times ED\times ET\times CF_2$$

Parameter	Units	Value used	References[b]
Concentration in sediment = C_{sed}	mg/kg	Chemical-specific	-----
Conversion factor = **CF**	kg/mg	10^{-6}	-----
Activity in sediment = A_{sed}	pCi/g	Chemical-specific	-----
Conversion factor = CF_{rad}	g/mg	10^{-3}	-----
Ingestion rate = **IR**	mg/day	50	[14]
Exposure frequency = **EF**	day/yr	250	[14]
Exposure duration = **ED**	year	25	[14]
Exposure time for sediment = **ET**	hour/day	2.6	[14]
Conversion factor = CF_2	worker day/hour	1/8	-----
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen) ED × 365 (noncarcinogen)	[14]

[a] Equation after [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Incidental Ingestion of Sediment by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	5.68×10^{-8}	1.59×10^{-7}	1.02×10^{2}

[a] Chemical concentration in sediment (mg/kg) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in sediment (pCi/g) times intake factor (g) yields default RME dose.

Table D-31. Reasonable maximum exposure assumptions and human intake factors for inhalation of vapors and particulates emitted from soil by an industrial worker[a]

Equations:

$$\text{Chemical Intake}[\text{mg/(kg} \times \text{day)}] = \frac{C_s \times EF \times ED \times ET \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_s \times EF \times ED \times ET \times CF \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}$$

Parameter	Units	Value used	References[b]
Concentration in soil = C_s	mg/kg	Chemical-specific	-----
Activity in soil or = A_s	pCi/g	Chemical-specific	-----
Conversion factor = **CF**	g/kg	10^3	-----
Exposure frequency = **EF**	day/year	250	[14]
Exposure duration = **ED**	years	25	[14]
Exposure time = **ET**	hour/day	8	[14]
Volatilization factor = **VF**	m^3/kg	Chemical-specific	[19]
Particulate emission factor = **PEF**	m^3/kg	3.21×10^{10}	[19]
Total inhalation rate = IR_{air}	m^3/hour	2.5	[14]
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen) ED × 365 (noncarcinogen)	[14]

[a] Equation from [20].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Inhalation of Vapors and Particulates Emitted from Soil by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	6.99×10^{-2}	1.96×10^{-1}	1.25×10^{8}

[a] Chemical concentration in soil (mg/kg) times "1/VF + 1/PEF" [$(m^3/kg)^{-1}$] times intake factor [m^3/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide activity in soil (pCi/g) times "1/VF + 1/PEF"[$(m^3/kg)^{-1}$] times intake factor [(g • m^3)/kg] yields default RME dose.

Table D-32. Reasonable maximum exposure assumptions and human intake factors for inhalation of vapors and particulates emitted from sediment by an industrial worker[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_{sed} \times EF \times ED \times ET \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_{sed} \times EF \times ED \times ET \times CF \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}$$

Parameter	Units	Value used	References[b]
Concentration in sediment = C_{sed}	mg/kg	Chemical-specific	-----
Activity in sediment = A_{sed}	pCi/g	Chemical-specific	-----
Conversion factor = **CF**	g/kg	10^3	-----
Exposure frequency = **EF**	day/year	250	[14]
Exposure duration = **ED**	years	25	[14]
Exposure time for sediment = **ET**	hours/day	2.6	[14]
Volatilization factor = **VF**	m^3/kg	Chemical-specific	[19]
Particulate emission factor = **PEF**	m^3/kg	3.21×10^{10}	[19]
Total inhalation rate = IR_{air}	m^3/hour	2.5	[14]
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equations after [20].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Inhalation of Vapors and Particulates Emitted from Sediment by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	2.27×10^{-2}	6.36×10^{-2}	4.06×10^{7}

[a] Chemical concentration in sediment (mg/kg) times "1/VF + 1/PEF" [$(m^3/kg)^{-1}$] times intake factor [$m^3/(kg \bullet day)$] yields default RME dose for associated endpoint.
[b] Radionuclide activity in sediment (pCi/g) times "1/VF + 1/PEF" [$(m^3/kg)^{-1}$] times intake factor [$(g \bullet m^3)/kg$] yields default RME dose.

Table D-33. Reasonable maximum exposure assumptions and human intake factors for dermal contact with soil or sediment by an industrial worker[a]

Equation:

$$\textbf{Absorbed Dose } [(\text{mg/(kg} \times \text{day})] = \frac{C_s \times CF_d \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Parameter	Units	Value used	References[b]
Concentration in soil or sediment = C_s	mg/kg	Chemical-specific	-----
Conversion factor-dermal = CF_d	$(kg\text{-}cm^2)/(mg\text{-}m^2)$	0.01	-----
Surface area[c] = **SA**	m^2/day	0.43	[14]
Adherence factor = **AF**	mg/cm^2	1	[14]
Absorption factor[d] = **ABS**	unitless	Chemical-specific	[14]
Exposure frequency = **EF**	day/yr	250	[14]
Exposure duration = **ED**	years	25	[14]
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation after [1].
[b] References follow Table D-50.
[c] Area of hands, arms, and head.
[d] The default factors are used unless chemical-specific absorption factors are available. These defaults are 0.25 (volatile organic compound), 0.1 (semivolatile organic compound), and 0.05 (inorganic chemical). Chemical-specific absorption factors available are 0.03 for dioxins[16], [17], 0.06 for polychlorinated biphenyls[16], [17], 0.01 for cadmium[16], [17], and 0.25 for carbon disulfide[18].

Notes:

Human Intake Factors for Dermal Contact with Soil and Sediment by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	1.50×10^{-5}	4.21×10^{-5}	Not Applicable

[a] Chemical concentration is soil or sediment (mg/kg) times chemical "ABS" (unitless) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-34. Reasonable maximum exposure assumptions and human intake factors for external exposure to ionizing radiation from soil by an industrial worker[a]

Equation:

$$\text{Absorbed Dose } [(\text{pCi} \times \text{year})/\text{g}] = A_s \times ED \times EF \times (1 - S_e) \times T_e$$

Parameter	Units	Value used	References[b]
Activity in soil = A_s	pCi/g	Chemical-specific	-----
Exposure frequency = **EF**	day/day	250/365	[14]
Exposure duration = **ED**	year	25	[14]
Gamma shielding factor = S_e	unitless	0.2	[20]
Gamma exposure time factor = T_e	hr/hr	8/24	[20]

[a] Equation after [20].
[b] References follow Table D-50.

Notes:

Human Intake Factors for External Exposure to Ionizing Radiation from Soil by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	Not Applicable	Not Applicable	4.57×10^0

[a] Exposure not applicable to chemicals not emitting ionizing radiation.
[b] Radionuclide activity in soil (pCi/g) times intake factor (yr) yields default RME dose.

Table D-35. Reasonable maximum exposure assumptions and human intake factors for external exposure to ionizing radiation from sediment by an industrial worker[a]

Equation:

$$\textbf{Absorbed Dose } [(\text{pCi} \times \text{year})/\text{g}] = A_{sed} \times ED \times EF \times (1 - S_e) \times T_e$$

Parameter	Units	Value used	References[b]
Activity in sediment = A_{sed}	pCi/g	Chemical-specific	-----
Exposure frequency = **EF**	day/day	250/365	[14]
Exposure duration = **ED**	year	25	[14]
Gamma shielding factor = S_e	unitless	0.2	[20]
Gamma exposure time factor = T_e	hr/hr	2.6/24	[20]

[a] Equation from [20].
[b] References follow Table D-50.

Notes:

Human Intake Factors for External Exposure to Ionizing Radiation from Sediment by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	Not Applicable	Not Applicable	1.48×10^{0}

[a] Exposure not applicable to chemicals not emitting ionizing radiation.
[b] Radionuclide activity in soil (pCi/g) times intake factor (yr) yields default RME dose.

Table D-36. Reasonable maximum exposure assumptions and human intake factors for dermal contact with surface water by an industrial worker[a]

Equation:

$$\text{Absorbed Dose } [\text{mg/(kg} \times \text{day)}] = \frac{C_{sw} \times SA \times P_c \times CF \times ED \times EF \times ET}{BW \times AT}$$

Parameter	Units	Value used	References[b]
Concentration in surface water = C_{sw}	mg/L	Chemical-specific	-----
Adult surface area[c] = **SA**	m^2	0.43	[14]
Permeability constant = P_c	cm/hr	Chemical-specific	-----
Exposure time = **ET**	hr/day	2.6	[14]
Exposure frequency = **EF**	day/yr	250	[14]
Exposure duration = **ED**	years	25	[14]
Conversion factor = **CF**	L/(cm - m^2)	10	-----
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Includes area of arms, hands, and head.

Notes:

Human Intake Factors for Dermal Contact with Surface Water by an Industrial Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Worker	3.91×10^{-2}	1.09×10^{-1}	Not Applicable

[a] Chemical concentration in surface water (mg/L) times chemical "P_c" (cm/hr) times intake factor [(hr • L)/(cm • kg • day)] yields default RME dose for associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-37. Reasonable maximum exposure assumptions and human intake factors for incidental ingestion of soil by an excavation worker[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_s \times CF \times EF \times FI \times ED \times IR}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_s \times CF_{rad} \times EF \times FI \times ED \times IR$$

Parameter	Units	Value used	References[b]
Concentration in soil or sediment = C_s	mg/kg	Chemical-specific	-----
Conversion factor = **CF**	kg/mg	10^{-6}	-----
Activity in soil or sediment = A_s	pCi/g	Chemical-specific	-----
Conversion factor = CF_{rad}	g/mg	10^{-3}	-----
Ingestion rate = **IR**	mg/day	480	[14]
Exposure frequency = **EF**	day/yr	185	[14]
Exposure duration = **ED**	year	25	[20]
Fraction ingested = **FI**	unitless	1	[14]
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation after [1].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Incidental Ingestion of Soil by an Excavation Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Excavation Worker	1.24×10^{-6}	3.48×10^{-6}	2.22×10^{3}

[a] Chemical concentration in soil (mg/kg) times intake factor [kg/(kg • day)] yields default RME dose for associated endpoint.
[b] Radionuclide concentration in soil (pCi/g) times intake factor (g) yields default RME dose.

Table D-38. Reasonable maximum exposure assumptions and human intake factors for inhalation of vapors and particulates emitted from soil by an excavation worker[a]

Equations:

$$\text{Chemical Intake [mg/(kg} \times \text{day)]} = \frac{C_s \times EF \times ED \times ET \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}}{BW \times AT}$$

$$\text{Radionuclide Intake (pCi)} = A_s \times EF \times ED \times ET \times CF \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times IR_{air}$$

Parameter	Units	Value used	References[b]
Concentration in soil or sediment = C_s	mg/kg	Chemical-specific	-----
Activity in soil or sediment = A_s	pCi/g	Chemical-specific	-----
Conversion factor = **CF**	g/kg	10^3	-----
Exposure frequency = **EF**	day/yr	185	[14]
Exposure duration = **ED**	years	25	[20]
Exposure time = **ET**	hours/day	8	[14]
Volatilization factor = **VF**	m^3/kg	Chemical-specific	[19]
Particulate emission factor = **PEF**	m^3/kg	3.21×10^{10}	[19]
Inhalation rate = IR_{air}	m^3/hour	2.5	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [20].
[b] References follow Table D-50.

Notes:

Human Intake Factors for Inhalation of Volatile Organic Compounds and Particulates Emitted from Soil by an Excavation Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Excavation Worker	5.17×10^{-2}	1.45×10^{-1}	9.25×10^{7}

[a] Chemical concentration in soil (mg/kg) times "1/VF + 1/PEF" $[(m^3/kg)^{-1}]$ times intake factor $[m^3/(kg \bullet day)]$ yields default RME dose for associated endpoint.
[b] Radionuclide activity in soil (pCi/g) times "1/VF + 1/PEF" $[(m^3/kg)^{-1}]$ times intake factor $[(g \bullet m^3)/kg]$ yields default RME dose.

Table D-39. Reasonable maximum exposure assumptions and human intake factors for dermal contact with soil by an excavation worker[a]

Equation:

$$\text{Absorbed Dose } [(\text{mg}/(\text{kg} \times \text{day})] = \frac{C_s \times CF_d \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Parameter	Units	Value used	References[b]
Concentration in soil or sediment = C_s	mg/kg	Chemical-specific	-----
Conversion factor-dermal = CF_d	$(kg\text{-}cm^2)/(mg\text{-}m^2)$	0.01	-----
Surface area[c] = **SA**	m^2/day	0.43	[14]
Adherence factor = **AF**	mg/cm^2	1	[14]
Absorption factor[d] = **ABS**	unitless	Chemical-specific	[14]
Exposure frequency = **EF**	day/yr	185	[14]
Exposure duration = **ED**	years	25	[20]
Body weight = **BW**	kg	70	[14]
Averaging time = **AT**	yr × day/yr	70 × 365 (carcinogen)	[14]
		ED × 365 (noncarcinogen)	

[a] Equation from [1].
[b] References follow Table D-50.
[c] Includes skin area of arms, hands, and head.
[d] The default factors are used unless chemical-specific absorption factors are available. These defaults are 0.25 (volatile organic compound), 0.1 (semivolatile organic compound), and 0.05 (inorganic chemical). Chemical-specific absorption factors available are 0.03 for dioxins[16],[17], 0.06 for polychlorinated biphenyls[16],[17], 0.01 for cadmium[16],[17], and 0.25 for carbon disulfide[18].

Notes:

Human Intake Factors for Dermal Contact with Soil by an Excavation Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogen[a]	Radionuclide Carcinogen[b]
Excavation Worker	1.11×10^{-5}	3.11×10^{-5}	Not Applicable

[a] Chemical concentration in soil (mg/kg) times chemical "ABS" (unitless) times intake factor [kg/(kg • day)] yields default RME dose for the associated endpoint.
[b] Dermal absorbed dose is not applicable to radionuclides per guidance found in [1].

Table D-40. Reasonable maximum exposure assumptions and human intake factors for external exposure to ionizing radiation from soil by an excavation worker[a]

Equation:

$$\textbf{Absorbed Dose } [(\text{pCi} \times \text{year})/\text{g}] = A_s \times ED \times EF \times (1 - S_e) \times T_e$$

Parameter	Units	Value used	References[b]
Activity in soil or sediment = A_s	pCi/g	Chemical-specific	-----
Exposure frequency = **EF**	day/day	185/365	[14], [20]
Exposure duration = **ED**	year	25	[20]
Gamma shielding factor = S_e	unitless	0.2	[20]
Gamma exposure time factor = T_e	hr/hr	8/24	[20]

[a] Equation from [20].
[b] References follow Table D-50.

Notes:

Human Intake Factors for External Exposure to Ionizing Radiation from Soil by an Excavation Worker

Cohort	Endpoint		
	Chemical Carcinogen[a]	Chemical Noncarcinogena	Radionuclide Carcinogen[b]
Excavation Worker	Not Applicable	Not Applicable	3.38×10^0

[a] Exposure not applicable to chemicals not emitting ionizing radiation.
[b] Radionuclide concentration in soil (pCi/g) times intake factor (yr) yields default RME dose.

Table D-41. Reasonable maximum exposure assumptions for concentration or activity of COPCs in deer[a]

Equations:

$$C_{deer} = F_{deer} \times [(C_{forage} \times AC \times f_s \times Q_f) + (C_s \times AC \times Q_s) + (C_{sw} \times CF_{rad} \times Q_{sw})]$$

$$C_{forage} = (C_s \times R_{upp}) + (C_s \times R_{es})$$

Parameter	Units	Value used	References[b]
Chemical concentration in deer = C_{deer}	mg/kg or pCi/g	Chemical-specific	Calculated
Forage-deer transfer factor = F_{deer}	day/kg	Chemical-specific	-----
Chemical concentration in forage = C_{forage}	mg/kg or pCi/g	Chemical-specific	Calculated
Area of contact[c] = **AC**	unitless	AS/AD	-----
Area of SWMU = **AS**	acres	SWMU-specific	-----
Area of deer range = **AD**	acres	494	[34]
Fraction of deer's food from site when on site = f_s	unitless	1.0	[5]
Quantity of forage ingested daily by deer = Q_f	kg/day	1.74	[7]
Chemical concentration in soil or sediment = C_s	mg/kg or pCi/g	Chemical-specific	-----
Quantity of soil ingested daily by deer = Q_s	kg/day	0.034	[6]; 2% of forage
Contaminant concentration in surface water = C_{sw}	mg/L or pCi/L	Chemical-specific	-----
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Quantity of surface water ingested daily by deer = Q_{sw}	L/day	3.61	[8]
Soil to plant uptake (dry) = R_{upp}	unitless	Chemical-specific or $38 \times K_{ow}^{-0.58}$	[8]
Soil resuspension multiplier = R_{es}	unitless	0.25	[3]

[a] Equations after [1], [2], [3], [4].
[b] All references follow Table D-50.
[c] AC cannot be greater than 1.
[d] All ingested water is assumed to be from SWMU or SWMU area.

Table D-42. Reasonable maximum exposure assumptions for concentration or activity of COPCs in home-grown vegetables[a]

Equations:

$$C_{vegetables} = (C_w \times Irr_{rup} \times CF_{rad}) + (C_s \times AC \times R_{upv}) + (C_w \times Irr_{res} \times CF_{rad}) + (C_s \times AC \times R_{es}) + (C_w \times Irr_{dep} \times CF_{rad})$$

$$Irr_{rup} = \frac{Ir \times F \times Bv_{wet} \times [1 - \exp(-\lambda_B \times t_b)]}{P \times \lambda_B} \qquad Irr_{dep} = \frac{Ir \times F \times I_f \times T \times [1 - \exp(-\lambda_E \times t_v)]}{Y_v \times \lambda_E}$$

$$Irr_{res} = \frac{Ir \times F \times MLF \times [1 - \exp(-\lambda_B \times t_b)]}{P \times \lambda_B}$$

Parameter	Units	Value used	References[b]
Concentration in vegetable = $C_{vegetables}$	mg/kg or pCi/g	Chemical-specific	Calculated
Concentration in groundwater = C_w	mg/L or pCi/L	Chemical-specific	-----
Root uptake from irrigation = Irr_{rup}	L/kg	Chemical-specific	Calculated
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Concentration in soil = C_s	mg/kg or pCi/g	Chemical-specific	-----
Area of contact[c] = **AC**	unitless	AS/AG	-----
Area of SWMU = **AS**	acres	SWMU-specific	-----
Area of garden = **AG**	acres	0.25	[33]
Wet root uptake for leafy vegetables = R_{upv}	kg/kg	Chemical-specific	-----
Resuspension from irrigation = Irr_{res}	L/kg	Chemical-specific	Calculated
Resuspension multiplier = R_{es}	unitless	0.26	[9]
Aerial deposition from irrigation = Irr_{dep}	L/kg	Chemical-specific	Calculated
Irrigation rate = **Ir**	L/m^2-day	3.62	[10]
Irrigation period = **F**	unitless	0.25	[10]; 3 months a year
Soil to plant uptake, wet weight = Bv_{wet}	kg/kg	Chemical-specific or $7.7 \times K_{ow}^{-0.58}$	[11]
Effective rate for removal = λ_B	1/day	$\lambda_i + \lambda_{HL}$	[11]
Decay = λ_i	1/day	$0.693/T_r$	[11]
Half-life = T_r	day	Chemical-specific	-----
Soil leaching rate = λ_{HL}	1/day	2.7×10^{-5}	[11]
Long term deposition and build-up = t_b	day	10,950	[2]
Area density for root zone = **P**	kg/m^2	240	[8], [12], [13]
Plant mass leading factor = **MLF**	unitless	0.26	[9]
Interception fraction = I_f	unitless	0.42	[7]
Translocation factor = **T**	unitless	1	[2]
Decay for removal on produce = λ_E	1/day	$\lambda_i + (0.693/t_w)$	[11]
Weathering half-life = t_w	day	14	[2]
Above ground exposure time = t_v	day	60	[2]
Plant yield (wet) = Y_v	kg/m^2	2	[2]

[a] Equations after [1], [2], [3], [4].
[b] References follow Table D-50.
[c] AC cannot be greater than 1.

Table D-43. Reasonable maximum exposure assumptions for concentration or activity of COPCs in fish

Equation:

$$C_{fish} = C_{sw} \times BAF_{fish}$$

Parameter	Units	Value used	References
Contaminant concentration in fish = C_{fish}	mg/kg or pCi/kg	Chemical-specific	Calculated
Contaminant concentration in water = C_{sw}	mg/L or pCi/L	Chemical-specific	-----
Bioaccumulation factor = BAF_{fish}	L/kg	Chemical-specific	-----

Table D-44. Reasonable maximum exposure assumptions for concentration or activity of COPCs in quail[a]

Equations:

$$C_{quail} = F_{quail} \times [(C_{forage} \times AC \times f_s \times Q_f) + (C_s \times AC \times Q_s) + (C_{sw} \times CF_{rad} \times Q_{sw}) + (C_i + AC + Q_i)]$$

$$C_{forage} = (C_s \times R_{upp}) + (C_s \times R_{es}) \qquad C_i = (C_s \times BAF_i)$$

Parameter	Units	Value used	References[b]
Chemical concentration in quail = C_{quail}	mg/kg or pCi/g	Chemical-specific	Calculated
Forage-quail transfer factor = F_{quail}	day/kg	Chemical-specific	-----
Chemical concentration in forage = C_{forage}	mg/kg or pCi/g	Chemical-specific	Calculated
Area of contact[c] = **AC**	unitless	AS/AQ	-----
Area of SWMU = **AS**	acres	SWMU-specific	-----
Area of quail range = **AQ**	acres	15.4	[30]
Fraction of quail's food from site when on site = f_s	unitless	1.0	-----
Quantity of forage ingested daily by quail = Q_f	kg/day	0.01499	[30] 88.2% of total food
Chemical concentration in invertebrates = C_i	mg/kg or pCi/g	Chemical-specific	-----
Quantity of invertebrates ingested daily by quail = Q_i	kg/day	0.002006	[30] 11.8 % of total food
Chemical concentration in soil or sediment = C_s	mg/kg or pCi/g	Chemical-specific	-----
Quantity of soil ingested daily by quail = Q_s	kg/day	0.00158	[32] 9.3% of total food (same as turkey)
Contaminant concentration in surface water = C_{sw}	mg/L or pCi/L	Chemical-specific	-----
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Quantity of surface water ingested daily by quail = Q_{sw}	L/day	0.024	[30]
Soil to plant uptake (dry) = R_{upp}	unitless	Chemical-specific or $38 \times K_{ow}^{-0.58}$	[8]
Soil resuspension multiplier = R_{es}	unitless	0.25	[3]

[a] Equations after [1], [2], [3], [4].
[b] All references follow Table D-50.
[c] AC cannot be greater than 1.
[d] All ingested water is considered to be from SWMU or SWMU area.

Table D-45. Reasonable maximum exposure assumptions for concentration or activity of COPCs in rabbits[a]

Equations:

$$C_{rabbit} = F_{rabbit} \times [(C_{forage} \times AC \times f_s \times Q_f) + (C_s \times AC \times Q_s) + (C_{sw} \times CF_{rad} \times Q_{sw})]$$

$$C_{forage} = (C_s \times R_{upp}) + (C_s \times R_{es})$$

Parameter	Units	Value used	References[b]
Chemical concentration in rabbit = C_{rabbit}	mg/kg or pCi/g	Chemical-specific	Calculated
Forage-rabbit transfer factor = F_{rabbit}	day/kg	Chemical-specific	-----
Chemical concentration in forage = C_{forage}	mg/kg or pCi/g	Chemical-specific	Calculated
Area of contact[c] = AC	unitless	AS/AR	-----
Area of SWMU = AS	acres	SWMU-specific	-----
Area of rabbit range = AR	acres	3.6	[30]
Fraction of rabbit's food from site when on site = f_s	unitless	1.0	-----
Quantity of forage ingested daily by rabbit = Q_f	kg/day	0.237	[31]
Chemical concentration in soil or sediment = C_s	mg/kg or pCi/g	Chemical-specific	-----
Quantity of soil ingested daily by rabbit = Q_s	kg/day	0.0149	[31] 6.3% of forage
Contaminant concentration in surface water = C_{sw}	mg/L or pCi/L	Chemical-specific	-----
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Quantity of surface water ingested daily by rabbit = Q_{sw}	L/day	0.116	[31]
Soil to plant uptake (dry) = R_{upp}	unitless	Chemical-specific or $38 \times K_{ow}^{-0.58}$	[8]
Soil resuspension multiplier = R_{es}	unitless	0.25	[3]

[a] Equations after [1], [2], [3], [4].
[b] All references follow Table D-50.
[c] AC cannot be greater than 1.
[d] All ingested water is considered to be from SWMU or SWMU area.

Table D-46. Reasonable maximum exposure assumptions for concentration or activity of COPCs in beef[a]

Equations:

$$C_{beef} = F_{beef} \times [(C_{forage} \times AC \times f_s \times Q_f) + (C_s \times AC \times Q_s) + (C_{sw} \times CF_{rad} \times Q_{sw})]$$

$$C_{forage} = (C_s \times R_{upp}) + (C_s \times R_{es})$$

Parameter	Units	Value used	References[b]
Chemical concentration in beef = C_{beef}	mg/kg or pCi/g	Chemical-specific	Calculated
Forage-beef transfer factor = F_{beef}	day/kg	Chemical-specific	-----
Chemical concentration in pasture = C_{forage}	mg/kg or pCi/g	Chemical-specific	Calculated
Area of contact[c] = **AC**	unitless	AS/AD	-----
Area of SWMU = **AS**	acres	SWMU-specific	-----
Area of beef range = **AD**	acres	2	[29]
Fraction of beef's food from site when on site = f_s	unitless	1.0	[5]
Quantity of pasture ingested daily by beef = Q_f	kg/day	25	[25]
Chemical concentration in soil or sediment = C_s	mg/kg or pCi/g	Chemical-specific	-----
Quantity of soil ingested daily by beef = Q_s	kg/day	1	[26]
Contaminant concentration in water = C_w	mg/L or pCi/L	Chemical-specific	-----
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Quantity of water ingested daily by beef = Q_w	L/day	50	[25]
Soil to plant uptake (dry) = R_{upp}	unitless	Chemical-specific or $38 \times K_{ow}^{-0.58}$	[8]
Soil resuspension multiplier = R_{es}	unitless	0.25	[3]

[a] Equations after [1], [2], [3], [4].
[b] All references follow Table D-50.
[c] AC cannot be greater than 1.
[d] All ingested water is considered to be from SWMU or SWMU area.

Table D-47. Reasonable maximum exposure assumptions for concentration or activity of COPCs in milk[a]

Equations:

$$C_{milk} = F_{milk} \times [(C_{forage} \times AC \times f_s \times Q_f) + (C_s \times AC \times Q_s) + (C_w \times CF_{rad} \times Q_{sw})]$$

$$C_{forage} = (C_s \times R_{upp}) + (C_s \times R_{es})$$

Parameter	Units	Value used	References[b]
Chemical concentration in milk = C_{milk}	mg/kg or pCi/g	Chemical-specific	Calculated
Forage-milk transfer factor = F_{milk}	day/kg	Chemical-specific	-----
Chemical concentration in pasture = C_{forage}	mg/kg or pCi/g	Chemical-specific	Calculated
Area of contact[c] = **AC**	unitless	AS/AD	-----
Area of SWMU = **AS**	acres	SWMU-specific	-----
Area of dairy range = **AD**	acres	2	[29]
Fraction of dairy's food from site when on site = f_s	unitless	1.0	[5]
Quantity of pasture ingested daily by dairy = Q_f	kg/day	25	[25]
Chemical concentration in soil or sediment = C_s	mg/kg or pCi/g	Chemical-specific	-----
Quantity of soil ingested daily by dairy = Q_s	kg/day	1	[26]
Contaminant concentration in water = C_w	mg/L or pCi/L	Chemical-specific	-----
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Quantity of water ingested daily by dairy = Q_w	L/day	60	[25]
Soil to plant uptake (dry) = R_{upp}	unitless	Chemical-specific or $38 \times K_{ow}^{-0.58}$	[8]
Soil resuspension multiplier = R_{es}	unitless	0.25	[3]

[a] Equations after [1], [2], [3], [4].
[b] All references follow Table D-50.
[c] AC cannot be greater than 1.
[d] All ingested water is considered to be from SWMU or SWMU area.

Table D-48. Reasonable maximum exposure assumptions for concentration or activity of COPCs in poultry[a]

Equations:

$$C_{poultry} = F_{poultry} \times [(C_{forage} \times AC \times f_s \times Q_f) + (C_s \times AC \times Q_s) + (C_w \times CF_{rad} \times Q_w)]$$

$$C_{forage} = (C_s \times R_{upp}) + (C_s \times R_{es})$$

Parameter	Units	Value used	References[b]
Chemical concentration in poultry = $C_{poultry}$	mg/kg or pCi/g	Chemical-specific	Calculated
Forage-poultry transfer factor = $F_{poultry}$	day/kg	Chemical-specific	-----
Chemical concentration in pasture = C_{forage}	mg/kg or pCi/g	Chemical-specific	Calculated
Area of contact[c] = **AC**	unitless	AS/AD	-----
Area of SWMU = **AS**	acres	SWMU-specific	-----
Area of poultry range = **AD**[d]	acres	1	[29]
Fraction of poultry's food from site = f_s	unitless	.5	[29] assumes broilers get 50% bought grain
Quantity of pasture ingested daily by poultry = Q_f	kg/day	0.12 (chicken)	[24]
		0.35 (turkey)	20 wk old male turkey
Chemical concentration in soil or sediment = C_s	mg/kg or pCi/g	Chemical-specific	-----
Quantity of soil ingested daily by poultry = Q_s	kg/day	0.0024 (chicken	[8]
		0.007 (turkey)	same ratio for chicken
Contaminant concentration in water = C_w	mg/L or pCi/L	Chemical-specific	-----
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Quantity of water ingested daily by poultry = Q_w	L/day	0.24 (chicken)	[24] 1:2 ratio of 20 wk old male turkey
		1.0 (turkey)	
Soil to plant uptake (dry) = R_{upp}	unitless	Chemical-specific or $38 \times K_{ow}^{-0.58}$	[8]
Soil resuspension multiplier = R_{es}	unitless	0.25	[3]

[a] Equations after [1], [2], [3], [4].
[b] All references follow Table D-50.
[c] AC cannot be greater than 1.
[d] Assumes 1 acre of pasture for 200 adult birds with a three year rotation.
[e] All ingested water is considered to be from SWMU or SWMU area.

Note: Under this model, poultry raised for use as broilers by subsistence farmers are allowed to forage on pasture where they ingest pasture and soil.

Table D-49. Reasonable maximum exposure assumptions for concentration or activity of COPCs in pork[a]

Equations:

$$C_{pork} = F_{pork} \times [(C_{forage} \times AC \times f_s \times Q_f) + (C_s \times AC \times Q_s) + (C_w \times CF_{rad} \times Q_w)]$$

$$C_{forage} = (C_s \times R_{upp}) + (C_s \times R_{es})$$

Parameter	Units	Value used	References[b]
Chemical concentration in pork = C_{pork}	mg/kg or pCi/g	Chemical-specific	Calculated
Forage-pork transfer factor = F_{pork}	day/kg	Chemical-specific	-----
Chemical concentration in pasture = C_{forage}	mg/kg or pCi/g	Chemical-specific	Calculated
Area of contact[c] = **AC**	unitless	AS/AD	-----
Area of SWMU = **AS**	acres	SWMU-specific	-----
Area of swine range = **AD**	acres	1	[29]
Fraction of swine's food from site = f_s	unitless	0.4	[29]
Quantity of pasture ingested daily by swine = Q_f	kg/day	2.4	[36]
Chemical concentration in soil or sediment = C_s	mg/kg or pCi/g	Chemical-specific	-----
Quantity of soil ingested daily by swine = Q_s	kg/day	0.034	[28]
Contaminant concentration in water = C_w	mg/L or pCi/L	Chemical-specific	-----
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Quantity of water ingested daily by swine = Q_w	L/day	6.14	[27] 2.56 to 1, water to feed ratio
Soil to plant uptake (dry) = R_{upp}	unitless	Chemical-specific or $38 \times K_{ow}^{-0.58}$	[8]
Soil resuspension multiplier = R_{es}	unitless	0.25	[3]

[a] Equations after [1], [2], [3], [4].
[b] All references follow Table D-50.
[c] AC cannot be greater than 1.
[d] All ingested water is considered to be from SWMU or SWMU area.

Note: According to Morrison (1956), subsistence farmers allow 20 to 40 percent of the swine's diet to come from pasture while the remaining comes from store bought grain.

Table D-50. Reasonable maximum exposure assumptions for concentration or activity of COPCs in egg[a]

Equations:

$$C_{egg} = F_{egg} \times (C_w \times CF_{rad} \times Q_w)]$$

Parameter	Units	Value used	References[b]
Chemical concentration in egg = C_{egg}	mg/kg or pCi/g	Chemical-specific	Calculated
Forage-egg transfer factor = F_{egg}	day/kg	Chemical-specific	-----
Contaminant concentration in water = C_w	mg/L or pCi/L	Chemical-specific	-----
Conversion factor for radionuclides = CF_{rad}	kg/g	10^{-3}	-----
Quantity of water ingested daily by poultry = Q_w	L/day	0.24 (chicken) 1.0 (turkey)	[24] 1:2 ratio of 20 wk old male turkey

[a] Equations after [1], [2], [3], [4].
[b] All references follow Table 50.
[c] AC cannot be greater than 1.
[d] All ingested water is considered to be from SWMU or SWMU area.

Note: Model assumes that laying hens are in a hutch and are not allowed to forage on pasture. Therefore, they eat only store bought grain and are not exposed to pasture or soil. Drinking water is assumed to come from the SWMU or SWMU area.

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PART 2: CHEMICAL-SPECIFIC VALUES

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
7429905	Inorganics	Aluminum	Aluminum	Al	26.98			1.00E-03	Dermal Prin. and Apps.
20859738	Inorganics	Aluminum phosphide		Al	57.96			1.00E-03	Dermal Prin. and Apps.
7664417	Inorganics	Ammonia	Ammonia, Ammonium Hydroxide		17.03			1.50E-03	Calc. using logkow
7773060	Inorganics	Ammonium sulfamate			114.12			1.00E-03	Dermal Prin. and Apps.
7440360	Inorganics	Antimony	Antimony, Stibium	Sb	121.76			1.00E-03	Dermal Prin. and Apps.
1314609	Inorganics			Sb	647.03			1.00E-03	Dermal Prin. and Apps.
304610	Inorganics			Sb	613.81			1.00E-03	Dermal Prin. and Apps.
1332816	Inorganics			Sb				1.00E-03	Dermal Prin. and Apps.
1309644	Inorganics			Sb	583.04			1.00E-03	Dermal Prin. and Apps.
	Inorganics			As				1.00E-03	Dermal Prin. and Apps.
7440382	Inorganics	Arsenic	Arsenic	As	74.92			1.00E-03	Dermal Prin. and Apps.
7784421	Inorganics				77.95			1.00E-03	Dermal Prin. and Apps.
1332214	Inorganics	Asbestos	Asbestos, Crocidolite, Blue asbestos					1.00E-03	Dermal Prin. and Apps.
7440393	Inorganics	Barium	Barium	Ba	137.33			1.00E-03	Dermal Prin. and Apps.
542621	Inorganics	Barium cyanide		Ba	189.37			1.00E-03	Dermal Prin. and Apps.
7440417	Inorganics	Beryllium	Beryllium, Glucinium	Be				1.00E-03	Dermal Prin. and Apps.
7440428	Inorganics	Boron	Boron (elemental)	B				1.00E-03	Dermal Prin. and Apps.
7637072	Inorganics			B				1.00E-03	Dermal Prin. and Apps.
7440439	Inorganics	Cadmium	Cadmium	Cd				1.00E-03	Dermal Prin. and Apps.
7440439	Inorganics	Cadmium	Cadmium	Cd				1.00E-03	Dermal Prin. and Apps.
592018	Inorganics			Ca				1.00E-03	Dermal Prin. and Apps.
16887006	Inorganics							1.00E-03	Dermal Prin. and Apps.
7782505	Inorganics		Chlorine gas	Cl				1.00E-03	Dermal Prin. and Apps.
7758192	Inorganics							1.00E-03	Dermal Prin. and Apps.
16065831	Inorganics	Chromium(III)	Chromium III	Cr				1.00E-03	Dermal Prin. and Apps.
	Inorganics			Cr				1.00E-03	Dermal Prin. and Apps.
18540299	Inorganics	Chromium(VI)	Chromium VI, Chrome	Cr				1.00E-03	Dermal Prin. and Apps.
18540299	Inorganics	Chromium(VI)	Chromium VI, Chrome	Cr				1.00E-03	Dermal Prin. and Apps.
7440484	Inorganics	Cobalt	Cobalt, metal dust, oxide, chloride, carbonyl	Co				1.00E-03	Dermal Prin. and Apps.
7440508	Inorganics	Copper	Copper, C.I. pigmentmetal 2	Cu				1.00E-03	Dermal Prin. and Apps.
544923	Inorganics	Copper cyanide		Cu				1.00E-03	Dermal Prin. and Apps.
57125	Inorganics	Cyanide	Cyanide ion, CN-					7.50E-03	Bast
7782414	Inorganics	Fluorine	Fluoride, Fluoro					1.00E-03	Dermal Prin. and Apps.
7647010	Inorganics	Hydrochloric acid			34.461			1.00E-03	Dermal Prin. and Apps.
74908	Inorganics	Hydrogen cyanide	Hydrocyanic Acid					2.40E-03	Calc. using logkow
7783064	Inorganics	Hydrogen sulfide			34.1			5.60E-03	Calc. using logkow
7439896	Inorganics	Iron		Fe				1.00E-03	Dermal Prin. and Apps.
7439921	Inorganics	Lead	Lead, DI, Col. Pigment metal 4	Pb				1.00E-03	Dermal Prin. and Apps.
7439932	Inorganics			Li				1.00E-03	Dermal Prin. and Apps.
7439954	Inorganics	Magnesium	Magnesium	Mg				1.00E-03	Dermal Prin. and Apps.
7439965	Inorganics	Manganese	Manganese	Mn				1.00E-03	Dermal Prin. and Apps.
7439965	Inorganics	Manganese	Manganese	Mn				1.00E-03	Dermal Prin. and Apps.
7487947	Inorganics			Hg				1.00E-03	Dermal Prin. and Apps.
7439976	Inorganics	Mercury	Mercury, Quicksilver	Hg				1.00E-03	Dermal Prin. and Apps.
7439976	Inorganics	Mercury	Mercury, Quicksilver	Hg				1.00E-03	Dermal Prin. and Apps.
22967926	Inorganics							1.00E-03	Dermal Prin. and Apps.
7439987	Inorganics	Molybdenum	Molybdium ion	Mo				1.00E-03	Dermal Prin. and Apps.
	Inorganics			Ni				1.00E-03	Dermal Prin. and Apps.
7440020	Inorganics	Nickel	Nickel, Raney alloy	Ni				1.00E-03	Dermal Prin. and Apps.
12035722	Inorganics			Ni				1.00E-03	Dermal Prin. and Apps.
14797558	Inorganics		Nitrate					1.00E-03	Dermal Prin. and Apps.
10102439	Inorganics	Nitric oxide						1.00E-03	Dermal Prin. and Apps.
14797650	Inorganics		Nitrite					1.00E-03	Dermal Prin. and Apps.
10102440	Inorganics	Nitrogen dioxide	Nitrogen dioxide, Nitrito					1.00E-03	Dermal Prin. and Apps.

Information current as of October 27, 2000.
Contact RAWG for references.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
7429905	Inorganics	Aluminum		Yes	Yes	Yes	NO	1.50E-03	1.50E-03	5.40E-02						
20859738	Inorganics	Aluminum phosphide		Yes	Yes	Yes	NO									
7664417	Inorganics	Ammonia	1	Yes	Yes	Yes	NO	2.50E-08								
7773060	Inorganics	Ammonium sulfamate		Yes	Yes	Yes	NO									
7440360	Inorganics	Antimony		Yes	Yes	Yes	NO	4.00E-05	4.00E-05	1.00E+00					0.00004	100
1314609	Inorganics			Yes	Yes	Yes	NO	4.00E-05							0.00004	100
304610	Inorganics			Yes	Yes	Yes	NO	4.00E-05							0.00004	100
1332816	Inorganics			Yes	Yes	Yes	NO	4.00E-05							0.00004	100
1309644	Inorganics			Yes	Yes	Yes	NO	4.00E-05							0.00004	100
	Inorganics			Yes	Yes	Yes	NO									
7440382	Inorganics	Arsenic		Yes	Yes	Yes	NO	2.00E-03	2.00E-03	1.50E-01						
7784421	Inorganics			Yes	Yes	Yes	NO									
1332214	Inorganics	Asbestos		Yes	Yes	Yes	NO									
7440393	Inorganics	Barium		Yes	Yes	Yes	NO	2.00E-04	9.00E-03	5.80E-02	0.009	0.9	0.000013	0.0046	0.0002	4
542621	Inorganics	Barium cyanide		Yes	Yes	Yes	NO	2.00E-04	9.00E-03		0.009	0.9	0.000013	0.0046	0.0002	4
7440417	Inorganics	Beryllium		Yes	Yes	Yes	NO	1.00E-03	1.00E-03	6.30E-01						100
7440428	Inorganics	Boron		Yes	Yes	Yes	NO	8.00E-04								
7637072	Inorganics			Yes	Yes	Yes	NO									
7440439	Inorganics	Cadmium		No	Yes	Yes	NO	4.00E-04	8.00E-01	7.40E-01	0.8	0.1			0.0004	
7440439	Inorganics	Cadmium		Yes	No	No	NO	4.00E-04	8.00E-01	7.40E-01	0.8	0.1			0.0004	
592018	Inorganics			Yes	Yes	Yes	NO	2.00E-03	4.00E-02		0.04	0.4			0.002	
16887006	Inorganics			Yes	Yes	Yes	NO									
7782505	Inorganics			Yes	Yes	Yes	NO	2.00E-02							0.02	
7758192	Inorganics			Yes	Yes	Yes	NO									
16065831	Inorganics	Chromium(III)		Yes	Yes	Yes	NO	9.00E-03	9.00E-03	7.80E-02					0.009	200
	Inorganics			Yes	Yes	Yes	NO	9.00E-03							0.009	200
18540299	Inorganics	Chromium(VI)		Yes	No	No	NO	9.00E-03	9.00E-03	7.80E-02					0.009	200
18540299	Inorganics	Chromium(VI)		No	Yes	Yes	NO	9.00E-03	9.00E-03	7.80E-02					0.009	200
7440484	Inorganics	Cobalt		Yes	Yes	Yes	NO	1.00E-04	2.00E+00		2	0.1			0.0001	300
7440508	Inorganics	Copper		Yes	Yes	Yes	NO	9.00E-03	5.00E-01		0.5	0.5			0.009	200
544923	Inorganics	Copper cyanide		Yes	Yes	Yes	NO	9.00E-03	5.00E-01		0.5	0.5			0.009	200
57125	Inorganics	Cyanide	12.58925412	Yes	Yes	Yes	YES	3.10E-07								
7782414	Inorganics	Fluorine		Yes	Yes	Yes	NO									
7647010	Inorganics	Hydrochloric acid		Yes	Yes	Yes	NO									
74908	Inorganics	Hydrogen cyanide	0.562341325	Yes	Yes	Yes	NO	6.00E-08								
7783064	Inorganics	Hydrogen sulfide	14.89724636	Yes	Yes	Yes	NO	2.20E-07								
7439896	Inorganics	Iron		Yes	Yes	Yes	NO	2.00E-02	1.00E+00	6.10E-02	1	1			0.02	200
7439921	Inorganics	Lead.		Yes	Yes	Yes	NO	4.00E-04	4.00E-04	7.20E-02					0.0004	300
7439932	Inorganics			Yes	Yes	Yes	NO	1.00E-02								
7439954	Inorganics	Magnesium		Yes	Yes	Yes	NO	5.00E-03				2			0.02	
7439965	Inorganics	Manganese		No	No	Yes	NO	5.00E-04	5.00E-02	6.40E-02	0.05	0.06			0.0005	400
7439965	Inorganics	Manganese		Yes	Yes	No	NO	5.00E-04	5.00E-02	6.40E-02	0.05	0.06			0.0005	400
7487947	Inorganics			Yes	Yes	Yes	NO		3.00E-02		0.03					1000
7439976	Inorganics	Mercury		Yes	Yes	Yes	NO	1.00E-02	3.00E-02		0.03					1000
7439976	Inorganics	Mercury		Yes	Yes	Yes	NO	1.00E-02	3.00E-02	1.50E-01	0.03					1000
22967926	Inorganics			Yes	Yes	Yes	NO									
7439987	Inorganics	Molybdenum		Yes	Yes	Yes	NO	1.00E-03	1.00E+00		1	0.9		0.009	0.001	10
	Inorganics			Yes	Yes	Yes	NO	5.00E-03							0.005	100
7440020	Inorganics	Nickel		Yes	Yes	Yes	NO	5.00E-03							0.005	100
12035722	Inorganics			Yes	Yes	Yes	NO	5.00E-03							0.005	100
14797558	Inorganics			Yes	Yes	Yes	NO									
10102439	Inorganics	Nitric oxide		Yes	Yes	Yes	NO									
14797650	Inorganics			Yes	Yes	Yes	NO									
10102440	Inorganics	Nitrogen dioxide		Yes	Yes	Yes	NO									

Information current as of October 27, 2000.
Contact RAWG for references.
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on date of p[illegible]on.

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
7429905	Inorganics	Aluminum				1.00E-03	4.00E-03	Baes et al. 1984		Baes et al. 1984	Baes et al. 1984			
20859738	Inorganics	Aluminum phosphide												
7664417	Inorganics	Ammonia				7.70E+00	3.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
7773060	Inorganics	Ammonium sulfamate												
7440360	Inorganics	Antimony				1.00E-02	5.00E-02	NCRP 1989		IAEA, 1994	IAEA, 1994	0.000025	0.00004	IAEA, 1994
1314609	Inorganics									IAEA, 1994	IAEA, 1994	0.000025	0.00004	IAEA, 1994
304610	Inorganics									IAEA, 1994	IAEA, 1994	0.000025	0.00004	IAEA, 1994
1332816	Inorganics									*IAEA, 1994*	*IAEA, 1994*	*0.000025*	*0.00004*	*IAEA, 1994*
1309644	Inorganics									IAEA, 1994	IAEA, 1994	0.000025	0.00004	IAEA, 1994
	Inorganics													
7440382	Inorganics	Arsenic				1.00E-02	4.00E-02	Baes et al. 1984		Baes et al. 1984	Baes et al. 1984			
7784421	Inorganics													
1332214	Inorganics	Asbestos												
7440393	Inorganics	Barium				3.00E-03	1.00E-01	NCRP, 1989		IAEA, 1994	IAEA, 1994	0.00048	0.0002	IAEA, 1994
542621	Inorganics	Barium cyanide								IAEA, 1994	IAEA, 1994	0.00048	0.0002	IAEA, 1994
7440417	Inorganics	Beryllium				2.50E-03	1.00E-02							IAEA, 1994
7440428	Inorganics	Boron				1.00E+00	4.00E+00	Baes et al. 1984		Baes et al. 1984	Baes et al. 1984			
7637072	Inorganics													
7440439	Inorganics	Cadmium	0.015			1.40E-01	5.50E-01	Baes et al. 1984		IAEA, 1994	Baes et al. 1984		0.0004	IAEA, 1994
7440439	Inorganics	Cadmium	0.015			1.40E-01	5.50E-01	Baes et al. 1984		IAEA, 1994	Baes et al. 1984		0.0004	IAEA, 1994
592018	Inorganics									IAEA, 1994	IAEA, 1994	0.003	0.002	IAEA, 1994
16887006	Inorganics													
7782505	Inorganics					1.80E+01	7.00E+01	Baes et al. 1984		IAEA, 1994	IAEA, 1994	0.017	0.02	IAEA, 1994
7758192	Inorganics													
16065831	Inorganics	Chromium(III)				1.00E-04	4.00E-02	NCRP, 1989		IAEA, 1994	IAEA, 1994	0.00001	0.009	IAEA, 1994
	Inorganics									IAEA, 1994	IAEA, 1994	0.00001	0.009	IAEA, 1994
18540299	Inorganics	Chromium(VI)				1.00E-04	4.00E-02	NCRP, 1989		IAEA, 1994	IAEA, 1994	0.00001	0.009	IAEA, 1994
18540299	Inorganics	Chromium(VI)				1.00E-04	4.00E-02	NCRP, 1989		*IAEA, 1994*	*IAEA, 1994*	*0.00001*	*0.009*	*IAEA, 1994*
7440484	Inorganics	Cobalt	0.002	0.062		2.30E-02	5.40E-02	IAEA, 1994		IAEA, 1994	IAEA, 1994	0.00007	0.0001	IAEA, 1994
7440508	Inorganics	Copper	0.022	0.039		8.00E-02	8.00E-01	IAEA, 1994		IAEA, 1994	Baes et al. 1984		0.009	IAEA, 1994
544923	Inorganics	Copper cyanide	0.022	0.039						IAEA, 1994			0.009	IAEA, 1994
57125	Inorganics	Cyanide				1.80E+00	8.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
7782414	Inorganics	Fluorine												
7647010	Inorganics	Hydrochloric acid												
74908	Inorganics	Hydrogen cyanide				4.60E+00	2.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
7783064	Inorganics	Hydrogen sulfide				2.20E+00	1.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
7439896	Inorganics	Iron	0.026	0.073		4.00E-04	1.00E-02	NCRP, 1989		IAEA, 1994	IAEA, 1994	0.00003	0.02	IAEA, 1994
7439921	Inorganics	Lead				7.60E-04	9.00E-02	NCRP, 1989		*IAEA, 1994*	*NCRP, 1989*		*0.0004*	*IAEA, 1994*
7439932	Inorganics					6.30E-03	2.50E-02	Baes et al. 1984		Baes et al. 1984	Baes et al. 1984			
7439954	Inorganics	Magnesium				2.50E-01	1.00E+00	Baes et al. 1984		Baes et al. 1984	Baes et al. 1984	0.0039	0.02	IAEA, 1994
7439965	Inorganics	Manganese	0.0036	0.0059		6.90E-02	6.80E-01	IAEA, 1994		IAEA, 1994	IAEA, 1994	0.00003	0.0005	IAEA, 1994
7439965	Inorganics	Manganese	0.0036	0.0059		6.90E-02	6.80E-01	IAEA, 1994		IAEA, 1994	IAEA, 1994	0.00003	0.0005	IAEA, 1994
7487947	Inorganics										*IAEA, 1994*	0.00047		IAEA, 1994
7439976	Inorganics	Mercury				3.00E-01	1.00E+00	NCRP, 1989		NCRP, 1989	IAEA, 1994	0.00047		IAEA, 1994
7439976	Inorganics	Mercury				3.00E-01	1.00E+00	NCRP, 1989		NCRP, 1989	IAEA, 1994	0.00047		IAEA, 1994
22967926	Inorganics													
7439987	Inorganics	Molybdenum				8.00E-02	4.00E-01	NCRP, 1989		IAEA, 1994	IAEA, 1994	0.0017	0.001	IAEA, 1994
	Inorganics									*IAEA, 1994*	*IAEA, 1994*	*0.016*	*0.005*	*IAEA, 1994*
7440020	Inorganics	Nickel				5.00E-02	1.80E-01	IAEA, 1994		IAEA, 1994	IAEA, 1994	0.016	0.005	IAEA, 1994
12035722	Inorganics									IAEA, 1994	IAEA, 1994	0.016	0.005	IAEA, 1994
14797558	Inorganics													
10102439	Inorganics	Nitric oxide												
14797650	Inorganics													
10102440	Inorganics	Nitrogen dioxide												

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
7429905	Inorganics	Aluminum								
20859738	Inorganics	Aluminum phosphide								
7664417	Inorganics	Ammonia								
7773060	Inorganics	Ammonium sulfamate								
7440360	Inorganics	Antimony								
1314609	Inorganics									
304610	Inorganics									
1332816	Inorganics									
1309644	Inorganics									
	Inorganics									
7440382	Inorganics	Arsenic								
7784421	Inorganics									
1332214	Inorganics	Asbestos								
7440393	Inorganics	Barium		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
542621	Inorganics	Barium cyanide	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
7440417	Inorganics	Beryllium								
7440428	Inorganics	Boron								
7637072	Inorganics									
7440439	Inorganics	Cadmium		IAEA, 1994	IAEA, 1994			IAEA, 1994		
7440439	Inorganics	Cadmium		IAEA, 1994	IAEA, 1994			IAEA, 1994		
592018	Inorganics		IAEA, 1994	IAEA, 1994	IAEA, 1994					
16887006	Inorganics									
7782505	Inorganics									
7758192	Inorganics									
16065831	Inorganics	Chromium(III)								
	Inorganics									
18540299	Inorganics	Chromium(VI)								
18540299	Inorganics	Chromium(VI)								
7440484	Inorganics	Cobalt	IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
7440508	Inorganics	Copper	IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
544923	Inorganics	Copper cyanide	IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
57125	Inorganics	Cyanide								
7782414	Inorganics	Fluorine								
7647010	Inorganics	Hydrochloric acid								
74908	Inorganics	Hydrogen cyanide								
7783064	Inorganics	Hydrogen sulfide								
7439896	Inorganics	Iron		IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
7439921	Inorganics	Lead								
7439932	Inorganics									
7439954	Inorganics	Magnesium			IAEA, 1994					
7439965	Inorganics	Manganese		IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
7439965	Inorganics	Manganese		IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
7487947	Inorganics		IAEA, 1994	IAEA, 1994						
7439976	Inorganics	Mercury	IAEA, 1994	IAEA, 1994						
7439976	Inorganics	Mercury		IAEA, 1994						
22967926	Inorganics									
7439987	Inorganics	Molybdenum	IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994			
	Inorganics									
7440020	Inorganics	Nickel								
12035722	Inorganics									
14797558	Inorganics									
10102439	Inorganics	Nitric oxide								
14797650	Inorganics									
10102440	Inorganics	Nitrogen dioxide								

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
7803512	Inorganics	Phosphine			34			1.00E-03	Dermal Prin. and Apps.
7664382	Inorganics	Phosphoric acid	Phosphoric Acid		98			1.00E-03	Dermal Prin. and Apps.
151508	Inorganics		Potassium Cyanide	K				5.10E-04	Calc. using logkow
506616	Inorganics	Potassium silver cyanide		K				1.00E-03	Dermal Prin. and Apps.
7782492	Inorganics	Selenium	Selenium	Se				1.00E-03	Dermal Prin. and Apps.
7446346	Inorganics			Se				1.00E-03	Dermal Prin. and Apps.
7440224	Inorganics	Silver	Silver	Ag				1.00E-03	Dermal Prin. and Apps.
506649	Inorganics	Silver Cyanide		Ag				1.00E-03	Dermal Prin. and Apps.
7440235	Inorganics	Sodium		Na				1.00E-03	Dermal Prin. and Apps.
26628228	Inorganics			Na				1.00E-03	Dermal Prin. and Apps.
143339	Inorganics		Sodium Cyanide	Na				2.50E-04	Calc. using logkow
13718268	Inorganics			Na				1.00E-03	Dermal Prin. and Apps.
7440246	Inorganics	Strontium		Sr				1.00E-03	Dermal Prin. and Apps.
14808798	Inorganics							1.00E-03	Dermal Prin. and Apps.
10102451	Inorganics		Thallium (I) Nitrate	Tl				1.00E-03	Dermal Prin. and Apps.
7440280	Inorganics	Thallium	Thallium, Famor	Tl				1.00E-03	Dermal Prin. and Apps.
7791120	Inorganics		Thallium (I) Chloride	Tl				1.00E-03	Dermal Prin. and Apps.
12039520	Inorganics			Tl				1.00E-03	Dermal Prin. and Apps.
7446186	Inorganics			Tl				1.00E-03	Dermal Prin. and Apps.
7440291	Inorganics	Thorium 232 (radionuclide)		Th				1.00E-03	Dermal Prin. and Apps.
7440315	Inorganics		Tin, Zinn	Sn				1.00E-03	Dermal Prin. and Apps.
7440326	Inorganics			Ti				1.00E-03	Dermal Prin. and Apps.
238	Inorganics			U				1.00E-03	Dermal Prin. and Apps.
1314621	Inorganics	Vanadium pentoxide	Vanadium Oxide	V				1.00E-03	Dermal Prin. and Apps.
36907423	Inorganics			V				1.00E-03	Dermal Prin. and Apps.
7440622	Inorganics	Vanadium	Vanadium	V				1.00E-03	Dermal Prin. and Apps.
27774136	Inorganics			V				1.00E-03	Dermal Prin. and Apps.
7723140	Inorganics	Phosphorous (elemental)		P				1.00E-03	Dermal Prin. and Apps.
7440666	Inorganics	Zinc	Zinc compounds	Zn				1.00E-03	Dermal Prin. and Apps.
557211	Inorganics	Zinc cyanide		Zn				1.00E-03	Dermal Prin. and Apps.
1314847	Inorganics	Zinc phosphide		Zn				1.00E-03	Dermal Prin. and Apps.
7440677	Inorganics		Zirconium	Zr				1.00E-03	Dermal Prin. and Apps.
1596845	Organics				160.17			1.70E-05	Calc. using logp
83329	Organics	Acenaphthene	Acenaphthene, 1,2-dihydro-acenaphthylene		154.21			2.50E-01	Calc. using logkow
208968	Organics	Acenaphthylene	Acenaphthylene, Cyclopenta(de)naphthalene		152.2			9.50E-02	Calc. using logkow
30560191	Organics		Orthene, Acephate, Ortril		183.16			3.60E-05	Calc. using logkow
75070	Organics	Acetaldehyde			44.1			7.20E-04	Dermal Prin. and Apps.
34256821	Organics				269.77			6.10E-03	Calc. using logkow
67641	Organics	Acetone	Acetone, 2-propanone, dimethyl ketone		58.08			5.70E-04	Bast
75865	Organics				85.1			5.50E-04	Calc. using logp
75058	Organics	Acetonitrile	Acetonitrile, methyl cyanide		41			6.10E-04	Calc. using logkow
98862	Organics	Acetophenone	Acetophenone, methyl phenyl ketone		120.15			5.70E-03	Calc. using logkow
107028	Organics	Acrolein	Acrolein, 2-propenal, Acryladehyde		56.1			7.40E-04	Calc. using logkow
79061	Organics	Acrylamide	Acrylamide, 2-Propenamide		71			2.40E-04	Calc. using logkow
79107	Organics	Acrylic acid			72.06			9.00E-04	Calc. using logkow
107131	Organics	Acrylonitrile	Acrylonitrile, Propenenitrile, Vinyl cyanide		53.1			1.40E-03	Calc. using logkow
15972608	Organics				269.77			4.90E-03	Calc. using logkow
116063	Organics	Aldicarb			190.26			8.40E-04	Calc. using logkow
1646884	Organics				222.26			3.30E-05	Calc. using logkow
309002	Organics	Aldrin	Aldrin, HHDN, Octalene, Aldrex		365			1.60E-03	Calc. using logkow
74223646	Organics				381.36			9.20E-06	Calc. using logkow
107186	Organics	Allyl alcohol	Allyl alcohol, Propenol, 3-Hydroxypropene		58.08			5.90E-04	Calc. using logkow
107051	Organics	Allyl chloride	3-Chloropropene, Chlorallylene		76.5			7.00E-03	Calc. using logkow
67485294	Organics				494.48				

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
7803512	Inorganics	Phosphine	220.8396245	Yes	Yes	Yes	NO	5.50E-06								
7664382	Inorganics	Phosphoric acid	0.013803843	Yes	Yes	Yes	NO	3.50E-10								
151508	Inorganics		0.562341325	Yes	Yes	Yes	YES	1.40E-08				1			0.02	
506616	Inorganics	Potassium silver cyanide		Yes	Yes	Yes	NO	2.00E-02				1			0.02	
7782492	Inorganics	Selenium		Yes	Yes	Yes	NO	1.00E-01	9.00E+00		9	9				
7446346	Inorganics			Yes	Yes	Yes	NO		9.00E+00		9	9				
7440224	Inorganics	Silver		Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
506649	Inorganics	Silver Cyanide		Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
7440235	Inorganics	Sodium		Yes	Yes	Yes	NO	8.00E-02				6			0.08	20
26628228	Inorganics			Yes	Yes	Yes	NO	8.00E-02				6			0.08	20
143339	Inorganics		0.151356125	Yes	Yes	Yes	YES	3.80E-09				6			0.08	20
13718268	Inorganics			Yes	Yes	Yes	NO	8.00E-02				6			0.08	20
7440246	Inorganics	Strontium		Yes	Yes	Yes	NO	8.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
14808798	Inorganics			Yes	Yes	Yes	NO									
10102451	Inorganics			Yes	Yes	Yes	NO									
7440280	Inorganics	Thallium		Yes	Yes	Yes	NO	4.00E-02	4.00E-02	0.00E+00						
7791120	Inorganics			Yes	Yes	Yes	NO									
12039520	Inorganics			Yes	Yes	Yes	NO									
7446186	Inorganics			Yes	Yes	Yes	NO									
7440291	Inorganics	Thorium 232 (radionuclide)		Yes	Yes	Yes	NO	1.00E-04								100
7440315	Inorganics			Yes	Yes	Yes	NO	1.00E-02								3000
7440326	Inorganics			Yes	Yes	Yes	NO	3.00E-02								
238	Inorganics			Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
1314621	Inorganics	Vanadium pentoxide		Yes	Yes	Yes	NO									
36907423	Inorganics			Yes	Yes	Yes	NO									
7440622	Inorganics	Vanadium		Yes	Yes	Yes	NO	2.50E-03	2.50E-03	6.70E-02						
27774136	Inorganics			Yes	Yes	Yes	NO									
7723140	Inorganics	Phosphorous (elemental)		Yes	Yes	Yes	NO	5.00E-02							0.05	50000
7440666	Inorganics	Zinc		Yes	Yes	Yes	NO	1.00E-01	7.00E+00		7	3		0.027	0.1	1000
557211	Inorganics	Zinc cyanide		Yes	Yes	Yes	NO	1.00E-01	7.00E+00		7	3		0.027	0.1	1000
1314847	Inorganics	Zinc phosphide		Yes	Yes	Yes	NO	1.00E-01	7.00E+00		7	3		0.027	0.1	1000
7440677	Inorganics			Yes	Yes	Yes	NO	1.00E-06	6.00E-05		0.00006	0.0002	0.00002	5.50E-06	1.00E-06	300
1596845	Organics		0.030902954	Yes	Yes	Yes	NO	7.70E-10								
83329	Organics	Acenaphthene	8317.637711	Yes	Yes	Yes	YES	5.00E-04								
208968	Organics	Acenaphthylene	11748.97555	Yes	Yes	Yes	YES	1.30E-04								
30560191	Organics		0.141253755	Yes	Yes	Yes	NO	3.50E-09								
75070	Organics	Acetaldehyde	2.691534804	Yes	Yes	Yes	YES	1.50E-08								
34256821	Organics		1071.519305	Yes	Yes	Yes	NO	2.70E-05								
67641	Organics	Acetone	0.575439937	Yes	Yes	Yes	YES	1.40E-08								
75865	Organics		0.933254301	Yes	Yes	Yes	NO	2.30E-08								
75058	Organics	Acetonitrile	0.45708819	Yes	Yes	Yes	YES	1.10E-08								
98862	Organics	Acetophenone	38.01893963	Yes	Yes	Yes	YES	1.30E-06								
107028	Organics	Acrolein	0.812830516	Yes	Yes	Yes	YES	2.00E-08								
79061	Organics	Acrylamide	6.321821076	Yes	Yes	Yes	NO	5.30E-09								
79107	Organics	Acrylic acid	2.041737945	Yes	Yes	Yes	NO	3.60E-08								
107131	Organics	Acrylonitrile	0.120226444	Yes	Yes	Yes	YES	4.40E-08								
15972608	Organics		794.3282347	Yes	Yes	Yes	NO	2.00E-05								
116063	Organics	Aldicarb	149.5608759	Yes	Yes	Yes	NO	3.40E-07								
1646884	Organics		0.26915348	Yes	Yes	Yes	NO	6.70E-09								
309002	Organics	Aldrin	466947.4413	Yes	Yes	Yes	NO	2.50E-05								
74223646	Organics		1.032761406	Yes	Yes	Yes	NO	2.60E-08								
107186	Organics	Allyl alcohol	1.479108388	Yes	Yes	Yes	YES	1.50E-08								
107051	Organics	Allyl chloride	9.006167088	Yes	Yes	Yes	YES	6.30E-07								
67485294	Organics			Yes	Yes	Yes	NO									

Information current as of October 27, 2000.
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on date c tion

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
7803512	Inorganics	Phosphine				3.40E-01	1.70E+00	29	29	29	29			
7664382	Inorganics	Phosphoric acid				9.20E+01	4.60E+02	29	29	29	29			
151508	Inorganics					1.10E+01	5.30E+01	Calc. using kow		Calc. using kow	Calc. using kow	0.0072	0.02	IAEA, 1994
506616	Inorganics	Potassium silver cyanide								IAEA, 1994	IAEA, 1994	0.0072	0.02	IAEA, 1994
7782492	Inorganics	Selenium	0.32			1.00E-01	5.00E-01	NCRP 1989		NCRP, 1989	NCRP, 1989			IAEA, 1994
7446346	Inorganics		0.32											IAEA, 1994
7440224	Inorganics	Silver	0.02	0.00027	0.06	2.20E-05	1.00E+00	NCRP, 1989		IAEA, 1994	IAEA, 1994	0.00005	0.003	IAEA, 1994
506649	Inorganics	Silver Cyanide	0.02	0.00027	0.06					IAEA, 1994	IAEA, 1994	0.00005	0.003	IAEA, 1994
7440235	Inorganics	Sodium				3.00E-02	2.00E-01	NCRP, 1989		IAEA, 1994	IAEA, 1994	0.016	0.08	IAEA, 1994
26628228	Inorganics									IAEA, 1994	IAEA, 1994	0.016	0.08	IAEA, 1994
143339	Inorganics					2.30E+01	1.10E+02	Calc. using kow		Calc. using kow	Calc. using kow	0.016	0.08	IAEA, 1994
13718268	Inorganics									IAEA, 1994	IAEA, 1994	0.016	0.08	IAEA, 1994
7440246	Inorganics	Strontium	0.04	0.33	0.056	2.10E-01	1.10E+00	IAEA, 1994		IAEA, 1994	IAEA, 1994	0.0028	0.008	IAEA, 1994
14808798	Inorganics													
10102451	Inorganics													
7440280	Inorganics	Thallium				1.00E-03	4.00E-03	Baes et al. 1984		Baes et al. 1984	Baes et al. 1984			
7791120	Inorganics													
12039520	Inorganics													
7446186	Inorganics													
7440291	Inorganics	Thorium 232 (radionuclide)				1.40E-04	1.10E-02							IAEA, 1994
7440315	Inorganics					3.00E-01	1.00E+00	NCRP 1989		NCRP, 1989	NCRP, 1989			IAEA, 1994
7440326	Inorganics					1.40E-03	5.50E-03	Baes et al. 1984		Baes et al. 1984	Baes et al. 1984			
238	Inorganics		0.062			6.30E-04	2.30E-02	IAEA, 1994		IAEA, 1994	IAEA, 1994	0.0004	0.0003	IAEA, 1994
1314621	Inorganics	Vanadium pentoxide												
36907423	Inorganics													
7440622	Inorganics	Vanadium				1.40E-03	5.50E-03	Baes et al. 1984		Baes et al. 1984	Baes et al. 1984			
27774136	Inorganics													
7723140	Inorganics	Phosphorous (elemental)								IAEA, 1994	IAEA, 1994	0.016	0.05	IAEA, 1994
7440666	Inorganics	Zinc	0.15	4.1		2.60E-01	9.90E-01	IAEA, 1994		IAEA, 1994	NCRP, 1989		0.1	IAEA, 1994
557211	Inorganics	Zinc cyanide	0.15	4.1						IAEA, 1994			0.1	IAEA, 1994
1314847	Inorganics	Zinc phosphide	0.15	4.1						IAEA, 1994			0.1	IAEA, 1994
7440677	Inorganics					1.00E-04	1.00E-03	IAEA, 1994		IAEA, 1994	IAEA, 1994	5.50E-07	1.00E-06	IAEA, 1994
1596845	Organics					5.80E+01	2.90E+02	29	29	29	29			
83329	Organics	Acenaphthene				2.50E-02	1.20E-01	Calc. using kow		Calc. using kow	Calc. using kow			
208968	Organics	Acenaphthylene				5.50E-02	2.70E-01	Calc. using kow		Calc. using kow	Calc. using kow			
30560191	Organics					2.40E+01	1.20E+02	Calc. using kow		Calc. using kow	Calc. using kow			
75070	Organics	Acetaldehyde				1.00E+01	5.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
34256821	Organics					1.30E-01	6.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
67641	Organics	Acetone				1.10E+01	5.20E+01	Calc. using kow		Calc. using kow	Calc. using kow			
75865	Organics					8.00E+00	4.00E+01	29	29	29	29			
75058	Organics	Acetonitrile				1.20E+01	6.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
98862	Organics	Acetophenone				8.00E-01	3.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
107028	Organics	Acrolein				8.80E+00	4.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
79061	Organics	Acrylamide				1.90E+01	9.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
79107	Organics	Acrylic acid				6.20E+00	3.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
107131	Organics	Acrylonitrile				5.50E+00	2.70E+01	Calc. using kow		Calc. using kow	Calc. using kow			
15972608	Organics					1.60E-01	7.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
116063	Organics	Aldicarb				1.70E+00	8.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
1646884	Organics					1.60E+01	8.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
309002	Organics	Aldrin				1.40E-01	6.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
74223646	Organics					7.60E+00	3.70E+01	Calc. using kow		Calc. using kow	Calc. using kow			
107186	Organics	Allyl alcohol				1.00E+01	5.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
107051	Organics	Allyl chloride				1.20E+00	5.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
67485294	Organics													

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
7803512	Inorganics	Phosphine								
7664382	Inorganics	Phosphoric acid								
151508	Inorganics				IAEA, 1994					
506616	Inorganics	Potassium silver cyanide			IAEA, 1994					
7782492	Inorganics	Selenium	IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994		
7446346	Inorganics		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994		
7440224	Inorganics	Silver	IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
506649	Inorganics	Silver Cyanide	IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
7440235	Inorganics	Sodium			IAEA, 1994					
26628228	Inorganics				IAEA, 1994					
143339	Inorganics				IAEA, 1994					
13718268	Inorganics				IAEA, 1994					
7440246	Inorganics	Strontium	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14808798	Inorganics									
10102451	Inorganics									
7440280	Inorganics	Thallium								
7791120	Inorganics									
12039520	Inorganics									
7446186	Inorganics									
7440291	Inorganics	Thorium 232 (radionuclide)								
7440315	Inorganics									
7440326	Inorganics									
238	Inorganics			IAEA, 1994	IAEA, 1994			IAEA, 1994		
1314621	Inorganics	Vanadium pentoxide								
36907423	Inorganics									
7440622	Inorganics	Vanadium								
27774136	Inorganics									
7723140	Inorganics	Phosphorous (elemental)								
7440666	Inorganics	Zinc	IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	
557211	Inorganics	Zinc cyanide	IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	
1314847	Inorganics	Zinc phosphide	IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	
7440677	Inorganics		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
1596845	Organics									
83329	Organics	Acenaphthene								
208968	Organics	Acenaphthylene								
30560191	Organics									
75070	Organics	Acetaldehyde								
34256821	Organics									
67641	Organics	Acetone								
75865	Organics									
75058	Organics	Acetonitrile								
98862	Organics	Acetophenone								
107028	Organics	Acrolein								
79061	Organics	Acrylamide								
79107	Organics	Acrylic acid								
107131	Organics	Acrylonitrile								
15972608	Organics									
116063	Organics	Aldicarb								
1646884	Organics									
309002	Organics	Aldrin								
74223646	Organics									
107186	Organics	Allyl alcohol								
107051	Organics	Allyl chloride								
67485294	Organics									

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
834128	Organics	AMETRYN			227.33			7.30E-04	Calc. using logkow
591275	Organics				109.13			5.80E-04	Calc. using logkow
504245	Organics	AMINOPYRIDINE,4-			94.12			8.00E-04	Calc. using logkow
33089611	Organics				293.41			2.50E-01	Calc. using logkow
62533	Organics	Aniline	Aniline, Aminobenzene, Phenylamine		93.1			4.10E-02	Dermal Prin. and Apps
120127	Organics	Anthracene	Anthracene, Paranaphthalene		178.23			2.20E-01	Bast
74115245	Organics				303.15			4.30E-03	Calc. using logkow
140578	Organics				334.87			4.60E-02	Calc. using logp
12674112	Organics		Aroclor 1016, PCB 1016					7.90E-01	Calc. using logkow
12674112	Organics		Aroclor 1016, PCB 1016					7.90E-01	Calc. using logkow
11104282	Organics		Aroclor 1221, Chlorodiphenyl (21% Cl), PCB 1021					9.20E-02	Calc. using logkow
11104282	Organics		Aroclor 1221, Chlorodiphenyl (21% Cl), PCB 1021					9.20E-02	Calc. using logkow
11141165	Organics		Aroclor 1232, Chlorodiphenyl (32% Cl), PCB 1232					1.40E-02	Calc. using logkow
11141165	Organics		Aroclor 1232, Chlorodiphenyl (32% Cl), PCB 1232					1.40E-02	Calc. using logkow
53469219	Organics		Aroclor 1242, PCB 1242					3.70E-02	Calc. using logkow
53469219	Organics		Aroclor 1242, PCB 1242					3.70E-02	Calc. using logkow
12672296	Organics		Aroclor 1248, Chlorodiphenyl (48% Cl), PCB 1248					3.70E-01	Calc. using logkow
12672296	Organics		Aroclor 1248, Chlorodiphenyl (48% Cl), PCB 1248					3.70E-01	Calc. using logkow
11097691	Organics		Aroclor 1254, PCB 1254					3.50E-01	Calc. using logkow
11097691	Organics		Aroclor 1254, PCB 1254					3.50E-01	Calc. using logkow
11096825	Organics		Aroclor 1260, PCB 1260					1.10E+00	Calc. using logkow
11096825	Organics		Aroclor 1260, PCB 1260					1.10E+00	Calc. using logkow
76578148	Organics				372.81			1.10E-02	Calc. using logkow
3337711	Organics				230.24			4.80E-05	Calc. using logkow
1912249	Organics	Atrazine			215.69			7.60E-03	Calc. using logkow
65195553	Organics								
103333	Organics				182.22			7.40E-02	Calc. using logkow
114261	Organics	PROPORUR (Baygon)			209.24			1.40E-03	Calc. using logkow
43121433	Organics				293.75			1.30E-03	Calc. using logkow
68359375	Organics				434.29			7.20E-02	Calc. using logkow
1861401	Organics				335.28			2.90E-02	Calc. using logkow
17804352	Organics		Tersan 1991, Benlat, MBC		290.32			1.40E-03	Calc. using logkow
25057890	Organics				240.28			3.90E-04	Calc. using logkow
56553	Organics	Benz(a)anthracene	Benzo(a)anthracene, 1,2-benzanthracene		228.29			8.10E-01	Calc. using logkow
100527	Organics	BENZALDEHYDE			106.12			1.80E-02	Calc. using logkow
71432	Organics	Benzene	Benzene, Benzol, Benzolene, Mineral naphtha		78.1			2.10E-02	Dermal Prin. and Apps
	Organics								
29224553	Organics								
	Organics								
	Organics								
28729546	Organics				134.22				
25551137	Organics		Trimethylbenzene (mixed isomers)		120.19			9.10E-02	Calc. using logkow
108985	Organics				110.2			2.40E-02	Calc. using logkow
92875	Organics	Benzidine	*Benzidine, 4,4'-diaminobiphenyl*		184.2			1.30E-03	Calc. using logkow
50328	Organics	Benzo(a)pyrene	Benzo(a)pyrene, 3,4-benzopyrene, B(a)p		252.31			1.20E+00	Calc. using logkow
205992	Organics	Benzo(b)fluoranthene	Benzo(b)fluoranthene, Benz(e)acephenanthrylene		252.31			1.20E+00	Calc. using logkow
191242	Organics	Benzo(g,h,i)perylene			276.34			1.80E+00	Bast
207089	Organics	Benzo(k)fluoranthene	Benzo(k)flouranthene, 11,12-benzo(k)flouranthene		252.31			6.00E-01	Bast
65850	Organics	Benzoic acid	Benzoic acid		122.12			7.30E-03	Calc. using logkow
98077	Organics	BENZOTRICHLORIDE			195.48			1.50E-02	Calc. using logkow
100516	Organics	Benzyl alcohol	BENZYL ALCOHOL		108.14			6.00E-03	Dermal Prin. and Apps
100447	Organics	Benzyl chloride			126.59			1.40E-02	Calc. using logkow
141662	Organics							2.20E-05	Calc. using logkow
82657043	Organics								

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
834128	Organics	AMETRYN	16 004975	Yes	Yes	Yes	NO	1 60E-06								
591275	Organics		1.621810097	Yes	Yes	Yes	NO	4 10E-08								
504245	Organics	AMINOPYRIDINE,4-	1 905460718	Yes	Yes	Yes	NO	4 80E-08								
33089611	Organics		316227 766	Yes	Yes	Yes	NO	7 90E-03								
62533	Organics	Aniline	7 943282347	Yes	Yes	Yes	NO	2 00E-07								
120127	Organics	Anthracene	28183 82931	Yes	Yes	Yes	YES	6 30E-04								
74115245	Organics		1258 925412	Yes	Yes	Yes	NO	3 10E-05								
140578	Organics		66069 3448	Yes	Yes	Yes	NO	1 70E-03								
12674112	Organics		794328 2347	No	Yes	Yes	NO	2 00E-02	2 40E+00	1 20E+00						
12674112	Organics		794328 2347	Yes	No	No	NO	2 00E-02	2 40E+00	1 20E+00						
11104282	Organics		12589 25412	No	Yes	Yes	NO	3 10E-04	2 40E+00	1 20E+00						
11104282	Organics		12589 25412	Yes	No	No	NO	3 10E-04	2 40E+00	1 20E+00						
11141165	Organics		1584 893193	No	Yes	Yes	NO	4 00E-05	2 40E+00	1 20E+00						
11141165	Organics		1584 893193	Yes	No	No	NO	4 00E-05	2 40E+00	1 20E+00						
53469219	Organics		12589 25412	No	Yes	Yes	NO	3 10E-04	2 40E+00	1 20E+00						
53469219	Organics		12589 25412	Yes	No	No	NO	3 10E-04	2 40E+00	1 20E+00						
12672296	Organics		630957 3445	No	Yes	Yes	NO	1 60E-02	2 40E+00	1 20E+00						
12672296	Organics		630957 3445	Yes	No	No	NO	1 60E-02	2 40E+00	1 20E+00						
11097691	Organics		1000000	No	Yes	Yes	NO	2 50E-02	2 40E+00	1 20E+00						
11097691	Organics		1000000	Yes	No	No	NO	2 50E-02	2 40E+00	1 20E+00						
11096825	Organics		12589254 12	No	Yes	Yes	NO	3 10E-01	2 40E+00	1 20E+00						
11096825	Organics		12589254 12	Yes	No	No	NO	3 10E-01	2 40E+00	1 20E+00						
76578148	Organics		19054 60718	Yes	Yes	Yes	NO	4 80E-04								
3337711	Organics		0 537031796	Yes	Yes	Yes	NO	1 30E-08								
1912249	Organics	Atrazine	446 6835922	Yes	Yes	Yes	NO	1 30E-05								
65195553	Organics			Yes	Yes	Yes	NO									
103333	Organics		6606 93448	Yes	Yes	Yes	NO	1 60E-04								
114261	Organics	PROPORUR (Baygon)	210 1817482	Yes	Yes	Yes	NO	1 00E-06								
43121433	Organics		199 5262315	Yes	Yes	Yes	NO	5 00E-06								
68359375	Organics		891250 9381	Yes	Yes	Yes	NO	2 20E-02								
1861401	Organics		34673 68505	Yes	Yes	Yes	NO	8 70E-04								
17804352	Organics		199 5262315	Yes	Yes	Yes	NO	5 00E-06								
25057890	Organics		12 58925412	Yes	Yes	Yes	NO	3 10E-07								
56553	Organics	Benz(a)anthracene	407380 2778	Yes	Yes	Yes	NO	1 30E-02								
100527	Organics	BENZALDEHYDE	30 1995172	Yes	Yes	Yes	NO	5 00E-06								
71432	Organics	Benzene	141 2537545	Yes	Yes	Yes	YES	3 10E-06								
	Organics			Yes	Yes	Yes	NO									
29224553	Organics			Yes	Yes	Yes	NO									
	Organics			Yes	Yes	Yes	NO									
	Organics			Yes	Yes	Yes	NO									
28729546	Organics			Yes	Yes	Yes	NO									
25551137	Organics		2511 886432	Yes	Yes	Yes	YES	6 30E-05								
108985	Organics		316 227766	Yes	Yes	Yes	NO	7 90E-06								
92875	Organics	Benzidine	64 5654229	Yes	Yes	Yes	NO	5 00E-07								
50328	Organics	Benzo(a)pyrene	954992 586	Yes	Yes	Yes	NO	3 10E-02	1 70E+00	5 40E-02						
205992	Organics	Benzo(b)fluoranthene	6966329 303	Yes	Yes	Yes	NO	3 10E-02								
191242	Organics	Benzo(g,h,i)perylene	5011872 336	Yes	Yes	Yes	NO	1 00E-01								
207089	Organics	Benzo(k)fluoranthene	6918309 709	Yes	Yes	Yes	NO	1 60E-01								
65850	Organics	Benzoic acid	72 44359601	Yes	Yes	Yes	NO	2 00E-06								
98077	Organics	BENZOTRICHLORIDE	831 7637711	Yes	Yes	Yes	NO	2 00E-05								
100516	Organics	Benzyl alcohol	47 42266978	Yes	Yes	Yes	NO	3 10E-07								
100447	Organics	Benzyl chloride	199 5262315	Yes	Yes	Yes	YES	5 00E-06								
141662	Organics		0 208929613	Yes	Yes	Yes	NO	5 20E-09								
82657043	Organics			Yes	Yes	Yes	NO									

Information current as of October 27, 2000
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
834128	Organics	AMETRYN				7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
591275	Organics					5.80E+00	2.90E+01	Calc. using kow		Calc. using kow	Calc. using kow			
504245	Organics	AMINOPYRIDINE,4-				5.30E+00	2.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
33089611	Organics					5.00E-03	2.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
62533	Organics	Aniline				2.30E+00	1.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
120127	Organics	Anthracene				2.20E-02	1.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
74115245	Organics					1.20E-01	6.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
140578	Organics					1.20E-02	6.10E-02	29	29	29	29			
12674112	Organics					2.90E-03	1.40E-02	Calc. using kow		Calc. using kow	Calc. using kow			
12674112	Organics					2.90E-03	1.40E-02	Calc. using kow		Calc. using kow	Calc. using kow			
11104282	Organics					3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
11104282	Organics					3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
11141165	Organics					1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
11141165	Organics					1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
53469219	Organics					3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
53469219	Organics					3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
12672296	Organics					3.30E-03	1.60E-02	Calc. using kow		Calc. using kow	Calc. using kow			
12672296	Organics					3.30E-03	1.60E-02	Calc. using kow		Calc. using kow	Calc. using kow			
11097691	Organics					2.50E-03	1.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
11097691	Organics					2.50E-03	1.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
11096825	Organics					5.90E-04	2.90E-03	Calc. using kow		Calc. using kow	Calc. using kow			
11096825	Organics					5.90E-04	2.90E-03	Calc. using kow		Calc. using kow	Calc. using kow			
76578148	Organics					2.50E-02	1.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
3337711	Organics					1.10E+01	5.40E+01	Calc. using kow		Calc. using kow	Calc. using kow			
1912249	Organics	Atrazine				2.10E-01	1.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
65195553	Organics													
103333	Organics					4.80E-02	2.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
114261	Organics	PROPORUR (Baygon)				9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
43121433	Organics					3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
68359375	Organics					2.70E-03	1.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
1861401	Organics					1.80E-02	8.80E-02	Calc. using kow		Calc. using kow	Calc. using kow			
17804352	Organics					3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
25057890	Organics					1.80E+00	8.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
56553	Organics	Benz(a)anthracene				3.80E-03	1.90E-02	Calc. using kow		Calc. using kow	Calc. using kow			
100527	Organics	BENZALDEHYDE				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
71432	Organics	Benzene				4.70E-01	2.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
	Organics													
29224553	Organics													
	Organics													
	Organics													
28729546	Organics													
25551137	Organics					8.20E-02	4.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
108985	Organics					2.70E-01	1.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
92875	Organics	Benzidine				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
50328	Organics	Benzo(a)pyrene				2.20E-03	1.10E-02	Calc. using kow		Calc. using kow	Calc. using kow			
205992	Organics	Benzo(b)fluoranthene				2.20E-03	1.10E-02	Calc. using kow		Calc. using kow	Calc. using kow			
191242	Organics	Benzo(g,h,i)perylene				1.10E-03	5.60E-03	Calc. using kow		Calc. using kow	Calc. using kow			
207089	Organics	Benzo(k)fluoranthene				8.80E-04	4.30E-03	Calc. using kow		Calc. using kow	Calc. using kow			
65850	Organics	Benzoic acid				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
98077	Organics	BENZOTRICHLORIDE				1.60E-01	7.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
100516	Organics	Benzyl alcohol				1.80E+00	8.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
100447	Organics	Benzyl chloride				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
141662	Organics					1.90E+01	9.40E+01	Calc. using kow		Calc. using kow	Calc. using kow			
82657043	Organics													

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
834128	Organics	AMETRYN								
591275	Organics									
504245	Organics	AMINOPYRIDINE,4-								
33089611	Organics									
62533	Organics	Aniline								
120127	Organics	Anthracene								
74115245	Organics									
140578	Organics									
12674112	Organics									
12674112	Organics									
11104282	Organics									
11104282	Organics									
11141165	Organics									
11141165	Organics									
53469219	Organics									
53469219	Organics									
12672296	Organics									
12672296	Organics									
11097691	Organics									
11097691	Organics									
11096825	Organics									
11096825	Organics									
76578148	Organics									
3337711	Organics									
1912249	Organics	Atrazine								
65195553	Organics									
103333	Organics									
114261	Organics	PROPORUR (Baygon)								
43121433	Organics									
68359375	Organics									
1861401	Organics									
17804352	Organics									
25057890	Organics									
56553	Organics	Benz(a)anthracene								
100527	Organics	BENZALDEHYDE								
71432	Organics	Benzene								
	Organics									
29224553	Organics									
	Organics									
	Organics									
28729546	Organics									
25551137	Organics									
108985	Organics									
92875	Organics	Benzidine								
50328	Organics	Benzo(a)pyrene								
205992	Organics	Benzo(b)fluoranthene								
191242	Organics	Benzo(g,h,i)perylene								
207089	Organics	Benzo(k)fluoranthene								
65850	Organics	Benzoic acid								
98077	Organics	BENZOTRICHLORIDE								
100516	Organics	Benzyl alcohol								
100447	Organics	Benzyl chloride								
141662	Organics									
82657043	Organics									

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Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
92524	Organics	Biphenyl, 1,1-			154.2			1.80E-01	Calc. using logkow
108601	Organics	Oxybis (1-chloropropane), 2,3'-	Bis(2-chloroisopropyl)ether		171.07			1.20E-02	Calc. using logkow
111911	Organics	Bis(2-chloroethoxy)methane						1.40E-03	Calc. using logkow
111444	Organics	Bis(2-chloroethyl)ether	Bis(2-chloroethyl ether), Chloroethyl ether, BCEE		143			2.10E-03	Calc. using logkow
39638329	Organics	Bis(2-chloroisopropyl)ether	Bis(2-chloroisopropyl)ether, Dichlorodiisapropyl ether					5.30E-03	Calc. using logkow
117817	Organics	Bis (2-ethylhexyl) phthalate	Bis(2-ethylhexyl phthalate), DEHP, DOP		390.56			2.30E-02	Bast
542881	Organics	Bis(chloromethyl)ether			114.96			7.10E-04	Calc. using logkow
80057	Organics	BISPHENOL(A)			228.28			2.80E-02	Calc. using logkow
74975	Organics	BROMOCHLOROMETHANE			129.39			3.10E-03	Calc. using logkow
75274	Organics	Bromodichloromethane	Bromodichloromethane, Dichlorobromomethane		163.8			5.80E-03	Calc. using logkow
101553	Organics	Bromophenyl-phenylether, 4-						2.40E-01	Calc. using logkow
75252	Organics	Tribromomethane	Tribromomethane, Bromoform		252.8			2.60E-03	Calc. using logkow
74839	Organics	Bromomethane	Bromomethane, Methyl bromide, MB, MBX, MEBR		95			3.50E-03	Calc. using logkow
2104963	Organics							5.60E-02	Calc. using logkow
75627	Organics								
1689845	Organics	Bromoxynil			276.92			8.70E-05	Calc. using logkow
1689992	Organics							1.40E-01	Calc. using logkow
106990	Organics	Butadiene, 1,3-			54			2.30E-02	Calc. using logkow
71363	Organics	Butanol	1-Butanol, n-butyl alcohol		74.1			2.50E-03	Dermal Prin. and Apps.
	Organics								
85687	Organics	Butylbenzyl phthalate						7.10E-02	Calc. using logkow
2008415	Organics							7.90E-02	Calc. using logkow
507200	Organics								
85701	Organics				336.39			1.50E-02	Calc. using logp
75605	Organics							2.70E-04	Calc. using logkow
105602	Organics	CAPROLACTAM			113.16			2.80E-04	Calc. using logkow
2425061	Organics							8.60E-04	Calc. using logkow
133062	Organics	Captan			300.57			1.30E-03	Calc. using logkow
63252	Organics	Carbaryl			201.22			4.80E-03	Calc. using logkow
86748	Organics	Carbazole						9.10E-02	Calc. using logkow
1563662	Organics	Carbofuran						1.20E-03	Calc. using logkow
75150	Organics	Carbon disulfide	Carbon disulfide, Carbon bisulfide		80			2.40E-02	Dermal Prin. and Apps.
56235	Organics	Carbon tetrachloride	Carbon tetrachloride, Freon 10, Tetrachloromethane		153.84			2.20E-02	Calc. using logkow
55285148	Organics								
5234684	Organics							2.20E-03	Calc. using logkow
75876	Organics	Chloral			147.4			1.20E-03	Calc. using logkow
133904	Organics	CHLORAMBEN			171.58			2.30E-03	Calc. using logp
118752	Organics				245.88			2.30E-03	Calc. using logp
57749	Organics	Chlordane	Chlordane, BELT, Ortho-klor, Velsicol 1068		409.8			5.20E-02	Calc. using logkow
90982324	Organics							3.30E-04	Calc. using logkow
10049044	Organics				67.46				
75683	Organics				100.5			6.40E-03	Calc. using logkow
126998	Organics	Chloroprene	2-chloro-1,3-butadiene, Chloroprene, Neoprene		88.54			1.00E-02	Calc. using logkow
3165933	Organics				178.06			6.40E-03	Calc. using logp
95692	Organics				141.6			1.10E-02	Calc. using logp
107200	Organics	CHLOROACETALDEHYDE			78.5			4.40E-04	Calc. using logp
79118	Organics	CHLOROACETIC ACID			94.5			3.60E-03	Calc. using logkow
532274	Organics	CHLORACETOPHENONE,2-			154.6			6.60E-03	Calc. using logkow
106478	Organics	Chloroaniline, p-	P-chloroaniline, 1-amino-4-chlorobenzene		127.57			3.10E-02	Calc. using logkow
108907	Organics	Chlorobenzene	Chlorobenzene, Phenyl chloride		112.6			4.10E-02	Bast
510156	Organics	Chlorobenzilate	Chlorobenzilate, 4,4'-dichlorobenzilic acid ethyl ester		325			3.10E-02	Calc. using logkow
74113	Organics							1.70E-02	Calc. using logkow
98566	Organics	CHLOROBENZOTRIFLUORIDE,			120.53			6.80E-02	Calc. using logkow
109693	Organics							3.60E-02	Calc. using logkow

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
92524	Organics	Biphenyl, 1,1-	18461.84073	Yes	Yes	Yes	NO	3.10E-04								
108601	Organics	Oxybis (1-chloropropane), 2,3'-	301.995172	Yes	Yes	Yes	YES	9.50E-06								
111911	Organics	Bis(2-chloroethoxy)methane	5.623413252	Yes	Yes	Yes	NO	5.00E-07								
111444	Organics	Bis(2-chloroethyl)ether	38.01893963	Yes	Yes	Yes	YES	5.00E-07								
39638329	Organics	Bis(2-chloroisopropyl)ether	380.1893963	Yes	Yes	Yes	YES	3.10E-06								
117817	Organics	Bis (2-ethylhexyl) phthalate	199526.2315	Yes	Yes	Yes	NO	2.00E-03								
542881	Organics	Bis(chloromethyl)ether	0.416869384	Yes	Yes	Yes	YES	6.00E-08								
80057	Organics	BISPHENOL(A)	44804.84714	Yes	Yes	Yes	NO	1.00E-04								
74975	Organics	BROMOCHLOROMETHANE	9.388856472	Yes	Yes	Yes	YES	6.30E-07								
75274	Organics	Bromodichloromethane	75.8577575	Yes	Yes	Yes	YES	3.10E-06								
101553	Organics	Bromophenyl-phenylether, 4-	100000	Yes	Yes	Yes	NO	3.10E-03								
75252	Organics	Tribromomethane	199.5262315	Yes	Yes	Yes	YES	6.30E-06								
74839	Organics	Bromomethane	12.58925412	Yes	Yes	Yes	YES	4.00E-07								
2104963	Organics		162181.0097	Yes	Yes	Yes	NO	4.10E-03								
75627	Organics			Yes	Yes	Yes	YES									
1689845	Organics	Bromoxynil	97.55532947	Yes	Yes	Yes	NO	7.70E-08								
1689992	Organics		1258925.412	Yes	Yes	Yes	NO	3.10E-02								
106990	Organics	Butadiene, 1,3-	74.32124908	Yes	Yes	Yes	YES	2.50E-06								
71363	Organics	Butanol	6.760829754	Yes	Yes	Yes	NO	1.10E-07								
	Organics			Yes	Yes	Yes	NO									
85687	Organics	Butylbenzyl phthalate	69183.09709	Yes	Yes	Yes	NO	2.00E-03								
2008415	Organics		14125.37545	Yes	Yes	Yes	NO	3.50E-04								
507200	Organics			Yes	Yes	Yes	NO									
85701	Organics		14125.37545	Yes	Yes	Yes	NO	3.50E-04								
75605	Organics		1	Yes	Yes	Yes	NO	2.50E-08								
105602	Organics	CAPROLACTAM	6.630973618	Yes	Yes	Yes	NO	1.60E-08								
2425061	Organics		323.5936569	Yes	Yes	Yes	NO	8.10E-06								
133062	Organics	Captan	840.4657111	Yes	Yes	Yes	NO	5.00E-06								
63252	Organics	Carbaryl	229.0867653	Yes	Yes	Yes	NO	5.00E-06								
86748	Organics	Carbazole	3890.45145	Yes	Yes	Yes	NO	1.60E-04								
1563662	Organics	Carbofuran	40.73802778	Yes	Yes	Yes	NO	1.00E-06								
75150	Organics	Carbon disulfide	144.5439771	Yes	Yes	Yes	YES	4.00E-06								
56235	Organics	Carbon tetrachloride	524.8074603	Yes	Yes	Yes	YES	1.60E-05								
55285148	Organics			Yes	Yes	Yes	NO									
5234684	Organics		125.8925412	Yes	Yes	Yes	NO	3.10E-06								
75876	Organics	Chloral	30.90359474	Yes	Yes	Yes	NO	2.40E-07								
133904	Organics	CHLORAMBEN	39.20875028	Yes	Yes	Yes	NO	9.80E-07								
118752	Organics		165.9586907	Yes	Yes	Yes	NO	4.10E-06								
57749	Organics	Chlordane	602.5595861	Yes	Yes	Yes	NO	7.90E-03								
90982324	Organics		316.227766	Yes	Yes	Yes	NO	7.90E-06								
10049044	Organics			Yes	Yes	Yes	NO									
75683	Organics		39.81071706	Yes	Yes	Yes	YES	1.00E-06								
126998	Organics	Chloroprene	3.715352291	Yes	Yes	Yes	YES	1.60E-06								
3165933	Organics		186.2087137	Yes	Yes	Yes	NO	4.70E-06								
95692	Organics		186.2087137	Yes	Yes	Yes	NO	4.70E-06								
107200	Organics	CHLOROACETALDEHYDE	0.6037612	Yes	Yes	Yes		1.50E-08								
79118	Organics	CHLOROACETIC ACID	0.239208936	Yes	Yes	Yes	NO	4.00E-07								
532274	Organics	CHLORACETOPHENONE,2-	393.265637	Yes	Yes	Yes	NO	3.10E-06								
106478	Organics	Chloroaniline, p-	67.60829754	Yes	Yes	Yes	NO	1.60E-05								
108907	Organics	Chlorobenzene	316.227766	Yes	Yes	Yes	YES	1.60E-05								
510156	Organics	Chlorobenzilate	1476457.669	Yes	Yes	Yes	NO	7.90E-04								
74113	Organics		501.1872336	Yes	Yes	Yes	NO	1.30E-05								
98566	Organics	CHLOROBENZOTRIFLUORIDE,	363.8521957	Yes	Yes	Yes	NO	1.40E-04								
109693	Organics		398.1071706	Yes	Yes	Yes	NO	1.00E-05								

Information current as of October 27, 2000.
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on date of ion.

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
92524	Organics	Biphenyl, 1,1-				3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
108601	Organics	Oxybis (1-chloropropane), 2,3'-				2.50E-01	1.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			
111911	Organics	Bis(2-chloroethoxy)methane				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
111444	Organics	Bis(2-chloroethyl)ether				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
39638329	Organics	Bis(2-chloroisopropyl)ether				4.70E-01	2.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
117817	Organics	Bis (2-ethylhexyl) phthalate				1.10E-02	5.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
542881	Organics	Bis(chloromethyl)ether				4.60E+00	2.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
80057	Organics	BISPHENOL(A)				6.30E-02	3.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
74975	Organics	BROMOCHLOROMETHANE				1.20E+00	5.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75274	Organics	Bromodichloromethane				4.70E-01	2.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
101553	Organics	Bromophenyl-phenylether, 4-				8.50E-03	4.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
75252	Organics	Tribromomethane				3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
74839	Organics	Bromomethane				1.60E+00	7.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
2104963	Organics					7.30E-03	3.60E-02	Calc. using kow		Calc. using kow	Calc. using kow			
75627	Organics													
1689845	Organics	Bromoxynil				4.00E+00	2.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
1689992	Organics					2.20E-03	1.10E-02	Calc. using kow		Calc. using kow	Calc. using kow			
106990	Organics	Butadiene, 1,3-				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
71363	Organics	Butanol				3.20E+00	1.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
	Organics													
85687	Organics	Butylbenzyl phthalate				1.10E-02	5.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
2008415	Organics					3.00E-02	1.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
507200	Organics													
85701	Organics					3.00E-02	1.50E-01	29	29	29	29			
75605	Organics					7.70E+00	3.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
105602	Organics	CAPROLACTAM				9.90E+00	4.90E+01	Calc. using kow		Calc. using kow	Calc. using kow			
2425061	Organics					2.70E-01	1.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
133062	Organics	Captan				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
63252	Organics	Carbaryl				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
86748	Organics	Carbazole				4.80E-02	2.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
1563662	Organics	Carbofuran				9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75150	Organics	Carbon disulfide				4.10E-01	2.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
56235	Organics	Carbon tetrachloride				1.80E-01	9.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
55285148	Organics													
5234684	Organics					4.70E-01	2.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75876	Organics	Chloral				2.10E+00	1.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
133904	Organics	CHLORAMBEN				9.20E-01	4.50E+00	29	29	29	29			
118752	Organics					4.00E-01	2.00E+00	29	29	29	29			
57749	Organics	Chlordane				5.00E-03	2.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
90982324	Organics					2.70E-01	1.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
10049044	Organics													
75683	Organics					9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
126998	Organics	Chloroprene				7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
3165933	Organics					3.70E-01	1.80E+00	29	29	29	29			
95692	Organics					3.70E-01	1.80E+00	29	29	29	29			
107200	Organics	CHLOROACETALDEHYDE				1.00E+01	5.10E+01	29	29	29	29			
79118	Organics	CHLOROACETIC ACID				1.60E+00	7.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
532274	Organics	CHLORACETOPHENONE,2-				4.70E-01	2.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
106478	Organics	Chloroaniline, p-				1.80E-01	9.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
108907	Organics	Chlorobenzene				1.80E-01	9.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
510156	Organics	Chlorobenzilate				1.90E-02	9.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
74113	Organics					2.10E-01	1.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
98566	Organics	CHLOROBENZOTRIFLUORIDE,				5.20E-02	2.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
109693	Organics					2.40E-01	1.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
92524	Organics	Biphenyl, 1,1-								
108601	Organics	Oxybis (1-chloropropane), 2,3'-								
111911	Organics	Bis(2-chloroethoxy)methane								
111444	Organics	Bis(2-chloroethyl)ether								
39638329	Organics	Bis(2-chloroisopropyl)ether								
117817	Organics	Bis (2-ethylhexyl) phthalate								
542881	Organics	Bis(chloromethyl)ether								
80057	Organics	BISPHENOL(A)								
74975	Organics	BROMOCHLOROMETHANE								
75274	Organics	Bromodichloromethane								
101553	Organics	Bromophenyl-phenylether, 4-								
75252	Organics	Tribromomethane								
74839	Organics	Bromomethane								
2104963	Organics									
75627	Organics									
1689845	Organics	Bromoxynil								
1689992	Organics									
106990	Organics	Butadiene, 1,3-								
71363	Organics	Butanol								
	Organics									
85687	Organics	Butylbenzyl phthalate								
2008415	Organics									
507200	Organics									
85701	Organics									
75605	Organics									
105602	Organics	CAPROLACTAM								
2425061	Organics									
133062	Organics	Captan								
63252	Organics	Carbaryl								
86748	Organics	Carbazole								
1563662	Organics	Carbofuran								
75150	Organics	Carbon disulfide								
56235	Organics	Carbon tetrachloride								
55285148	Organics									
5234684	Organics									
75876	Organics	Chloral								
133904	Organics	CHLORAMBEN								
118752	Organics									
57749	Organics	Chlordane								
90982324	Organics									
10049044	Organics									
75683	Organics									
126998	Organics	Chloroprene								
3165933	Organics									
95692	Organics									
107200	Organics	CHLOROACETALDEHYDE								
79118	Organics	CHLOROACETIC ACID								
532274	Organics	CHLORACETOPHENONE,2-								
106478	Organics	Chloroaniline, p-								
108907	Organics	Chlorobenzene								
510156	Organics	Chlorobenzilate								
74113	Organics									
98566	Organics	CHLOROBENZOTRIFLUORIDE,								
109693	Organics									

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
78864	Organics							2.30E-02	Calc. using logkow
41851507	Organics				100.55			2.50E-02	Calc. using logp
73506942	Organics								
75456	Organics	MONOCHLORODIFLUOROMET			86.47			3.30E-03	Calc. using logkow
110758	Organics								
67663	Organics	Chloroform	Chloroform, Trichloromethane, Freon 20		119.4			8.90E-03	Dermal Prin. and Apps.
74873	Organics	Chloromethane	Chloromethane, Methyl chloride		50.5			4.20E-03	Calc. using logkow
107302	Organics	Chloromethyl methyl ether			80.51			4.40E-04	Calc. using logp
91587	Organics	Chloronaphthalene, 2-	2-Chloronaphthalene		162.62			1.60E-01	Calc. using logkow
88733	Organics	CHLORONITROBENZENE(-o)			157.56			7.60E-03	Calc. using logkow
121733	Organics	CHLORONITROBENZENE, p			157.57			1.10E-02	Calc. using logkow
95578	Organics	Chlorophenol, 2-	2-Chlorophenol, Phenol		128.6			3.30E-02	Dermal Prin. and Apps.
123091	Organics								
934736	Organics								
75296	Organics	CHLOROPROPANE-2			78.54			1.40E-02	Calc. using logkow
1897456	Organics							2.50E-02	Calc. using logkow
95498	Organics	CHLOROTOLUENE-4			126.6			8.40E-02	Calc. using logkow
101213	Organics							1.10E-02	Calc. using logkow
2921882	Organics	Chlorpyrifos						8.00E-02	Calc. using logkow
5598130	Organics							1.30E-02	Calc. using logkow
64902723	Organics							1.40E-06	Calc. using logkow
60238564	Organics								
218019	Organics	Chrysene	Chrysene, Benz(a)phenanthrene		228.2			8.10E-01	Calc. using logkow
8007452	Organics		Coal Tar		276			1.60E+00	Calc. using logkow
8001589	Organics	Creosote							
108394	Organics	Cresol, m-			108.1			1.50E-02	Dermal Prin. and Apps.
95487	Organics	Cresol, o-	2-Methylphenol, O-cresylic acid		108.1			1.60E-02	Dermal Prin. and Apps.
106445	Organics	Cresol, p-	4-Methylphenol, p-Cresol		108.1			1.80E-02	Dermal Prin. and Apps.
123739	Organics	CROTONALDEHYDE			70.09			1.40E-02	Calc. using logkow
98828	Organics	Cumene			120.19			1.10E-01	Calc. using logkow
21725462	Organics	Cyanazine						2.40E-03	Calc. using logkow
460195	Organics	Cyanogen			52.04			1.00E-03	Calc. using logkow
506683	Organics	Cyanogen bromide							
506774	Organics	Chlorine cyanide						1.10E-03	Calc. using logkow
87843	Organics							3.20E-03	Calc. using logkow
108941	Organics	Cyclohexanone	Cyclohexanone, Hexanon, Nadone, Sextone		98.2			1.80E-03	Calc. using logkow
108918	Organics	CYCLOHEXYLAMINE			99.17			5.50E-03	Calc. using logkow
542927	Organics	CYCLOPENTADIENE			66.1			3.20E-02	Calc. using logkow
68085858	Organics							2.70E-01	Calc. using logkow
52315078	Organics							1.00E-01	Calc. using logkow
66215278	Organics								
72548	Organics	DDD	DDD, Rhothane					2.80E-01	Calc. using logkow
72559	Organics	DDE	DDE, Dichloroethylene		318.03			2.40E-01	Calc. using logkow
50293	Organics	DDT	DDT, Kopsol, Dicophane		354.5			4.30E-01	Calc. using logkow
1861321	Organics							2.40E-02	Calc. using logkow
75990	Organics							9.10E-04	Calc. using logkow
1163195	Organics							1.40E-05	Calc. using logkow
8065483	Organics								
103231	Organics		Dioctyl adipate, BEHA, DOA					3.60E+00	Calc. using logkow
2303164	Organics	Diallate						1.40E-04	Calc. using logkow
505293	Organics				120.24			3.40E-03	Calc. using logp
333415	Organics	Diazinon	Diazinon		304.36			1.30E-02	Calc. using logkow
53703	Organics	Dibenz(a,h)anthracene	Dibenzo(a,h)anthracene, 1,2,5,6-DBA					2.70E+00	Calc. using logkow
132649	Organics	Dibenzofuran			222			9.30E-01	Calc. using logp

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
78864	Organics		213.796209	Yes	Yes	Yes	NO	5.30E-06								
41851507	Organics		269.1534804	Yes	Yes	Yes	NO	6.70E-06								
73506942	Organics			Yes	Yes	Yes	YES									
75456	Organics	MONOCHLORODIFLUOROMET	68.00330184	Yes	Yes	Yes	YES	3.00E-07								
110758	Organics			Yes	Yes	Yes	YES									
67663	Organics	Chloroform	91.20108394	Yes	Yes	Yes	YES	2.50E-06								
74873	Organics	Chloromethane	83.17637711	Yes	Yes	Yes	YES	2.00E-07								
107302	Organics	Chloromethyl methyl ether	0.616595002	Yes	Yes	Yes	NO	1.50E-08								
91587	Organics	Chloronaphthalene, 2-	13182.56739	Yes	Yes	Yes	YES	3.10E-04								
88733	Organics	CHLORONITROBENZENE(-o)	401.4264641	Yes	Yes	Yes	NO	4.00E-06								
121733	Organics	CHLORONITROBENZENE, p	401.4264641	Yes	Yes	Yes	NO	6.30E-06								
95578	Organics	Chlorophenol, 2-	141.2537545	Yes	Yes	Yes	YES	4.00E-06								
123091	Organics			Yes	Yes	Yes	NO									
934736	Organics			Yes	Yes	Yes	NO									
75296	Organics	CHLOROPROPANE-2	11.16937829	Yes	Yes	Yes	YES	2.00E-06								
1897456	Organics		7943.282347	Yes	Yes	Yes	NO	2.00E-04								
95498	Organics	CHLOROTOLUENE-4	3437.771446	Yes	Yes	Yes	YES	6.30E-05								
101213	Organics		794.3282347	Yes	Yes	Yes	NO	2.00E-05								
2921882	Organics	Chlorpyrifos	181970.0859	Yes	Yes	Yes	NO	5.00E-03								
5598130	Organics		19952.62315	Yes	Yes	Yes	NO	5.00E-04								
64902723	Organics		0.045708819	Yes	Yes	Yes	NO	1.10E-09								
60238564	Organics			Yes	Yes	Yes	NO									
218019	Organics	Chrysene	407380.2778	Yes	Yes	Yes	NO	1.30E-02								
8007452	Organics		3162277.66	Yes	Yes	Yes	NO	7.90E-02								
8001589	Organics	Creosote		Yes	Yes	Yes	NO									
108394	Organics	Cresol, m-	9.332543008	Yes	Yes	Yes	NO	2.50E-06								
95487	Organics	Cresol, o-	95.4992586	Yes	Yes	Yes	NO	2.00E-06								
106445	Organics	Cresol, p-	87.096359	Yes	Yes	Yes	NO	2.00E-06								
123739	Organics	CROTONALDEHYDE	12.36832817	Yes	Yes	Yes	NO	1.60E-06								
98828	Organics	Cumene	3145.639865	Yes	Yes	Yes	YES	7.90E-05								
21725462	Organics	Cyanazine	158.4893193	Yes	Yes	Yes	NO	4.10E-06								
460195	Organics	Cyanogen	6.423128344	Yes	Yes	Yes	YES	2.90E-08								
506683	Organics	Cyanogen bromide		Yes	Yes	Yes	YES									
506774	Organics	Chlorine cyanide	1.584893193	Yes	Yes	Yes	YES	4.00E-08								
87843	Organics		52480.74603	Yes	Yes	Yes	NO	1.30E-03								
108941	Organics	Cyclohexanone	6.45654229	Yes	Yes	Yes	YES	1.60E-07								
108918	Organics	CYCLOHEXYLAMINE	99.52243654	Yes	Yes	Yes	NO	7.90E-07								
542927	Organics	CYCLOPENTADIENE	106.6738575	Yes	Yes	Yes	NO	5.00E-06								
68085858	Organics		7943282.347	Yes	Yes	Yes	NO	2.00E-01								
52315078	Organics		1000000	Yes	Yes	Yes	NO	2.50E-02								
66215278	Organics			Yes	Yes	Yes	NO									
72548	Organics	DDD	1258925.412	Yes	Yes	Yes	NO	1.60E-02								
72559	Organics	DDE	489778.8194	Yes	Yes	Yes	NO	1.30E-02								
50293	Organics	DDT	1548816.619	Yes	Yes	Yes	NO	5.70E-02								
1861321	Organics		25118.86432	Yes	Yes	Yes	NO	6.30E-04								
75990	Organics		5.997910763	Yes	Yes	Yes	NO	1.50E-07								
1163195	Organics		173780.0829	Yes	Yes	Yes	NO	4.30E-03								
8065483	Organics			Yes	Yes	Yes	NO									
103231	Organics		63095734.45	Yes	Yes	Yes	NO	1.60E+00								
2303164	Organics	Diallate	30902.95433	Yes	Yes	Yes	NO	1.30E-07								
505293	Organics		23.98832919	Yes	Yes	Yes	NO	6.00E-07								
333415	Organics	Diazinon	6625.27638	Yes	Yes	Yes	NO	1.60E-04								
53703	Organics	Dibenz(a,h)anthracene	4897788.194	Yes	Yes	Yes	NO	1.60E-01								
132649	Organics	Dibenzofuran	496285.9724	Yes	Yes	Yes		1.20E-02								

Information current as of October 27, 2000.
Contact RAWG for references.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
78864	Organics					3.40E-01	1.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
41851507	Organics					3.00E-01	1.50E+00	29	29	29	29			
73506942	Organics													
75456	Organics	MONOCHLORODIFLUOROMET				1.80E+00	9.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
110758	Organics													
67663	Organics	Chloroform				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
74873	Organics	Chloromethane				2.30E+00	1.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
107302	Organics	Chloromethyl methyl ether				1.00E+01	5.00E+01	29	29	29	29			
91587	Organics	Chloronaphthalene, 2-				3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
88733	Organics	CHLORONITROBENZENE(-o)				4.10E-01	2.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
121733	Organics	CHLORONITROBENZENE, p				3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
95578	Organics	Chlorophenol, 2-				4.10E-01	2.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
123091	Organics													
934736	Organics													
75296	Organics	CHLOROPROPANE-2				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
1897456	Organics					4.20E-02	2.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
95498	Organics	CHLOROTOLUENE-4				8.20E-02	4.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
101213	Organics					1.60E-01	7.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
2921882	Organics	Chlorpyrifos				6.50E-03	3.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
5598130	Organics					2.50E-02	1.20E-01	Calc. using kow		Calc. using kow	Calc. using kow			
64902723	Organics					4.60E+01	2.30E+02	Calc. using kow		Calc. using kow	Calc. using kow			
60238564	Organics													
218019	Organics	Chrysene				3.80E-03	1.90E-02	Calc. using kow		Calc. using kow	Calc. using kow			
8007452	Organics					1.30E-03	6.50E-03	Calc. using kow		Calc. using kow	Calc. using kow			
8001589	Organics	Creosote												
108394	Organics	Cresol, m-				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
95487	Organics	Cresol, o-				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
106445	Organics	Cresol, p-				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
123739	Organics	CROTONALDEHYDE				7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
98828	Organics	Cumene				7.20E-02	3.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
21725462	Organics	Cyanazine				4.00E-01	2.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
460195	Organics	Cyanogen				7.00E+00	3.50E+01	Calc. using kow		Calc. using kow	Calc. using kow			
506683	Organics	Cyanogen bromide												
506774	Organics	Chlorine cyanide				5.90E+00	2.90E+01	Calc. using kow		Calc. using kow	Calc. using kow			
87843	Organics					1.40E-02	7.00E-02	Calc. using kow		Calc. using kow	Calc. using kow			
108941	Organics	Cyclohexanone				2.60E+00	1.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
108918	Organics	CYCLOHEXYLAMINE				1.00E+00	5.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
542927	Organics	CYCLOPENTADIENE				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
68085858	Organics					7.70E-04	3.80E-03	Calc. using kow		Calc. using kow	Calc. using kow			
52315078	Organics					2.50E-03	1.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
66215278	Organics													
72548	Organics	DDD				3.30E-03	1.60E-02	Calc. using kow		Calc. using kow	Calc. using kow			
72559	Organics	DDE				3.80E-03	1.90E-02	Calc. using kow		Calc. using kow	Calc. using kow			
50293	Organics	DDT				1.60E-03	7.80E-03	Calc. using kow		Calc. using kow	Calc. using kow			
1861321	Organics					2.20E-02	1.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
75990	Organics					2.70E+00	1.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
1163195	Organics					7.00E-03	3.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
8065483	Organics													
103231	Organics					2.30E-04	1.10E-03	Calc. using kow		Calc. using kow	Calc. using kow			
2303164	Organics	Diallate				2.90E+00	1.40E+01	Calc. using kow		Calc. using kow	Calc. using kow			
505293	Organics					1.20E+00	6.00E+00	29	29	29	29			
333415	Organics	Diazinon				4.80E-02	2.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
53703	Organics	Dibenz(a,h)anthracene				8.80E-04	4.30E-03	Calc. using kow		Calc. using kow	Calc. using kow			
132649	Organics	Dibenzofuran				3.80E-03	1.90E-02	29	29	29	29			

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
78864	Organics									
41851507	Organics									
73506942	Organics									
75456	Organics	MONOCHLORODIFLUOROMET								
110758	Organics									
67663	Organics	Chloroform								
74873	Organics	Chloromethane								
107302	Organics	Chloromethyl methyl ether								
91587	Organics	Chloronaphthalene, 2-								
88733	Organics	CHLORONITROBENZENE(-o)								
121733	Organics	CHLORONITROBENZENE, p								
95578	Organics	Chlorophenol, 2-								
123091	Organics									
934736	Organics									
75296	Organics	CHLOROPROPANE-2								
1897456	Organics									
95498	Organics	CHLOROTOLUENE-4								
101213	Organics									
2921882	Organics	Chlorpyrifos								
5598130	Organics									
64902723	Organics									
60238564	Organics									
218019	Organics	Chrysene								
8007452	Organics									
8001589	Organics	Creosote								
108394	Organics	Cresol, m-								
95487	Organics	Cresol, o-								
106445	Organics	Cresol, p-								
123739	Organics	CROTONALDEHYDE								
98828	Organics	Cumene								
21725462	Organics	Cyanazine								
460195	Organics	Cyanogen								
506683	Organics	Cyanogen bromide								
506774	Organics	Chlorine cyanide								
87843	Organics									
108941	Organics	Cyclohexanone								
108918	Organics	CYCLOHEXYLAMINE								
542927	Organics	CYCLOPENTADIENE								
68085858	Organics									
52315078	Organics									
66215278	Organics									
72548	Organics	DDD								
72559	Organics	DDE								
50293	Organics	DDT								
1861321	Organics									
75990	Organics									
1163195	Organics									
8065483	Organics									
103231	Organics									
2303164	Organics	Diallate								
505293	Organics									
333415	Organics	Diazinon								
53703	Organics	Dibenz(a,h)anthracene								
132649	Organics	Dibenzofuran								

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
96128	Organics	Dibromo-3-chloropropane, 1,2-	1,2-dibrom-3-chlor-propane Fumazone		236.36			4.80E-03	Calc. using logkow
106376	Organics							3.50E-02	Calc. using logkow
124481	Organics	Dibromochloromethane	Chlorodibromomethane, Dibromochloromethane		208.29			3.90E-03	Calc. using logkow
594183	Organics								
2050477	Organics								
106934	Organics	Dibromoethane, 1,2-			188			3.30E-03	Calc. using logkow
74953	Organics	Methylene bromide	Dibromomethane, Methylene bromide		173.85			1.20E-03	Calc. using logkow
84742	Organics	Di-n-butyl phthalate	Di-n-butyl Phthalate, Elaol, DBP		278.3			1.20E-01	Calc. using logkow
1918009	Organics	Dicamba	MDBA, Velsicol compound 'R', Benvel, Dicamba					1.20E-02	Calc. using logkow
764410	Organics	DICHLORO-2-BUTENE(1,4)			125			1.40E-03	Calc. using logp
79436	Organics							1.40E-03	Calc. using logkow
95501	Organics	Dichlorobenzene, 1,2-	1,2 Dichlorobenzene, Dowtherm E		147			6.10E-02	Calc. using logkow
541731	Organics	Dichlorobenzene, 1,3-	1,3-Dichlorobenzene					8.70E-02	Calc. using logkow
106467	Organics	Dichlorobenzene, 1,4-	1,4-Dichlorobenzene, Paracide, PDB		147			6.20E-02	Calc. using logkow
91941	Organics	Dichlorobenzidine, 3,3-	3,3'-Dichlorobenzidine, 4,4-Diamine		253.13			1.70E-02	Calc. using logkow
75718	Organics	Dichlorodifluoromethane	Dichlorodifluoromethane, Halon		120.9			1.20E-02	Calc. using logkow
75343	Organics	Dichloroethane, 1,1-	1,1-Dichloroethane, Chlorure		99			8.90E-03	Calc. using logkow
107062	Organics	Dichloroethane, 1,2-	1,2-Dichloroethane, Ethylene dichloride		99			5.30E-03	Calc. using logkow
75354	Organics	Dichloroethylene, 1,1-	1,1 dichloroethylene, Vinylidine chloride		96.9			8.90E-03	Calc. using logkow
540590	Organics							1.10E-03	Calc. using logkow
156592	Organics	Dichloroethylene, cis-1,2-			96.95			1.00E-02	Calc. using logkow
156605	Organics	Dichloroethylene, trans-1,2-	Trans-1,2-Dichloroethylene, Trans-acetylene dichloride		96.94			1.10E-03	Calc. using logkow
120832	Organics	Dichlorophenol, 2,4-	2,4-Dichlorophenol, DCP, NCI-C55345		163.01			6.00E-02	Dermal Prin. and Apps.
94757	Organics	Dichlorophenoxyacetic acid, 2,4-	2,4-D, Amidox, Estone, Fernesta		221			5.10E-03	Calc. using logkow
94826	Organics	Butyric acid, 4-(2,4-dichlorophenox						4.50E-03	Calc. using logkow
78875	Organics	Dichloropropane, 1,2-	1,2-Dichloropropane, Propylene dichloride		113			1.00E-02	Calc. using logkow
616239	Organics	DICHLORO PROPANOL 2,3			129			2.00E-04	Calc. using logp
542756	Organics	Dichloropropene, 1,3-	1,3-Dichloropropylene, 1-propene,1,3-dichloro-(1)-(9Cl)		111			5.50E-03	Calc. using logkow
62737	Organics	Dichlorvos	Vaponite, Dichlorvos, 2,2-dichlorovinyl dimethyl phosphate		221			9.50E-04	Calc. using logkow
115322	Organics	Dicofol	Dicofol, DTMC, Carbax, Kelthane					2.30E-01	Calc. using logkow
77736	Organics				132.21			3.40E-02	Calc. using logkow
60571	Organics	Dieldrin	Dieldrin, Octalox, Heod, Quintox		381			1.60E-02	Calc. using logkow
	Organics								
84662	Organics	Diethyl phthalate	Diethyl phthalate, Neantine, Solvanol					4.80E-03	Calc. using logkow
311455	Organics							1.00E-03	Calc. using logkow
693210	Organics								
112345	Organics	DIETHYLENE GLYCOL MONOE			162			4.40E-05	Calc. using logkow
111900	Organics	DIETHYLENE GLYCOL MONOE			134.18			2.50E-04	Calc. using logkow
617845	Organics				101.15			5.00E-04	Calc. using logp
56531	Organics	Diethylstibestrol			268.34			3.50E-01	Calc. using logkow
43222486	Organics								
35367385	Organics							1.40E-02	Calc. using logkow
75376	Organics				66.05			2.60E-03	Calc. using logkow
1445756	Organics	Diisopropylmethyl-phosphonate						8.20E-04	Calc. using logkow
55290647	Organics							7.50E-05	Calc. using logkow
60515	Organics	Dimethoate						6.30E-03	Calc. using logkow
119904	Organics	Dimethoxybenzidine, 3,3-	3,3'-Dimethoxybenzidine, Diacel navy DC		244.32			1.00E-03	Calc. using logkow
77781	Organics	Dimethyl sulfate			126.14			2.20E-03	Calc. using logkow
124403	Organics	DIMETHYL AMINE			45.09			1.10E-03	Calc. using logp
21436964	Organics								
95681	Organics				121.18			1.20E-02	Calc. using logp
121697	Organics	dimethylaniline N,N			128			2.40E-02	Calc. using logkow
119937	Organics	Dimethylbenzidine, 3,3'-	3,3'-Dimethylbenzidine, o-Tolidine		212.28			4.40E-03	Calc. using logkow
107584407	Organics								

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
96128	Organics	Dibromo-3-chloropropane, 1,2-	1.609331085	Yes	Yes	Yes	YES	1.00E-05								
106376	Organics		6309.573445	Yes	Yes	Yes	NO	1.60E-04								
124481	Organics	Dibromochloromethane	123.0268771	Yes	Yes	Yes	YES	4.00E-06								
594183	Organics			Yes	Yes	Yes	NO									
2050477	Organics			Yes	Yes	Yes	NO									
106934	Organics	Dibromoethane, 1,2-	39.81071706	Yes	Yes	Yes	YES	2.50E-06								
74953	Organics	Methylene bromide	4.964486111	Yes	Yes	Yes	YES	4.00E-07								
84742	Organics	Di-n-butyl phthalate	158489.3193	Yes	Yes	Yes	NO	2.00E-03								
1918009	Organics	Dicamba	223.8721139	Yes	Yes	Yes	NO	2.50E-05								
764410	Organics	DICHLORO-2-BUTENE(1,4)	7.457749643	Yes	Yes	Yes	YES	1.90E-07								
79436	Organics		8.317637711	Yes	Yes	Yes	NO	2.10E-07								
95501	Organics	Dichlorobenzene, 1,2-	2398.832919	Yes	Yes	Yes	YES	6.30E-05								
541731	Organics	Dichlorobenzene, 1,3-	3235.936569	Yes	Yes	Yes	YES	1.00E-04								
106467	Organics	Dichlorobenzene, 1,4-	2454.708916	Yes	Yes	Yes	YES	6.30E-05								
91941	Organics	Dichlorobenzidine, 3,3-	3235.936569	Yes	Yes	Yes	NO	7.90E-05								
75718	Organics	Dichlorodifluoromethane	252.3753882	Yes	Yes	Yes	YES	4.00E-06								
75343	Organics	Dichloroethane, 1,1-	61.65950019	Yes	Yes	Yes	YES	1.60E-06								
107062	Organics	Dichloroethane, 1,2-	28.18382931	Yes	Yes	Yes	YES	7.90E-07								
75354	Organics	Dichloroethylene, 1,1-	1	Yes	Yes	Yes	YES	1.60E-06								
540590	Organics		3.01995172	Yes	Yes	Yes	YES	7.50E-08								
156592	Organics	Dichloroethylene, cis-1,2-	159.4002507	Yes	Yes	Yes	YES	2.00E-06								
156605	Organics	Dichloroethylene, trans-1,2-	30.1995172	Yes	Yes	Yes	YES	7.50E-08								
120832	Organics	Dichlorophenol, 2,4-	562.3413252	Yes	Yes	Yes	NO	2.00E-05								
94757	Organics	Dichlorophenoxyacetic acid, 2,4-	1690.697849	Yes	Yes	Yes	NO	7.90E-06								
94826	Organics	Butyric acid, 4-(2,4-dichlorophenox	3388.441561	Yes	Yes	Yes	NO	8.50E-05								
78875	Organics	Dichloropropane, 1,2-	190.5460718	Yes	Yes	Yes	YES	2.50E-06								
616239	Organics	DICHLORO PROPANOL 2,3	0.537647957	Yes	Yes	Yes	NO	1.30E-08								
542756	Organics	Dichloropropene, 1,3-	95.4992586	Yes	Yes	Yes	YES	1.00E-06								
62737	Organics	Dichlorvos	8.580156315	Yes	Yes	Yes	NO	2.70E-06								
115322	Organics	Dicofol	19054.60718	Yes	Yes	Yes	NO	3.10E-02								
77736	Organics		776.2471166	Yes	Yes	Yes	YES	1.90E-05								
60571	Organics	Dieldrin	8056269.762	Yes	Yes	Yes	NO	1.00E-03	5.70E+00	4.90E-02						
	Organics			Yes	Yes	Yes										
84662	Organics	Diethyl phthalate	316.227766	Yes	Yes	Yes	NO	7.90E-06								
311455	Organics		95.4992586	Yes	Yes	Yes	NO	2.40E-06								
693210	Organics			Yes	Yes	Yes	NO									
112345	Organics	DIETHYLENE GLYCOL MONOE	159.3055844	Yes	Yes	Yes	NO	3.00E-09								
111900	Organics	DIETHYLENE GLYCOL MONOE	21.58539498	Yes	Yes	Yes	NO	2.10E-08								
617845	Organics		1.122018454	Yes	Yes	Yes	NO	2.80E-08								
56531	Organics	Diethylstibestrol	117489.7555	Yes	Yes	Yes	NO	7.90E-03								
43222486	Organics			Yes	Yes	Yes	NO									
35367385	Organics		7585.77575	Yes	Yes	Yes	NO	1.90E-04								
75376	Organics		5.623413252	Yes	Yes	Yes	YES	1.40E-07								
1445756	Organics	Diisopropylmethyl-phosphonate	10.71519305	Yes	Yes	Yes	NO	2.70E-07								
55290647	Organics		0.676082975	Yes	Yes	Yes	NO	1.70E-08								
60515	Organics	Dimethoate	4.897788194	Yes	Yes	Yes	NO	1.30E-05								
119904	Organics	Dimethoxybenzidine, 3,3-	1414.021458	Yes	Yes	Yes	NO	1.60E-06								
77781	Organics	Dimethyl sulfate	2.081148163	Yes	Yes	Yes	NO	4.00E-07								
124403	Organics	DIMETHYL AMINE	1.134566693	Yes	Yes	Yes		2.80E-08								
21436964	Organics			Yes	Yes	Yes	NO									
95681	Organics		147.9108388	Yes	Yes	Yes	NO	3.70E-06								
121697	Organics	dimethylaniline N,N	0.131825674	Yes	Yes	Yes	NO	1.00E-05								
119937	Organics	Dimethylbenzidine, 3,3'-	14778.45386	Yes	Yes	Yes	NO	5.00E-06								
107584407	Organics			Yes	Yes	Yes	NO									

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on date c tion.

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
96128	Organics	Dibromo-3-chloropropane, 1,2-				2.40E-01	1.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			
106376	Organics					4.80E-02	2.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
124481	Organics	Dibromochloromethane				4.10E-01	2.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
594183	Organics													
2050477	Organics													
106934	Organics	Dibromoethane, 1,2-				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
74953	Organics	Methylene bromide				1.60E+00	7.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
84742	Organics	Di-n-butyl phthalate				1.10E-02	5.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
1918009	Organics	Dicamba				1.40E-01	6.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
764410	Organics	DICHLORO-2-BUTENE(1,4)				2.40E+00	1.20E+01	29	29	29	29			
79436	Organics					2.30E+00	1.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
95501	Organics	Dichlorobenzene, 1,2-				8.20E-02	4.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
541731	Organics	Dichlorobenzene, 1,3-				6.30E-02	3.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
106467	Organics	Dichlorobenzene, 1,4-				8.20E-02	4.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
91941	Organics	Dichlorobenzidine, 3,3-				7.20E-02	3.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
75718	Organics	Dichlorodifluoromethane				4.10E-01	2.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75343	Organics	Dichloroethane, 1,1-				7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
107062	Organics	Dichloroethane, 1,2-				1.00E+00	5.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75354	Organics	Dichloroethylene, 1,1-				7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
540590	Organics					4.10E+00	2.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
156592	Organics	Dichloroethylene, cis-1,2-				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
156605	Organics	Dichloroethylene, trans-1,2-				4.10E+00	2.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
120832	Organics	Dichlorophenol, 2,4-				1.60E-01	7.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
94757	Organics	Dichlorophenoxyacetic acid, 2,4-				2.70E-01	1.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
94826	Organics	Butyric acid, 4-(2,4-dichlorophenox				6.90E-02	3.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
78875	Organics	Dichloropropane, 1,2-				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
616239	Organics	DICHLORO PROPANOL 2,3				1.10E+01	5.40E+01	29	29	29	29			
542756	Organics	Dichloropropene, 1,3-				9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
62737	Organics	Dichlorvos				5.10E-01	2.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
115322	Organics	Dicofol				2.20E-03	1.10E-02	Calc. using kow		Calc. using kow	Calc. using kow			
77736	Organics					1.60E-01	8.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
60571	Organics	Dieldrin				1.70E-02	8.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
	Organics													
84662	Organics	Diethyl phthalate				2.70E-01	1.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
311455	Organics					5.50E-01	2.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
693210	Organics													
112345	Organics	DIETHYLENE GLYCOL MONOB				2.60E+01	1.30E+02	Calc. using kow		Calc. using kow	Calc. using kow			
111900	Organics	DIETHYLENE GLYCOL MONOE				8.60E+00	4.20E+01	Calc. using kow		Calc. using kow	Calc. using kow			
617845	Organics					7.20E+00	3.60E+01	29	29	29	29			
56531	Organics	Diethylstibestrol				5.00E-03	2.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
43222486	Organics													
35367385	Organics					4.30E-02	2.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
75376	Organics					2.80E+00	1.40E+01	Calc. using kow		Calc. using kow	Calc. using kow			
1445756	Organics	Diisopropylmethyl-phosphonate				1.90E+00	9.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
55290647	Organics					9.70E+00	4.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
60515	Organics	Dimethoate				2.10E-01	1.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
119904	Organics	Dimethoxybenzidine, 3,3-				7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
77781	Organics	Dimethyl sulfate				1.60E+00	7.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
124403	Organics	DIMETHYL AMINE				7.20E+00	3.50E+01	29	29	29	29			
21436964	Organics													
95681	Organics					4.20E-01	2.10E+00	29	29	29	29			
121697	Organics	dimethylaniline N,N				2.40E-01	1.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			
119937	Organics	Dimethylbenzidine, 3,3'-				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
107584407	Organics													

Information current as of October 27, 2000.
Contact RAWG for references.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
96128	Organics	Dibromo-3-chloropropane, 1,2-								
106376	Organics									
124481	Organics	Dibromochloromethane								
594183	Organics									
2050477	Organics									
106934	Organics	Dibromoethane, 1,2-								
74953	Organics	Methylene bromide								
84742	Organics	Di-n-butyl phthalate								
1918009	Organics	Dicamba								
764410	Organics	DICHLORO-2-BUTENE(1,4)								
79436	Organics									
95501	Organics	Dichlorobenzene, 1,2-								
541731	Organics	Dichlorobenzene, 1,3-								
106467	Organics	Dichlorobenzene, 1,4-								
91941	Organics	Dichlorobenzidine, 3,3-								
75718	Organics	Dichlorodifluoromethane								
75343	Organics	Dichloroethane, 1,1-								
107062	Organics	Dichloroethane, 1,2-								
75354	Organics	Dichloroethylene, 1,1-								
540590	Organics									
156592	Organics	Dichloroethylene, cis-1,2-								
156605	Organics	Dichloroethylene, trans-1,2-								
120832	Organics	Dichlorophenol, 2,4-								
94757	Organics	Dichlorophenoxyacetic acid, 2,4-								
94826	Organics	Butyric acid, 4-(2,4-dichlorophenox								
78875	Organics	Dichloropropane, 1,2-								
616239	Organics	DICHLORO PROPANOL 2,3								
542756	Organics	Dichloropropene, 1,3-								
62737	Organics	Dichlorvos								
115322	Organics	Dicofol								
77736	Organics									
60571	Organics	Dieldrin								
	Organics									
84662	Organics	Diethyl phthalate								
311455	Organics									
693210	Organics									
112345	Organics	DIETHYLENE GLYCOL MONOB								
111900	Organics	DIETHYLENE GLYCOL MONOE								
617845	Organics									
56531	Organics	Diethylstibestrol								
43222486	Organics									
35367385	Organics									
75376	Organics									
1445756	Organics	Diisopropylmethyl-phosphonate								
55290647	Organics									
60515	Organics	Dimethoate								
119904	Organics	Dimethoxybenzidine, 3,3-								
77781	Organics	Dimethyl sulfate								
124403	Organics	DIMETHYL AMINE								
21436964	Organics									
95681	Organics									
121697	Organics	dimethylaniline N,N								
119937	Organics	Dimethylbenzidine, 3,3'-								
107584407	Organics									

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
68122	Organics	DIMETHYL FORMAMIDE	N,N-dimethyl formamide, DMF, NSC5356		73.09			1.30E-04	Calc. using logkow
57147	Organics	DIMETHYL HYDRAZINE(1,1)	suspected semi-volatile		60.1			2.20E-03	Calc. using logp
540738	Organics								
105679	Organics	Dimethyl phenol, 2,4-	2,4-Dimethylphenol, 1-hydroxy-2,4-dimethylbenzene		122.16			1.10E-01	Dermal Prin. and Apps.
576261	Organics							1.60E-02	Calc. using logkow
95658	Organics	XYLENOL(3,4)			122.17			4.00E-02	Dermal Prin. and Apps.
131113	Organics	Dimethyl phthalate	Dimethyl phthalate, Solvarone		194.2			1.60E-03	Calc. using logkow
120616	Organics				194.19			1.70E-02	Calc. using logkow
534521	Organics	Dinitro-2-methylphenol, 4,6-	4,6-Dinitro-O-cresol, Krenite, Lipan		198			9.80E-03	Calc. using logkow
131895	Organics							5.50E-07	Calc. using logkow
528290	Organics							2.50E-03	Calc. using logkow
99650	Organics	Dinitrobenzene, 1,3-	m-Dinitrobenzene, Dinitrobenzene		168.1			2.40E-03	Bast
100254	Organics							2.10E-03	Calc. using logkow
51285	Organics	Dinitrophenol, 2,4-	2,4-Dinitrophenol, Nitro kleenup, Solfo black B		184			3.20E-03	Dermal Prin. and Apps.
25321146	Organics	Dinitrotoluene, 2,4-	Dinitrotoluene mixture		182.1			3.80E-03	Calc. using logkow
25321146	Organics								
121142	Organics	Dinitrotoluene, 2,4-	2,4-Dinitrotoluene, DNT		182.1			3.80E-03	Calc. using logkow
606202	Organics	Dinitrotoluene, 2,6-			182.14			2.50E-03	Calc. using logkow
35572782	Organics								
88857	Organics	Dinoseb	2-sec-butyl-4,6-dintrophenol, Dinoseb, DNBP, Spurge					2.80E-02	Calc. using logkow
123911	Organics	Dioxane, 1,4-	1,4-Dioxane, Glycol ethylene ether		88.2			4.00E-04	Dermal Prin. and Apps.
957517	Organics							2.30E-03	Calc. using logkow
122394	Organics	Diphenylamine	N-phenyl benzenamine, Diphenylamine, N,N'-diphenylamine					5.40E-02	Calc. using logkow
122667	Organics	Diphenylhydrazine, 1,2-	1,2-Diphenylhydrazine, Hydrazine		184.2			1.80E-02	Calc. using logkow
85007	Organics	Diquat						1.00E-07	Calc. using logkow
1937377	Organics				779.77			9.40E-07	Calc. using logp
2602462	Organics								
16071866	Organics								
2610051	Organics								
298044	Organics	Disulfoton	Disulfoton, Disystax, Frumin al					2.80E-02	Calc. using logkow
505293	Organics				120.24			3.40E-03	Calc. using logp
330541	Organics	Diuron	Diuron, Dichlorfenidim, Vonduron					6.00E-03	Calc. using logkow
2439103	Organics				287.45			2.50E-03	Calc. using logp
759944	Organics	Ethyldipropylthiocarbamate, s-						2.50E-02	Calc. using logkow
115297	Organics	Endosulfan (I or II)			406.95			2.10E-03	Calc. using logp
145733	Organics	Endothall						3.20E-03	Calc. using logkow
72208	Organics	Endrin	Endrin, Hexadrin		380.93			1.60E-02	Calc. using logkow
106898	Organics	Chloromethyloxirane, 2-			92			3.70E-04	Calc. using logkow
106887	Organics	EPOXYBUTANE 1,2			72.12			7.30E-03	Calc. using logp
16672870	Organics				144.5			2.70E-04	Calc. using logp
563122	Organics	Ethion						3.40E-02	Calc. using logkow
111159	Organics	ETHYLENE GLYCOL MONOETI			148.17			8.60E-04	Calc. using logkow
110805	Organics	Ethylene glycol monoethyl ether			90			3.00E-04	Dermal Prin. and Apps.
141786	Organics	Ethyl acetate	Ethyl acetate, Acetoxyethane		88.1			2.10E-03	Calc. using logkow
140885	Organics	ETHYL ACRYLATE			100			4.00E-03	Calc. using logkow
75003	Organics	Ethyl chloride	Chloroethane, Ethyl chloride		64.5			8.00E-03	Calc. using logkow
60297	Organics	Ethyl ether	Ethyl ether, Diethyl ether, ethoxyethane		74.12			1.70E-02	Dermal Prin. and Apps.
97632	Organics	Ethyl methacrylate	Ethyl methacrylate, Ethyl ester					8.60E-03	Calc. using logkow
2104645	Organics	Phosphonodithioic acid, phenyl-o-et						1.00E-02	Calc. using logkow
100414	Organics	Ethyl benzene	Ethyl benzene, Phenylethane		106.2			7.40E-02	Dermal Prin. and Apps.
109784	Organics							6.00E-05	Calc. using logkow
107153	Organics	ETHYLENE DIAMINE			60.11			8.90E-04	Calc. using logkow
107211	Organics	Ethylene glycol	Ethylene glycol, 1,2-ethandiol		62.08			3.60E-05	Calc. using logkow
111762	Organics	ETHYLENE GLYCOL MONOBU			118			1.20E-02	Dermal Prin. and Apps.

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
68122	Organics	DIMETHYL FORMAMIDE	0.909058831	Yes	Yes	Yes	NO	2.50E-09								
57147	Organics	DIMETHYL HYDRAZINE(1,1)	3.938564844	Yes	Yes	Yes	NO	9.80E-08								
540738	Organics			Yes	Yes	Yes	NO									
105679	Organics	Dimethyl phenol, 2,4-	263.0267992	Yes	Yes	Yes	YES	5.00E-06								
576261	Organics		229.0867653	Yes	Yes	Yes	NO	5.70E-06								
95658	Organics	XYLENOL(3,4)	1.258925412	Yes	Yes	Yes	NO	4.00E-06								
131113	Organics	Dimethyl phthalate	74.13102413	Yes	Yes	Yes	NO	1.00E-06								
120616	Organics		1000	Yes	Yes	Yes	NO	2.50E-05								
534521	Organics	Dinitro-2-methylphenol, 4,6-	707.9457844	Yes	Yes	Yes	NO	1.30E-05								
131895	Organics		0.001995262	Yes	Yes	Yes	NO	5.00E-11								
528290	Organics		39.81071706	Yes	Yes	Yes	NO	1.00E-06								
99650	Organics	Dinitrobenzene, 1,3-	33.28817608	Yes	Yes	Yes	NO	1.00E-06								
100254	Organics		31.6227766	Yes	Yes	Yes	NO	7.90E-07								
51285	Organics	Dinitrophenol, 2,4-	34.67368505	Yes	Yes	Yes	NO	7.90E-07								
25321146	Organics	Dinitrotoluene, 2,4-	102.3292992	Yes	Yes	Yes	NO	2.50E-06								
25321146	Organics			Yes	Yes	Yes										
121142	Organics	Dinitrotoluene, 2,4-	102.3292992	Yes	Yes	Yes	NO	2.50E-06								
606202	Organics	Dinitrotoluene, 2,6-	112.2018454	Yes	Yes	Yes	NO	1.30E-06								
35572782	Organics			Yes	Yes	Yes	NO									
88857	Organics	Dinoseb	1380.384265	Yes	Yes	Yes	NO	1.30E-04								
123911	Organics	Dioxane, 1,4-	16.61001406	Yes	Yes	Yes	YES	1.30E-08								
957517	Organics		147.9108388	Yes	Yes	Yes	NO	3.70E-06								
122394	Organics	Diphenylamine	3019.95172	Yes	Yes	Yes	NO	7.90E-05								
122667	Organics	Diphenylhydrazine, 1,2-	1071.519305	Yes	Yes	Yes	NO	2.00E-05								
85007	Organics	Diquat	0.000891251	Yes	Yes	Yes	NO	2.20E-11								
1937377	Organics		109.6478196	Yes	Yes	Yes	NO	2.70E-06								
2602462	Organics			Yes	Yes	Yes	NO									
16071866	Organics			Yes	Yes	Yes	NO									
2610051	Organics			Yes	Yes	Yes	NO									
298044	Organics	Disulfoton	9549.92586	Yes	Yes	Yes	NO	2.50E-04								
505293	Organics		23.98832919	Yes	Yes	Yes		6.00E-07								
330541	Organics	Diuron	478.6300923	Yes	Yes	Yes	NO	1.30E-05								
2439103	Organics		436.5158322	Yes	Yes	Yes	NO	1.10E-05								
759944	Organics	Ethyldipropylthiocarbamate, s-	1621.810097	Yes	Yes	Yes	NO	4.10E-05								
115297	Organics	Endosulfan (I or II)	3548.133892	Yes	Yes	Yes	NO	8.90E-05								
145733	Organics	Endothall	0.281838293	Yes	Yes	Yes	NO	2.00E-06								
72208	Organics	Endrin	398107.1706	Yes	Yes	Yes	NO	1.00E-03								
106898	Organics	Chloromethyloxirane, 2-	1.071519305	Yes	Yes	Yes	YES	1.50E-08								
106887	Organics	EPOXYBUTANE 1,2	27.62809877	Yes	Yes	Yes	NO	6.90E-07								
16672870	Organics		1.122018454	Yes	Yes	Yes	NO	2.80E-08								
563122	Organics	Ethion	117489.7555	Yes	Yes	Yes	NO	3.00E-03								
111159	Organics	ETHYLENE GLYCOL MONOETI	4.162497637	Yes	Yes	Yes	NO	1.10E-07								
110805	Organics	Ethylene glycol monoethyl ether	1.779198485	Yes	Yes	Yes	NO	2.00E-08								
141786	Organics	Ethyl acetate	8.403981738	Yes	Yes	Yes	YES	1.60E-07								
140885	Organics	ETHYL ACRYLATE	31.72488087	Yes	Yes	Yes	NO	5.00E-07								
75003	Organics	Ethyl chloride	26.91534804	Yes	Yes	Yes	YES	6.30E-07								
60297	Organics	Ethyl ether	43.57586331	Yes	Yes	Yes	YES	1.90E-07								
97632	Organics	Ethyl methacrylate	38.9045145	Yes	Yes	Yes	YES	2.00E-06								
2104645	Organics	Phosphonodithioic acid, phenyl-o-et	7079.457844	Yes	Yes	Yes	NO	1.60E-04								
100414	Organics	Ethyl benzene	1412.537545	Yes	Yes	Yes	YES	3.10E-05								
109784	Organics		0.031622777	Yes	Yes	Yes	NO	7.90E-10								
107153	Organics	ETHYLENE DIAMINE	0.537686955	Yes	Yes	Yes	NO	2.80E-08								
107211	Organics	Ethylene glycol	0.121774316	Yes	Yes	Yes	NO	3.10E-10								
111762	Organics	ETHYLENE GLYCOL MONOBU	35.84726282	Yes	Yes	Yes	NO	1.70E-07								

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on date of [illegible]tion

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
68122	Organics	DIMETHYL FORMAMIDE				2.90E+01	1.40E+02	Calc. using kow		Calc. using kow	Calc. using kow			
57147	Organics	DIMETHYL HYDRAZINE(1,1)				3.50E+00	1.70E+01	29	29	29	29			
540738	Organics													
105679	Organics	Dimethyl phenol, 2,4-				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
576261	Organics					3.30E-01	1.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
95658	Organics	XYLENOL(3,4)				4.10E-01	2.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
131113	Organics	Dimethyl phthalate				9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
120616	Organics					1.40E-01	6.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
534521	Organics	Dinitro-2-methylphenol, 4,6-				2.10E-01	1.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
131895	Organics					2.80E+02	1.40E+03	Calc. using kow		Calc. using kow	Calc. using kow			
528290	Organics					9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
99650	Organics	Dinitrobenzene, 1,3-				9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
100254	Organics					1.00E+00	5.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
51285	Organics	Dinitrophenol, 2,4-				1.00E+00	5.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
25321146	Organics	Dinitrotoluene, 2,4-				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
25321146	Organics													
121142	Organics	Dinitrotoluene, 2,4-				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
606202	Organics	Dinitrotoluene, 2,6-				8.00E-01	3.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
35572782	Organics													
88857	Organics	Dinoseb				5.50E-02	2.70E-01	Calc. using kow		Calc. using kow	Calc. using kow			
123911	Organics	Dioxane, 1,4-				1.10E+01	5.40E+01	Calc. using kow		Calc. using kow	Calc. using kow			
957517	Organics					4.20E-01	2.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
122394	Organics	Diphenylamine				7.20E-02	3.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
122667	Organics	Diphenylhydrazine, 1,2-				1.60E-01	7.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
85007	Organics	Diquat				4.50E+02	2.20E+03	Calc. using kow		Calc. using kow	Calc. using kow			
1937377	Organics					5.00E-01	2.50E+00	29	29	29	29			
2602462	Organics													
16071866	Organics													
2610051	Organics													
298044	Organics	Disulfoton				3.70E-02	1.80E-01	Calc. using kow		Calc. using kow	Calc. using kow			
505293	Organics					1.20E+00	6.00E+00	29	29	29	29			
330541	Organics	Diuron				2.10E-01	1.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
2439103	Organics					2.30E-01	1.10E+00	29	29	29	29			
759944	Organics	Ethyldipropylthiocarbamate, s-				1.10E-01	5.20E-01	Calc. using kow		Calc. using kow	Calc. using kow			
115297	Organics	Endosulfan (I or II)				6.70E-02	3.30E-01	29	29	29	29			
145733	Organics	Endothall				6.00E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
72208	Organics	Endrin				1.70E-02	8.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
106898	Organics	Chloromethyloxirane, 2-				1.00E+01	5.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
106887	Organics	EPOXYBUTANE 1,2				1.10E+00	5.50E+00	29	29	29	29			
16672870	Organics					7.20E+00	3.60E+01	29	29	29	29			
563122	Organics	Ethion				8.80E-03	4.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
111159	Organics	ETHYLENE GLYCOL MONOETI				3.20E+00	1.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
110805	Organics	Ethylene glycol monoethyl ether				8.80E+00	4.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
141786	Organics	Ethyl acetate				2.60E+00	1.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
140885	Organics	ETHYL ACRYLATE				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75003	Organics	Ethyl chloride				1.20E+00	5.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
60297	Organics	Ethyl ether				2.30E+00	1.20E+01	Calc. using kow		Calc. using kow	Calc. using kow			
97632	Organics	Ethyl methacrylate				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
2104645	Organics	Phosphonodithioic acid, phenyl-o-et				4.80E-02	2.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
100414	Organics	Ethyl benzene				1.20E-01	6.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
109784	Organics					5.70E+01	2.80E+02	Calc. using kow		Calc. using kow	Calc. using kow			
107153	Organics	ETHYLENE DIAMINE				7.20E+00	3.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
107211	Organics	Ethylene glycol				9.70E+01	4.80E+02	Calc. using kow		Calc. using kow	Calc. using kow			
111762	Organics	ETHYLENE GLYCOL MONOBU				2.50E+00	1.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
68122	Organics	DIMETHYL FORMAMIDE								
57147	Organics	DIMETHYL HYDRAZINE(1,1)								
540738	Organics									
105679	Organics	Dimethyl phenol, 2,4-								
576261	Organics									
95658	Organics	XYLENOL(3,4)								
131113	Organics	Dimethyl phthalate								
120616	Organics									
534521	Organics	Dinitro-2-methylphenol, 4,6-								
131895	Organics									
528290	Organics									
99650	Organics	Dinitrobenzene, 1,3-								
100254	Organics									
51285	Organics	Dinitrophenol, 2,4-								
25321146	Organics	Dinitrotoluene, 2,4-								
25321146	Organics									
121142	Organics	Dinitrotoluene, 2,4-								
606202	Organics	Dinitrotoluene, 2,6-								
35572782	Organics									
88857	Organics	Dinoseb								
123911	Organics	Dioxane, 1,4-								
957517	Organics									
122394	Organics	Diphenylamine								
122667	Organics	Diphenylhydrazine, 1,2-								
85007	Organics	Diquat								
1937377	Organics									
2602462	Organics									
16071866	Organics									
2610051	Organics									
298044	Organics	Disulfoton								
505293	Organics									
330541	Organics	Diuron								
2439103	Organics									
759944	Organics	Ethyldipropylthiocarbamate, s-								
115297	Organics	Endosulfan (I or II)								
145733	Organics	Endothall								
72208	Organics	Endrin								
106898	Organics	Chloromethyloxirane, 2-								
106887	Organics	EPOXYBUTANE 1,2								
16672870	Organics									
563122	Organics	Ethion								
111159	Organics	ETHYLENE GLYCOL MONOETH								
110805	Organics	Ethylene glycol monoethyl ether								
141786	Organics	Ethyl acetate								
140885	Organics	ETHYL ACRYLATE								
75003	Organics	Ethyl chloride								
60297	Organics	Ethyl ether								
97632	Organics	Ethyl methacrylate								
2104645	Organics	Phosphonodithioic acid, phenyl-o-et								
100414	Organics	Ethyl benzene								
109784	Organics									
107153	Organics	ETHYLENE DIAMINE								
107211	Organics	Ethylene glycol								
111762	Organics	ETHYLENE GLYCOL MONOBU								

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
75218	Organics	ETHYLENE OXIDE			44.1			6.30E-04	Calc. using logkow
96457	Organics	Ethylene thiourea			102.17			1.70E-04	Calc. using logkow
84720	Organics				280.28			1.30E-03	Calc. using logp
101200480	Organics								
22224926	Organics							6.40E-03	Calc. using logkow
39515418	Organics							1.60E-01	Calc. using logkow
2164172	Organics							3.70E-03	Calc. using logkow
206440	Organics	Fluoranthene	Flouranthene, IDRYL		202			3.60E-01	Calc. using logkow
86737	Organics	Fluorene	Fluorene					2.50E-01	Calc. using logkow
59756604	Organics				329.32			3.30E-03	Calc. using logp
56425913	Organics							5.60E-03	Calc. using logkow
66332965	Organics								
69409945	Organics				502.93			1.10E-01	Calc. using logp
133073	Organics							4.70E-03	Calc. using logkow
72178020	Organics							4.60E-04	Calc. using logkow
944229	Organics							3.80E-02	Calc. using logkow
50000	Organics	Formaldehyde	Formaldehyde, Methanal, Formic aldehyde, Formalin		30.03			2.20E-03	Bast
64186	Organics	Formic acid			46.03			4.10E-04	Calc. using logkow
39148248	Organics								
110009	Organics	Furan	Furan, furfuran, oxacyclopentadiene		68.08			6.10E-03	Calc. using logkow
67458	Organics							2.50E-04	Calc. using logkow
98011	Organics	Furfural			120.19			1.10E-01	Calc. using logkow
531828	Organics								
60568050	Organics								
77182822	Organics								
765344	Organics	Glycidylaldehyde			72.07			2.10E-04	Calc. using logkow
1071836	Organics	GLYPHOSATE	Glyphosate, N-(Phosphonomethyl) Glycine, MON0573		169.07			1.30E-06	Calc. using logkow
42874033	Organics							2.70E-02	Calc. using logkow
69806402	Organics							3.10E-03	Calc. using logkow
79277273	Organics							1.10E-04	Calc. using logkow
76448	Organics	Heptachlor	Heptachlor, Rhodiachlor, Drinox		373.5			1.10E-02	Calc. using logkow
1024573	Organics	Heptachlor epoxide	Heptachlor epoxide		389.32			5.50E-02	Calc. using logkow
142825	Organics	HEPTANE(-n)	Heptanes, Dipropylmethane		100.02			1.00E+00	Calc. using logkow
87821	Organics	Hexabromobenzene						1.70E-02	Calc. using logkow
118741	Organics	Hexachlorobenzene	Hexachlorobenzene		284.8			2.10E-01	Calc. using logkow
87683	Organics	Hexachlorobutadiene	Hexachlorobutadiene, HCBD, Dolen-pur		260.8			1.20E-01	Calc. using logkow
319846	Organics	Hexachlorocyclohexane, alpha-	Alpha-hexachlorocyclohexane, Alpha-lindane		290.83			1.90E-02	Calc. using logkow
319857	Organics	Hexachlorocyclohexane, beta-	Beta-hexachlorocyclohexane, Beta-HCH, Beta-BHC, Beta-Lindane		290.83			2.20E-02	Calc. using logkow
319868	Organics	Hexachlorocyclohexane, delta-	Delta-hexachlorocyclohexane, Delta-HCH, Delta-BHC, Delta-lindane					3.10E-03	Calc. using logkow
6108107	Organics								
58899	Organics	Lindane	Gamma-hexachlorocyclohexane, Lindane, Gamma-BHC, Gamma-HCH, BHC		290.83			1.40E-02	Calc. using logkow
608731	Organics				290.8			3.40E-02	Calc. using logp
77474	Organics	Hexachlorocyclopentadiene	Hexachlorocyclopentadiene, C-56		272.77			2.90E-02	Calc. using logkow
19408743	Organics	Hexachlorinated dibenzo-p-dioxin, 1	Hexachlorodibenzo-p-dioxin		390.86			4.50E-01	Calc. using logkow
67721	Organics	Hexachloroethane	Hexachloroethane, Phenohep		236.7			4.20E-02	Calc. using logkow
70304	Organics	Hexachlorophene	Hexachlorophene					1.30E+00	Calc. using logkow
121824	Organics	Cyclotrimethylenetrinitriamine	RDX, Hexahydro-1,3,4-Trinito-1,3,5-Triazine					1.90E-02	Calc. using logkow
822060	Organics	HEXAMETHYLENE 1,6 DIISOCY			168.22			1.40E-03	Calc. using logp
110543	Organics	Hexane	Hexanes		86.18			3.30E-01	Calc. using logkow
591786	Organics	Hexanone, 2-	Hexanone-2, n-butylmethyl ketone					4.60E-03	Calc. using logkow
51235042	Organics							4.10E-08	Calc. using logkow
37871004	Organics		2,3,7,8-Heptachlorodibenzo-p-Dioxin, HpCDD		425.31			1.60E+00	Calc. using logp
38998753	Organics		2,3,7,8-Heptachlorodibenzo-p-Furan, HpCDF						
34465468	Organics		2,3,7,8-Hexachlorodibenzo-p-Dioxin, HxCDD						

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
75218	Organics	ETHYLENE OXIDE	0.501187234	Yes	Yes	Yes	YES	1.30E-08								
96457	Organics	Ethylene thiourea	0.228217214	Yes	Yes	Yes	NO	5.50E-09								
84720	Organics		154.8816619	Yes	Yes	Yes	NO	3.90E-06								
101200480	Organics			Yes	Yes	Yes	NO									
22224926	Organics		1698.243653	Yes	Yes	Yes	NO	4.20E-05								
39515418	Organics		501187.2336	Yes	Yes	Yes	NO	1.30E-02								
2164172	Organics		251.1886432	Yes	Yes	Yes	NO	6.30E-06								
206440	Organics	Fluoranthene	213796.209	Yes	Yes	Yes	NO	2.00E-03								
86737	Organics	Fluorene	16218.10097	Yes	Yes	Yes	YES	6.30E-04								
59756604	Organics		1445.439771	Yes	Yes	Yes	NO	3.60E-05								
56425913	Organics		2187.761624	Yes	Yes	Yes	NO	5.50E-05								
66332965	Organics			Yes	Yes	Yes	NO									
69409945	Organics		6456542.29	Yes	Yes	Yes	NO	1.60E-01								
133073	Organics		1258.925412	Yes	Yes	Yes	NO	3.10E-05								
72178020	Organics		794.3282347	Yes	Yes	Yes	NO	2.00E-05								
944229	Organics		8709.6359	Yes	Yes	Yes	NO	2.20E-04								
50000	Organics	Formaldehyde	87.096359	Yes	Yes	Yes	YES	2.50E-08								
64186	Organics	Formic acid	0.119095952	Yes	Yes	Yes	NO	7.20E-09								
39148248	Organics			Yes	Yes	Yes	NO									
110009	Organics	Furan	71.37185755	Yes	Yes	Yes	YES	5.00E-07								
67458	Organics		4.786300923	Yes	Yes	Yes	NO	1.20E-07								
98011	Organics	Furfural	37.86038274	Yes	Yes	Yes	NO	7.90E-05								
531828	Organics			Yes	Yes	Yes	NO									
60568050	Organics			Yes	Yes	Yes	NO									
77182822	Organics			Yes	Yes	Yes	NO									
765344	Organics	Glycidylaldehyde	0.186208714	Yes	Yes	Yes	NO	4.70E-09								
1071836	Organics	GLYPHOSATE	0.319899234	Yes	Yes	Yes	NO	2.50E-11								
42874033	Organics		53703.17964	Yes	Yes	Yes	NO	1.30E-03								
69806402	Organics		3311.311215	Yes	Yes	Yes	NO	8.30E-05								
79277273	Organics		36.30780548	Yes	Yes	Yes	NO	9.10E-07								
76448	Organics	Heptachlor	112201.8454	Yes	Yes	Yes	NO	5.00E-04								
1024573	Organics	Heptachlor epoxide	100000	Yes	Yes	Yes	NO	6.30E-03								
142825	Organics	HEPTANE(-n)	1450.951848	Yes	Yes	Yes	YES	1.30E-03								
87821	Organics	Hexabromobenzene	1288249.552	Yes	Yes	Yes	NO	2.90E-02								
118741	Organics	Hexachlorobenzene	295120.9227	Yes	Yes	Yes	NO	5.00E-03								
87683	Organics	Hexachlorobutadiene	5495.408739	Yes	Yes	Yes	NO	1.60E-03								
319846	Organics	Hexachlorocyclohexane, alpha-	6309.573445	Yes	Yes	Yes	NO	2.00E-04								
319857	Organics	Hexachlorocyclohexane, beta-	6456.54229	Yes	Yes	Yes	NO	2.50E-04								
319868	Organics	Hexachlorocyclohexane, delta-	13803.84265	Yes	Yes	Yes	NO	1.60E-05								
6108107	Organics			Yes	Yes	Yes	NO									
58899	Organics	Lindane	8.648723243	Yes	Yes	Yes	NO	1.30E-04								
608731	Organics		18197.00859	Yes	Yes	Yes	NO	4.50E-04								
77474	Organics	Hexachlorocyclopentadiene	9772.37221	Yes	Yes	Yes	NO	2.50E-04								
19408743	Organics	Hexachlorinated dibenzo-p-dioxin, 1	162181009.7	Yes	Yes	Yes	NO	1.30E-01								
67721	Organics	Hexachloroethane	2859.130642	Yes	Yes	Yes	NO	2.00E-04								
70304	Organics	Hexachlorophene	34673685.05	Yes	Yes	Yes	NO	7.90E-01								
121824	Organics	Cyclotrimethylenetrinitriamine	7.413102413	Yes	Yes	Yes	NO	5.00E-05	3.00E-03	4.90E-02						
822060	Organics	HEXAMETHYLENE 1,6 DIISOCY	18.7633336	Yes	Yes	Yes	NO	4.70E-07								
110543	Organics	Hexane	534.100519	Yes	Yes	Yes	YES	2.00E-04								
591786	Organics	Hexanone, 2-	24.54708916	Yes	Yes	Yes	YES	6.30E-07								
51235042	Organics		3.98107E-05	Yes	Yes	Yes	NO	1.00E-12								
37871004	Organics		60255958.61	Yes	Yes	Yes	NO	1.50E+00								
38998753	Organics			Yes	Yes	Yes	NO									
34465468	Organics			Yes	Yes	Yes	NO									

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
75218	Organics	ETHYLENE OXIDE				1.10E+01	5.70E+01	Calc. using kow		Calc. using kow	Calc. using kow			
96457	Organics	Ethylene thiourea				1.90E+01	9.20E+01	Calc. using kow		Calc. using kow	Calc. using kow			
84720	Organics					4.10E-01	2.00E+00	29	29	29	29			
101200480	Organics													
22224926	Organics					1.00E-01	5.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
39515418	Organics					3.80E-03	1.90E-02	Calc. using kow		Calc. using kow	Calc. using kow			
2164172	Organics					3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
206440	Organics	Fluoranthene				1.10E-02	5.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
86737	Organics	Fluorene				2.20E-02	1.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
59756604	Organics					1.10E-01	5.60E-01	29	29	29	29			
56425913	Organics					8.90E-02	4.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
66332965	Organics													
69409945	Organics					8.60E-04	4.30E-03	29	29	29	29			
133073	Organics					1.20E-01	6.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
72178020	Organics					1.60E-01	7.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
944229	Organics					4.00E-02	2.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
50000	Organics	Formaldehyde				7.70E+00	3.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
64186	Organics	Formic acid				1.60E+01	7.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
39148248	Organics													
110009	Organics	Furan				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
67458	Organics					3.10E+00	1.50E+01	Calc. using kow		Calc. using kow	Calc. using kow			
98011	Organics	Furfural				7.20E-02	3.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
531828	Organics													
60568050	Organics													
77182822	Organics													
765344	Organics	Glycidylaldehyde				2.00E+01	1.00E+02	Calc. using kow		Calc. using kow	Calc. using kow			
1071836	Organics	GLYPHOSATE				4.20E+02	2.10E+03	Calc. using kow		Calc. using kow	Calc. using kow			
42874033	Organics					1.40E-02	6.90E-02	Calc. using kow		Calc. using kow	Calc. using kow			
69806402	Organics					7.00E-02	3.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
79277273	Organics					9.60E-01	4.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
76448	Organics	Heptachlor				2.50E-02	1.20E-01	Calc. using kow		Calc. using kow	Calc. using kow			
1024573	Organics	Heptachlor epoxide				5.70E-03	2.80E-02	Calc. using kow		Calc. using kow	Calc. using kow			
142825	Organics	HEPTANE(-n)				1.40E-02	7.10E-02	Calc. using kow		Calc. using kow	Calc. using kow			
87821	Organics	Hexabromobenzene				2.30E-03	1.10E-02	Calc. using kow		Calc. using kow	Calc. using kow			
118741	Organics	Hexachlorobenzene				6.50E-03	3.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
87683	Organics	Hexachlorobutadiene				1.30E-02	6.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
319846	Organics	Hexachlorocyclohexane, alpha-				4.20E-02	2.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
319857	Organics	Hexachlorocyclohexane, beta-				3.70E-02	1.80E-01	Calc. using kow		Calc. using kow	Calc. using kow			
319868	Organics	Hexachlorocyclohexane, delta-				1.80E-01	9.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
6108107	Organics													
58899	Organics	Lindane				5.50E-02	2.70E-01	Calc. using kow		Calc. using kow	Calc. using kow			
608731	Organics					2.60E-02	1.30E-01	29	29	29	29			
77474	Organics	Hexachlorocyclopentadiene				3.70E-02	1.80E-01	Calc. using kow		Calc. using kow	Calc. using kow			
19408743	Organics	Hexachlorinated dibenzo-p-dioxin, 1				1.00E-03	4.90E-03	Calc. using kow		Calc. using kow	Calc. using kow			
67721	Organics	Hexachloroethane				4.20E-02	2.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
70304	Organics	Hexachlorophene				3.40E-04	1.70E-03	Calc. using kow		Calc. using kow	Calc. using kow			
121824	Organics	Cyclotrimethylenetrinitriamine				9.40E-02	4.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
822060	Organics	HEXAMETHYLENE 1,6 DIISOCY				1.40E+00	6.90E+00	29	29	29	29			
110543	Organics	Hexane				4.20E-02	2.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
591786	Organics	Hexanone, 2-				1.20E+00	5.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
51235042	Organics					2.70E+03	1.40E+04	Calc. using kow		Calc. using kow	Calc. using kow			
37871004	Organics					2.40E-04	1.20E-03	29	29	29	29			
38998753	Organics													
34465468	Organics													

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
75218	Organics	ETHYLENE OXIDE								
96457	Organics	Ethylene thiourea								
84720	Organics									
101200480	Organics									
22224926	Organics									
39515418	Organics									
2164172	Organics									
206440	Organics	Fluoranthene								
86737	Organics	Fluorene								
59756604	Organics									
56425913	Organics									
66332965	Organics									
69409945	Organics									
133073	Organics									
72178020	Organics									
944229	Organics									
50000	Organics	Formaldehyde								
64186	Organics	Formic acid								
39148248	Organics									
110009	Organics	Furan								
67458	Organics									
98011	Organics	Furfural								
531828	Organics									
60568050	Organics									
77182822	Organics									
765344	Organics	Glycidylaldehyde								
1071836	Organics	GLYPHOSATE								
42874033	Organics									
69806402	Organics									
79277273	Organics									
76448	Organics	Heptachlor								
1024573	Organics	Heptachlor epoxide								
142825	Organics	HEPTANE(-n)								
87821	Organics	Hexabromobenzene								
118741	Organics	Hexachlorobenzene								
87683	Organics	Hexachlorobutadiene								
319846	Organics	Hexachlorocyclohexane, alpha-								
319857	Organics	Hexachlorocyclohexane, beta-								
319868	Organics	Hexachlorocyclohexane, delta-								
6108107	Organics									
58899	Organics	Lindane								
608731	Organics									
77474	Organics	Hexachlorocyclopentadiene								
19408743	Organics	Hexachlorinated dibenzo-p-dioxin, 1								
67721	Organics	Hexachloroethane								
70304	Organics	Hexachlorophene								
121824	Organics	Cyclotrimethylenetrinitriamine								
822060	Organics	HEXAMETHYLENE 1,6 DIISOCY								
110543	Organics	Hexane								
591786	Organics	Hexanone, 2-								
51235042	Organics									
37871004	Organics									
38998753	Organics									
34465468	Organics									

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
55684941	Organics		2,3,7,8-Hexachlorodibenzo-p-Furan, HxCDF						
302012	Organics	Hydrazine	Hydrazine, Diamine		32			4.10E-05	Calc. using logkow
10034932	Organics				130.12			4.10E-05	Calc. using logkow
123319	Organics	HYDROQUINONE			110.11			1.00E-03	Calc. using logkow
35554440	Organics							1.50E-02	Calc. using logkow
81335377	Organics							5.00E-04	Calc. using logkow
193395	Organics	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-CD)pyrene, IP		276.34			1.90E+00	Calc. using logkow
36734197	Organics							2.50E-03	Calc. using logkow
78831	Organics	Isobutanol	Isobutyl alcohol, Isobutanol		74			2.60E-03	Calc. using logkow
78591	Organics	Isophorone	Isophorone, Isoforon		138.21			4.40E-03	Calc. using logkow
33820530	Organics				309.37			3.20E-01	Calc. using logp
67630	Organics	PROPANOL ISO	Isopropyl alcohol, 2-Propanol, Isopropanal		60.09			8.90E-04	Calc. using logkow
1832548	Organics				138.1			4.30E-04	Calc. using logp
82558507	Organics								
143500	Organics	Kepone			490.64			1.10E-02	Calc. using logp
23950585	Organics	Pronamide						1.40E-02	Calc. using logkow
77501634	Organics							7.60E-03	Calc. using logkow
	Organics								
330552	Organics							1.10E-02	Calc. using logkow
83055996	Organics							1.10E-04	Calc. using logkow
94746	Organics							4.90E-03	Calc. using logkow
94815	Organics				228.68			2.30E-02	Calc. using logp
93652	Organics							6.60E-03	Calc. using logkow
121755	Organics	Malathion						2.10E-03	Calc. using logkow
108316	Organics	Maleic anhydride			98.1			4.80E-04	Calc. using logp
123331	Organics	Maleic hydrazide						2.10E-04	Calc. using logkow
109773	Organics							8.00E-04	Calc. using logkow
8018017	Organics				541.03				
12427382	Organics							4.60E-05	Calc. using logkow
950107	Organics							2.40E-04	Calc. using logkow
24307264	Organics								
150505	Organics				298.51			8.00E+00	Calc. using logp
78488	Organics	DEF			314.54			2.60E-01	Calc. using logkow
57837191	Organics							5.60E-04	Calc. using logkow
126987	Organics	Methacrylonitrile	Methylacrilonitrile, Isopropene cyanide		67.1			1.80E-03	Calc. using logkow
10265926	Organics	TAMARON (METHAMIDIPHOS)			141.12			8.90E-05	Calc. using logkow
67561	Organics	Methanol	Methanol, Methyl alcohol, Carbinol		32			1.60E-03	Dermal Prin. and Apps
950378	Organics							1.40E-03	Calc. using logkow
16752775	Organics	Methomyl			162.2			5.20E-04	Calc. using logkow
99592	Organics							2.50E-03	Calc. using logkow
72435	Organics	Methoxychlor	Methoxychlor, Metox, DMDT		345.65			2.00E-02	Calc. using logkow
110496	Organics	ETHYLENE GLYCOL MONOME			134.14			3.90E-04	Calc. using logp
109864	Organics	ETHYLENE GLYCOL MONOME			76			1.90E-04	Calc. using logkow
79209	Organics	METHYL ACETATE			74.1			9.00E-04	Calc. using logkow
96333	Organics	METHYL ACRYLATE			86.1			1.70E-03	Calc. using logkow
78933	Organics	Methyl ethyl ketone	Methyl ethyl ketone, Meetco, 2-butanone		72			1.10E-03	Dermal Prin. and Apps
108101	Organics	Methyl isobutyl ketone	4-Methyl-2-pentanone, Hexone		100			3.30E-03	Calc. using logkow
80626	Organics	Methyl methacrylate			100.1			3.90E-03	Calc. using logkow
298000	Organics	Parathion, methyl-			263.23			1.10E-03	Calc. using logkow
25013154	Organics				118.18			8.70E-02	Calc. using logkow
79221	Organics	Methyl chlorocarbonate							
60344	Organics	METHYL HYDRAZINE	suspected semi-volatile		46.09			4.60E-04	Calc. using logp
1634044	Organics	METHYL-TERTIARY-BUTYL ET			88.15			2.60E-03	Calc. using logkow
99558	Organics		5-Nitro-o-toluidine, NCI-C01843					5.90E-03	Calc. using logkow

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
55684941	Organics			Yes	Yes	Yes	NO									
302012	Organics	Hydrazine	0.042657952	Yes	Yes	Yes	NO	2.00E-10								
10034932	Organics		0.007943282	Yes	Yes	Yes	NO	2.00E-10								
123319	Organics	HYDROQUINONE	3.89045145	Yes	Yes	Yes	NO	8.90E-08								
35554440	Organics		6606.93448	Yes	Yes	Yes	NO	1.70E-04								
81335377	Organics		72.44359601	Yes	Yes	Yes	NO	1.80E-06								
193395	Organics	Indeno(1,2,3-cd)pyrene	45708818.96	Yes	Yes	Yes	NO	1.00E-01								
36734197	Organics		1000	Yes	Yes	Yes	NO	2.50E-05								
78831	Organics	Isobutanol	5.623413252	Yes	Yes	Yes	YES	1.70E-07								
78591	Organics	Isophorone	50.11872336	Yes	Yes	Yes	NO	1.30E-06								
33820530	Organics		630957.3445	Yes	Yes	Yes	NO	1.60E-02								
67630	Organics	PROPANOL ISO	0.691830971	Yes	Yes	Yes	YES	2.80E-08								
1832548	Organics		1.862087137	Yes	Yes	Yes	NO	4.70E-08								
82558507	Organics			Yes	Yes	Yes	NO									
143500	Organics	Kepone	199526.2315	Yes	Yes	Yes		5.00E-03								
23950585	Organics	Pronamide	3235.936569	Yes	Yes	Yes	NO	6.70E-05								
77501634	Organics		64565.4229	Yes	Yes	Yes	NO	1.60E-03								
	Organics			Yes	Yes	Yes	NO									
330552	Organics		1584.893193	Yes	Yes	Yes	NO	4.00E-05								
83055996	Organics		63.09573445	Yes	Yes	Yes	NO	1.60E-06								
94746	Organics		199.5262315	Yes	Yes	Yes	NO	5.00E-06								
94815	Organics		3162.27766	Yes	Yes	Yes	NO	7.90E-05								
93652	Organics		398.1071706	Yes	Yes	Yes	NO	1.00E-05								
121755	Organics	Malathion	724.4359601	Yes	Yes	Yes	NO	2.00E-05								
108316	Organics	Maleic anhydride	1	Yes	Yes	Yes	NO	2.50E-08								
123331	Organics	Maleic hydrazide	0.181970086	Yes	Yes	Yes	NO	1.00E-08								
109773	Organics		1.096478196	Yes	Yes	Yes	YES	2.70E-08								
8018017	Organics			Yes	Yes	Yes	NO									
12427382	Organics		1	Yes	Yes	Yes	NO	2.50E-08								
950107	Organics		10.96478196	Yes	Yes	Yes	NO	2.70E-07								
24307264	Organics			Yes	Yes	Yes	NO									
150505	Organics		46773514.13	Yes	Yes	Yes	NO	1.20E+00								
78488	Organics	DEF	63552.69912	Yes	Yes	Yes	NO	1.30E-02								
57837191	Organics		44.66835922	Yes	Yes	Yes	NO	1.10E-06								
126987	Organics	Methacrylonitrile	3.467368505	Yes	Yes	Yes	YES	8.70E-08								
10265926	Organics	TAMARON (METHAMIDIPHOS)	3.400980955	Yes	Yes	Yes	NO	5.50E-09								
67561	Organics	Methanol	0.199526232	Yes	Yes	Yes	YES	4.20E-09								
950378	Organics		263.0267992	Yes	Yes	Yes	NO	6.60E-06								
16752775	Organics	Methomyl	0.499676241	Yes	Yes	Yes	NO	1.00E-07								
99592	Organics		31.6227766	Yes	Yes	Yes	NO	7.90E-07								
72435	Organics	Methoxychlor	3731049.407	Yes	Yes	Yes	NO	6.30E-04								
110496	Organics	ETHYLENE GLYCOL MONOME	1.532226609	Yes	Yes	Yes	NO	3.80E-08								
109864	Organics	ETHYLENE GLYCOL MONOME	1.787568117	Yes	Yes	Yes	NO	4.20E-09								
79209	Organics	METHYL ACETATE	0.812830516	Yes	Yes	Yes	NO	3.80E-08								
96333	Organics	METHYL ACRYLATE	8.57329169	Yes	Yes	Yes	NO	1.20E-07								
78933	Organics	Methyl ethyl ketone	1.905460718	Yes	Yes	Yes	YES	4.70E-08								
108101	Organics	Methyl isobutyl ketone	23.98832919	Yes	Yes	Yes	YES	4.00E-07								
80626	Organics	Methyl methacrylate	19.76400704	Yes	Yes	Yes	YES	5.00E-07								
298000	Organics	Parathion, methyl-	109.6478196	Yes	Yes	Yes	NO	2.00E-06								
25013154	Organics		2238.721139	Yes	Yes	Yes	YES	5.60E-05								
79221	Organics	Methyl chlorocarbonate		Yes	Yes	Yes										
60344	Organics	METHYL HYDRAZINE	0.332206786	Yes	Yes	Yes	NO	8.30E-09								
1634044	Organics	METHYL-TERTIARY-BUTYL ET	79.70214324	Yes	Yes	Yes	YES	2.20E-07								
99558	Organics		100	Yes	Yes	Yes	NO	2.50E-06								

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
55684941	Organics													
302012	Organics	Hydrazine				1.30E+02	6.30E+02	Calc. using kow		Calc. using kow	Calc. using kow			
10034932	Organics					1.30E+02	6.30E+02	Calc. using kow		Calc. using kow	Calc. using kow			
123319	Organics	HYDROQUINONE				3.70E+00	1.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
35554440	Organics					4.70E-02	2.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
81335377	Organics					6.40E-01	3.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			
193395	Organics	Indeno(1,2,3-cd)pyrene				1.10E-03	5.60E-03	Calc. using kow		Calc. using kow	Calc. using kow			
36734197	Organics					1.40E-01	6.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
78831	Organics	Isobutanol				2.50E+00	1.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
78591	Organics	Isophorone				8.00E-01	3.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
33820530	Organics					3.30E-03	1.60E-02	29	29	29	29			
67630	Organics	PROPANOL ISO				7.20E+00	3.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
1832548	Organics					5.40E+00	2.60E+01	29	29	29	29			
82558507	Organics													
143500	Organics	Kepone				6.50E-03	3.20E-02	29	29	29	29			
23950585	Organics	Pronamide				7.90E-02	3.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
77501634	Organics					1.20E-02	6.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
	Organics													
330552	Organics					1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
83055996	Organics					7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
94746	Organics					3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
94815	Organics					7.20E-02	3.50E-01	29	29	29	29			
93652	Organics					2.40E-01	1.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			
121755	Organics	Malathion				1.60E-01	7.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
108316	Organics	Maleic anhydride				7.70E+00	3.80E+01	29	29	29	29			
123331	Organics	Maleic hydrazide				1.30E+01	6.50E+01	Calc. using kow		Calc. using kow	Calc. using kow			
109773	Organics					7.30E+00	3.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
8018017	Organics													
12427382	Organics					7.70E+00	3.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
950107	Organics					1.90E+00	9.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
24307264	Organics													
150505	Organics					2.70E-04	1.40E-03	29	29	29	29			
78488	Organics	DEF				3.80E-03	1.90E-02	Calc. using kow		Calc. using kow	Calc. using kow			
57837191	Organics					8.50E-01	4.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			
126987	Organics	Methacrylonitrile				3.70E+00	1.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
10265926	Organics	TAMARON (METHAMIDIPHOS)				1.90E+01	9.20E+01	Calc. using kow		Calc. using kow	Calc. using kow			
67561	Organics	Methanol				2.20E+01	1.10E+02	Calc. using kow		Calc. using kow	Calc. using kow			
950378	Organics					3.00E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
16752775	Organics	Methomyl				3.50E+00	1.70E+01	Calc. using kow		Calc. using kow	Calc. using kow			
99592	Organics					1.00E+00	5.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
72435	Organics	Methoxychlor				2.20E-02	1.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
110496	Organics	ETHYLENE GLYCOL MONOME				6.00E+00	3.00E+01	29	29	29	29			
109864	Organics	ETHYLENE GLYCOL MONOME				2.20E+01	1.10E+02	Calc. using kow		Calc. using kow	Calc. using kow			
79209	Organics	METHYL ACETATE				6.10E+00	3.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
96333	Organics	METHYL ACRYLATE				3.10E+00	1.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
78933	Organics	Methyl ethyl ketone				5.40E+00	2.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
108101	Organics	Methyl isobutyl ketone				1.60E+00	7.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
80626	Organics	Methyl methacrylate				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
298000	Organics	Parathion, methyl-				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
25013154	Organics					8.80E-02	4.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
79221	Organics	Methyl chlorocarbonate												
60344	Organics	METHYL HYDRAZINE				1.50E+01	7.20E+01	29	29	29	29			
1634044	Organics	METHYL-TERTIARY-BUTYL ET				2.20E+00	1.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
99558	Organics					5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
55684941	Organics									
302012	Organics	Hydrazine								
10034932	Organics									
123319	Organics	HYDROQUINONE								
35554440	Organics									
81335377	Organics									
193395	Organics	Indeno(1,2,3-cd)pyrene								
36734197	Organics									
78831	Organics	Isobutanol								
78591	Organics	Isophorone								
33820530	Organics									
67630	Organics	PROPANOL ISO								
1832548	Organics									
82558507	Organics									
143500	Organics	Kepone								
23950585	Organics	Pronamide								
77501634	Organics									
	Organics									
330552	Organics									
83055996	Organics									
94746	Organics									
94815	Organics									
93652	Organics									
121755	Organics	Malathion								
108316	Organics	Maleic anhydride								
123331	Organics	Maleic hydrazide								
109773	Organics									
8018017	Organics									
12427382	Organics									
950107	Organics									
24307264	Organics									
150505	Organics									
78488	Organics	DEF								
57837191	Organics									
126987	Organics	Methacrylonitrile								
10265926	Organics	TAMARON (METHAMIDIPHOS)								
67561	Organics	Methanol								
950378	Organics									
16752775	Organics	Methomyl								
99592	Organics									
72435	Organics	Methoxychlor								
110496	Organics	ETHYLENE GLYCOL MONOME								
109864	Organics	ETHYLENE GLYCOL MONOME								
79209	Organics	METHYL ACETATE								
96333	Organics	METHYL ACRYLATE								
78933	Organics	Methyl ethyl ketone								
108101	Organics	Methyl isobutyl ketone								
80626	Organics	Methyl methacrylate								
298000	Organics	Parathion, methyl-								
25013154	Organics									
79221	Organics	Methyl chlorocarbonate								
60344	Organics	METHYL HYDRAZINE								
1634044	Organics	METHYL-TERTIARY-BUTYL ET								
99558	Organics									

Information current as of October 27, 2000.
Contact RAWG for references.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
636215	Organics							2.10E-03	Calc. using logkow
108872	Organics	METHYL CYCLOHEXANE	Methylcyclohexane, Hexahydrotoluene, UN2296		98.19			5.10E-02	Calc. using logkow
75092	Organics	Methylene chloride	Methylene chloride, *Dichloromethane, DCM, Freon 30*		84.9			4.50E-03	Calc. using logkow
101144	Organics	Methylene bis (2-chloroaniline), 4,4-	4,4'-Methylenebis (2-chloroaniline), Bis amine, MOCA		267.2			2.80E-02	Calc. using logkow
101611	Organics							1.30E-01	Calc. using logkow
101779	Organics	METHYLENE DIPHENYLAMINE	suspected semi-volatile		198			1.60E-03	Calc. using logkow
101688	Organics	Methylenediphenyl diisocyanate, 4,4			250.26			1.30E-02	Calc. using logp
98839	Organics	ALPHA METHYL STYRENE			118.18			8.70E-02	Calc. using logkow
1762283	Organics								
51218452	Organics							5.90E-03	Calc. using logkow
21087649	Organics	Metribuzin						1.50E-03	Calc. using logkow
2385855	Organics	Mirex						5.00E-03	Calc. using logkow
2212671	Organics							4.40E-02	Calc. using logkow
10599903	Organics								
25154421	Organics								
300765	Organics							8.80E-04	Calc. using logkow
91203	Organics	Naphthalene	Naphthalene, Naphthalin		128.2			6.90E-02	Calc. using logkow
90120	Organics	METHYL NAPTHALENE(1-)			142.19			1.40E-01	Calc. using logkow
91576	Organics	Methylnaphthalene, 2-	Methylnaphthalene, Methylanftalen		142.19			1.50E-01	Calc. using logkow
91598	Organics	Naphthylamine			143.19			1.00E-02	Calc. using logp
15299997	Organics							1.20E-04	Calc. using logkow
2429745	Organics								
13463393	Organics		Nickel Carbonyl						
1929824	Organics							1.00E-02	Calc. using logkow
88744	Organics	Nitroaniline, 2-	O-Nitroaniline, Devol orange B		138.13			5.20E-03	Calc. using logkow
99092	Organics	Nitroaniline, 3-			138.13			2.60E-03	Calc. using logp
100016	Organics	Nitroaniline, p-			138.13			2.70E-03	Calc. using logp
98953	Organics	Nitrobenzene	Nitrobenzene, *Nitrobenzol (liquid)*		123.11			6.90E-03	Bast
67209	Organics							3.10E-05	Calc. using logkow
59870	Organics				198.14			1.70E-04	Calc. using logkow
556887	Organics							1.00E-04	Calc. using logkow
100027	Organics	Nitrophenol, 4-	4-Nitrophenol, Ncl-C55992		139.11			6.00E-03	Calc. using logkow
79469	Organics	Nitropropane, 2-			110			1.00E-03	Calc. using logkow
759739	Organics							5.40E-04	Calc. using logkow
684935	Organics	NITROSO-N-METHYLUREA N			103.1			4.30E-04	Calc. using logkow
924163	Organics	Nitroso-di-n-butylamine, N-	N-Nitro-di-n-butylamine, DBN		158.2			4.80E-03	Calc. using logkow
621647	Organics	Nitroso-di-n-propylamine, N-	N-Nitrosodipropylamine, N-nitroso-1-propyl-1-propanamine					2.80E-03	Calc. using logkow
1116547	Organics	Nitrosodiethanolamine, N-						5.00E-06	Dermal Prin. and Apps.
55185	Organics	Nitrosodiethylamine, N-	N-Nitrosodiethylamine, DANA		102.14			1.20E-03	Calc. using logkow
62759	Organics	Nitrosodimethylamine, N-	N-Nitrosodimethylamine, DMNA		74.1			2.70E-04	Calc. using logkow
86306	Organics	Nitrosodiphenylamine, N-	N-Nitrodosiphenylamine, REDAX					2.00E-02	Calc. using logkow
10595956	Organics	Nitrosomethylethylamine						5.90E-04	Calc. using logkow
4549400	Organics							5.70E-04	Calc. using logkow
930552	Organics	Nitrosopyrrolidine, N-	N-Nitrosopyrrolidine, NPYR		100			7.70E-05	Calc. using logkow
119324	Organics								
99081	Organics	NITROTOLUENE, m			137.13			1.40E-02	Calc. using logkow
88722	Organics	NITROTOLUENE, o			137.14			1.20E-02	Calc. using logkow
99990	Organics	Nitrotoluene, 4-			137.13			1.40E-02	Calc. using logkow
27314132	Organics							1.10E-03	Calc. using logkow
85509199	Organics								
3268879	Organics		Octachlorodibenzo-p-Dioxin, OCDD					5.10E+00	Calc. using logkow
39001020	Organics		Octachlorodibenzo-p-Furan, OCDF					4.80E+00	Calc. using logkow
32536520	Organics								
2691410	Organics		1,3,5,7-Tetrazocine, Octahydro-1,3,5,7-tetranitro, Octagen					7.80E-05	Calc. using logkow

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
636215	Organics		1	Yes	Yes	Yes	NO	2.50E-08								
108872	Organics	METHYL CYCLOHEXANE	919.9770639	Yes	Yes	Yes	YES	1.80E-05								
75092	Organics	Methylene chloride	17.7827941	Yes	Yes	Yes	YES	5.00E-07								
101144	Organics	Methylene bis (2-chloroaniline), 4,4-	79584.95957	Yes	Yes	Yes	NO	2.00E-04								
101611	Organics		63095.73445	Yes	Yes	Yes	NO	1.60E-03								
101779	Organics	METHYLENE DIPHENYLAMINE	2396.690752	Yes	Yes	Yes	NO	1.00E-06								
101688	Organics	Methylenediphenyl diisocyanate, 4,4	2034.759103	Yes	Yes	Yes	YES	5.10E-05								
98839	Organics	ALPHA METHYL STYRENE	2907.58219	Yes	Yes	Yes	YES	5.60E-05								
1762283	Organics			Yes	Yes	Yes	NO									
51218452	Organics		1348.962883	Yes	Yes	Yes	NO	3.40E-05								
21087649	Organics	Metribuzin	50.11872336	Yes	Yes	Yes	NO	1.30E-06								
2385855	Organics	Mirex	7762471.166	Yes	Yes	Yes	NO	4.80E-03								
2212671	Organics		3388.441561	Yes	Yes	Yes	NO	8.50E-05								
10599903	Organics			Yes	Yes	Yes	NO									
25154421	Organics			Yes	Yes	Yes	NO									
300765	Organics		630.9573445	Yes	Yes	Yes	NO	1.60E-05								
91203	Organics	Naphthalene	2344.228815	Yes	Yes	Yes	YES	5.00E-05								
90120	Organics	METHYL NAPTHALENE(1-)	13555.17098	Yes	Yes	Yes	NO	1.90E-04								
91576	Organics	Methylnaphthalene, 2-	13555.17098	Yes	Yes	Yes	YES	2.00E-04								
91598	Organics	Naphthylamine	177.827941	Yes	Yes	Yes		4.40E-06								
15299997	Organics		4.570881896	Yes	Yes	Yes	NO	1.10E-07								
2429745	Organics			Yes	Yes	Yes	NO									
13463393	Organics			Yes	Yes	Yes	NO									
1929824	Organics		1000	Yes	Yes	Yes	NO	2.50E-05								
88744	Organics	Nitroaniline, 2-	15.22470899	Yes	Yes	Yes	YES	1.60E-06								
99092	Organics	Nitroaniline, 3-	23.44228815	Yes	Yes	Yes		5.90E-07								
100016	Organics	Nitroaniline, p-	24.54708916	Yes	Yes	Yes		6.10E-07								
98953	Organics	Nitrobenzene	69.18309709	Yes	Yes	Yes	YES	1.60E-06								
67209	Organics		0.338844156	Yes	Yes	Yes	NO	8.50E-09								
59870	Organics		1.698243653	Yes	Yes	Yes	NO	4.20E-08								
556887	Organics		0.128824955	Yes	Yes	Yes	NO	3.20E-09								
100027	Organics	Nitrophenol, 4-	81.28305162	Yes	Yes	Yes	YES	2.00E-06								
79469	Organics	Nitropropane, 2-	19.22874765	Yes	Yes	Yes	YES	8.90E-08								
759739	Organics		1.698243653	Yes	Yes	Yes	NO	4.20E-08								
684935	Organics	NITROSO-N-METHYLUREA N	1.53394928	Yes	Yes	Yes	NO	2.30E-08								
924163	Organics	Nitroso-di-n-butylamine, N-	257.0395783	Yes	Yes	Yes	YES	2.00E-06								
621647	Organics	Nitroso-di-n-propylamine, N-	25.11886432	Yes	Yes	Yes	NO	6.30E-07	6.00E-03	4.90E-02						
1116547	Organics	Nitrosodiethanolamine, N-	0.02630268	Yes	Yes	Yes	NO	6.30E-10								
55185	Organics	Nitrosodiethylamine, N-	3.01995172	Yes	Yes	Yes	NO	7.50E-08								
62759	Organics	Nitrosodimethylamine, N-	0.338844156	Yes	Yes	Yes	NO	6.70E-09								
86306	Organics	Nitrosodiphenylamine, N-	1445.439771	Yes	Yes	Yes	YES	3.10E-05								
10595956	Organics	Nitrosomethylethylamine	0.758577575	Yes	Yes	Yes	NO	2.70E-08								
4549400	Organics		1	Yes	Yes	Yes	NO	2.50E-08								
930552	Organics	Nitrosopyrrolidine, N-	0.645654229	Yes	Yes	Yes	NO	2.00E-09								
119324	Organics			Yes	Yes	Yes	NO									
99081	Organics	NITROTOLUENE, m	285.0952621	Yes	Yes	Yes	NO	6.30E-06								
88722	Organics	NITROTOLUENE, o	285.0952621	Yes	Yes	Yes	NO	5.00E-06								
99990	Organics	Nitrotoluene, 4-	285.0952621	Yes	Yes	Yes	NO	6.30E-06								
27314132	Organics		199.5262315	Yes	Yes	Yes	NO	5.00E-06								
85509199	Organics			Yes	Yes	Yes	NO									
3268879	Organics		602559586.1	Yes	Yes	Yes	NO	1.50E+01								
39001020	Organics		398107170.6	Yes	Yes	Yes	NO	1.00E+01								
32536520	Organics			Yes	Yes	Yes	NO									
2691410	Organics		3.89045145	Yes	Yes	Yes	NO	9.70E-08								

Information current as of October 27, 2000.
Contact RAWG for references.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
636215	Organics					7.70E+00	3.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
108872	Organics	METHYL CYCLOHEXANE				1.70E-01	8.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
75092	Organics	Methylene chloride				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
101144	Organics	Methylene bis (2-chloroaniline), 4,4-				4.20E-02	2.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
101611	Organics					1.30E-02	6.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
101779	Organics	METHYLENE DIPHENYLAMINE				9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
101688	Organics	Methylenediphenyl diisocyanate, 4,4				9.30E-02	4.60E-01	29	29	29	29			
98839	Organics	ALPHA METHYL STYRENE				8.80E-02	4.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
1762283	Organics													
51218452	Organics					1.20E-01	5.80E-01	Calc. using kow		Calc. using kow	Calc. using kow			
21087649	Organics	Metribuzin				8.00E-01	3.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
2385855	Organics	Mirex				6.70E-03	3.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
2212671	Organics					6.90E-02	3.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
10599903	Organics													
25154421	Organics													
300765	Organics					1.80E-01	9.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
91203	Organics	Naphthalene				9.40E-02	4.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
90120	Organics	METHYL NAPTHALENE(1-)				4.40E-02	2.20E-01	Calc. using kow		Calc. using kow	Calc. using kow			
91576	Organics	Methylnaphthalene, 2-				4.20E-02	2.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
91598	Organics	Naphthylamine				3.80E-01	1.90E+00	29	29	29	29			
15299997	Organics					3.20E+00	1.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
2429745	Organics													
13463393	Organics													
1929824	Organics					1.40E-01	6.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
88744	Organics	Nitroaniline, 2-				7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
99092	Organics	Nitroaniline, 3-				1.20E+00	6.10E+00	29	29	29	29			
100016	Organics	Nitroaniline, p-				1.20E+00	5.90E+00	29	29	29	29			
98953	Organics	Nitrobenzene				7.00E-01	3.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
67209	Organics					1.40E+01	7.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
59870	Organics					5.70E+00	2.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
556887	Organics					2.50E+01	1.20E+02	Calc. using kow		Calc. using kow	Calc. using kow			
100027	Organics	Nitrophenol, 4-				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
79469	Organics	Nitropropane, 2-				3.70E+00	1.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
759739	Organics					5.70E+00	2.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
684935	Organics	NITROSO-N-METHYLUREA N				8.00E+00	4.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
924163	Organics	Nitroso-di-n-butylamine, N-				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
621647	Organics	Nitroso-di-n-propylamine, N-				1.20E+00	5.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
1116547	Organics	Nitrosodiethanolamine, N-				6.50E+01	3.20E+02	Calc. using kow		Calc. using kow	Calc. using kow			
55185	Organics	Nitrosodiethylamine, N-				4.10E+00	2.00E+01	Calc. using kow		Calc. using kow	Calc. using kow			
62759	Organics	Nitrosodimethylamine, N-				1.60E+01	8.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
86306	Organics	Nitrosodiphenylamine, N-				1.20E-01	6.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
10595956	Organics	Nitrosomethylethylamine				7.30E+00	3.60E+01	Calc. using kow		Calc. using kow	Calc. using kow			
4549400	Organics					7.70E+00	3.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
930552	Organics	Nitrosopyrrolidine, N-				3.30E+01	1.70E+02	Calc. using kow		Calc. using kow	Calc. using kow			
119324	Organics													
99081	Organics	NITROTOLUENE, m				3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
88722	Organics	NITROTOLUENE, o				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
99990	Organics	Nitrotoluene, 4-				3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
27314132	Organics					3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
85509199	Organics													
3268879	Organics					6.20E-05	3.10E-04	Calc. using kow		Calc. using kow	Calc. using kow			
39001020	Organics					7.90E-05	3.90E-04	Calc. using kow		Calc. using kow	Calc. using kow			
32536520	Organics													
2691410	Organics					3.50E+00	1.70E+01	Calc. using kow		Calc. using kow	Calc. using kow			

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
636215	Organics									
108872	Organics	METHYL CYCLOHEXANE								
75092	Organics	Methylene chloride								
101144	Organics	Methylene bis (2-chloroaniline), 4,4-								
101611	Organics									
101779	Organics	METHYLENE DIPHENYLAMINE								
101688	Organics	Methylenediphenyl diisocyanate, 4,4								
98839	Organics	ALPHA METHYL STYRENE								
1762283	Organics									
51218452	Organics									
21087649	Organics	Metribuzin								
2385855	Organics	Mirex								
2212671	Organics									
10599903	Organics									
25154421	Organics									
300765	Organics									
91203	Organics	Naphthalene								
90120	Organics	METHYL NAPTHALENE(1-)								
91576	Organics	Methylnaphthalene, 2-								
91598	Organics	Naphthylamine								
15299997	Organics									
2429745	Organics									
13463393	Organics									
1929824	Organics									
88744	Organics	Nitroaniline, 2-								
99092	Organics	Nitroaniline, 3-								
100016	Organics	Nitroaniline, p-								
98953	Organics	Nitrobenzene								
67209	Organics									
59870	Organics									
556887	Organics									
100027	Organics	Nitrophenol, 4-								
79469	Organics	Nitropropane, 2-								
759739	Organics									
684935	Organics	NITROSO-N-METHYLUREA N								
924163	Organics	Nitroso-di-n-butylamine, N-								
621647	Organics	Nitroso-di-n-propylamine, N-								
1116547	Organics	Nitrosodiethanolamine, N-								
55185	Organics	Nitrosodiethylamine, N-								
62759	Organics	Nitrosodimethylamine, N-								
86306	Organics	Nitrosodiphenylamine, N-								
10595956	Organics	Nitrosomethylethylamine								
4549400	Organics									
930552	Organics	Nitrosopyrrolidine, N-								
119324	Organics									
99081	Organics	NITROTOLUENE, m								
88722	Organics	NITROTOLUENE, o								
99990	Organics	Nitrotoluene, 4-								
27314132	Organics									
85509199	Organics									
3268879	Organics									
39001020	Organics									
32536520	Organics									
2691410	Organics									

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
152169	Organics	Octamethylpyrophosphoramide			286.25			1.50E-05	Calc. using logp
117840	Organics	Di-n-octyl phthalate	Di-n-octylphthalate		390.56			2.70E+01	Calc. using logkow
19044883	Organics				346.36			1.30E-03	Calc. using logp
19666309	Organics							3.80E-02	Calc. using logkow
23135220	Organics							4.00E-05	Calc. using logkow
76738620	Organics							5.80E-03	Calc. using logkow
1910425	Organics							1.40E-07	Calc. using logkow
56382	Organics	Parathion, ethyl-	Parathion, Pethion, Alleron		291.3			1.70E-02	Calc. using logkow
36088229	Organics		2,3,7,8-Pentachlorodibenzo-p-Dioxin, PeCDD					5.30E-01	Calc. using logkow
57117416	Organics	Pentachlorinated dibenzofuran, 2,3,4	1,2,3,7,8-Pentachlorodibenzo-p-Furan, PeCDF					1.10E+00	Calc. using logkow
57117314	Organics		2,3,4,7,8-Pentachlorodibenzo-p-Furan, PeCDF					1.30E+00	Calc. using logkow
1114712	Organics							5.70E-02	Calc. using logkow
40487421	Organics							1.70E-01	Calc. using logkow
32534819	Organics								
608935	Organics	Pentachlorobenzene	Pentachlorobenzene, PCB		250.34			2.80E-01	Calc. using logkow
25329355	Organics								
82688	Organics	Pentachloronitrobenzene	Pentachloronitrobenzene, Tritisan		295.36			5.90E-02	Calc. using logkow
87865	Organics	Pentachlorophenol	Pentachlorophenol, Permite, EP 30		266.4			6.50E-01	Calc. using logkow
71410	Organics							6.50E-03	Calc. using logkow
52645531	Organics							2.40E-03	Calc. using logkow
85018	Organics	Phenanthrene	Phenanthrene					2.70E-01	Calc. using logkow
13684634	Organics							3.40E-06	Calc. using logkow
108952	Organics	Phenol	Phenol, Carbolic acid, Ocybenzene		94.1			5.50E-03	Dermal Prin. and Apps.
108452	Organics	Phenylenediamine, m-			108.14			1.20E-04	Calc. using logkow
95545	Organics	PHENYLENE DIAMINE(-o)			108.14			8.60E-04	Calc. using logkow
106503	Organics	PHENYLENE DIAMINE(-p)			108.14			5.90E-05	Calc. using logkow
62384	Organics	Phenylmercuric acetate						5.40E-05	Calc. using logkow
90437	Organics	PHENYLPHENOL P			170.2			2.80E-02	Calc. using logkow
298022	Organics	Phorate						7.90E-04	Calc. using logkow
732116	Organics							2.10E-03	Calc. using logkow
100210	Organics	TEREPHTHALIC ACID			166.13			3.00E-03	Calc. using logkow
85449	Organics	Phthalic anhydride			148.12			8.60E-05	Calc. using logkow
1918021	Organics		Tordon 22K, 4-amino-3,5,6-trichloro-Picolinic acid K-salt, Picloram					1.90E-03	Calc. using logkow
29232937	Organics							2.50E-02	Calc. using logkow
	Organics								
1336363	Organics	PCBs	Aroclor, PCB (General Classification), Therminal, Polychlorinated Biphenyls		292			3.50E-01	Calc. using logkow
1336363	Organics	PCBs	Aroclor, PCB (General Classification), Therminal, Polychlorinated Biphenyls		292			3.50E-01	Calc. using logkow
1336363	Organics	PCBs	Aroclor, PCB (General Classification), Therminal, Polychlorinated Biphenyls		292			3.50E-01	Calc. using logkow
	Organics								
9016879	Organics								
	Organics							7.80E-03	Calc. using logkow
67747095	Organics				347.3			1.30E-01	Calc. using logp
26399360	Organics							3.50E-03	Calc. using logkow
1610180	Organics							3.80E-03	Calc. using logkow
7287196	Organics							3.40E-03	Calc. using logkow
1918167	Organics							1.50E-02	Calc. using logkow
709988	Organics							4.90E-02	Calc. using logkow
2312358	Organics							4.70E-04	Calc. using logkow
107197	Organics	PROPYN-1-OL 2(PROPARLGYL)			56.06			3.80E-03	Calc. using logkow
139402	Organics							2.90E-02	Calc. using logkow
122429	Organics							4.80E-03	Calc. using logkow
60207901	Organics							4.10E-05	Calc. using logkow
57556	Organics	PROPYLENE GLYCOL			76.11				
1569024	Organics								

Information current as of October 27, 2000
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
152169	Organics	Octamethylpyrophosphoramide	0.301995172	Yes	Yes	Yes	NO	7.50E-09								
117840	Organics	Di-n-octyl phthalate	1584893193	Yes	Yes	Yes	NO	4.00E+01								
19044883	Organics		537.0317964	Yes	Yes	Yes	NO	1.30E-05								
19666309	Organics		63095.73445	Yes	Yes	Yes	NO	1.60E-03								
23135220	Organics		0.331131122	Yes	Yes	Yes	NO	8.30E-09								
76738620	Organics		1584.893193	Yes	Yes	Yes	NO	4.00E-05								
1910425	Organics		0.000060256	Yes	Yes	Yes	NO	1.50E-12								
56382	Organics	Parathion, ethyl-	1136.245039	Yes	Yes	Yes	NO	1.60E-04								
36088229	Organics		3162277.66	Yes	Yes	Yes	NO	7.90E-02								
57117416	Organics	Pentachlorinated dibenzofuran, 2,3,4	8317637.711	Yes	Yes	Yes	NO	1.50E-01								
57117314	Organics		8317637.711	Yes	Yes	Yes	NO	2.10E-01								
1114712	Organics		6760.829754	Yes	Yes	Yes	NO	1.70E-04								
40487421	Organics		151356.1248	Yes	Yes	Yes	NO	3.80E-03								
32534819	Organics			Yes	Yes	Yes	NO									
608935	Organics	Pentachlorobenzene	925891.2929	Yes	Yes	Yes	NO	4.00E-03								
25329355	Organics			Yes	Yes	Yes	NO									
82688	Organics	Pentachloronitrobenzene	442332.6528	Yes	Yes	Yes	NO	1.00E-03								
87865	Organics	Pentachlorophenol	102329.2992	Yes	Yes	Yes	NO	2.00E-02	8.90E-02	4.90E-02						
71410	Organics		32.35936569	Yes	Yes	Yes	NO	8.10E-07								
52645531	Organics		3162.27766	Yes	Yes	Yes	NO	7.90E-05								
85018	Organics	Phenanthrene	35481.33892	Yes	Yes	Yes	YES	1.00E-03	2.70E-01	4.50E-02						
13684634	Organics		0.050118723	Yes	Yes	Yes	NO	1.30E-09								
108952	Organics	Phenol	28.84031503	Yes	Yes	Yes	NO	7.90E-07								
108452	Organics	Phenylenediamine, m-	6.962846163	Yes	Yes	Yes	NO	4.40E-09								
95545	Organics	PHENYLENE DIAMINE(-o)	6.962846163	Yes	Yes	Yes	NO	6.90E-08								
106503	Organics	PHENYLENE DIAMINE(-p)	6.962846163	Yes	Yes	Yes	NO	1.60E-09								
62384	Organics	Phenylmercuric acetate	169.8243653	Yes	Yes	Yes	NO	1.30E-07								
90437	Organics	PHENYLPHENOL P	6645.459262	Yes	Yes	Yes	NO	3.10E-05								
298022	Organics	Phorate	6456.54229	Yes	Yes	Yes	NO	1.30E-06								
732116	Organics		630.9573445	Yes	Yes	Yes	NO	1.60E-05								
100210	Organics	TEREPHTHALIC ACID	6.64621521	Yes	Yes	Yes	NO	1.30E-06								
85449	Organics	Phthalic anhydride	0.239883292	Yes	Yes	Yes	NO	6.00E-09								
1918021	Organics		251.1886432	Yes	Yes	Yes	NO	6.30E-06								
29232937	Organics		15848.93193	Yes	Yes	Yes	NO	4.00E-04								
	Organics			Yes	Yes	Yes	NO									
1336363	Organics	PCBs	20349465.2	No	Yes	Yes	NO	2.50E-02								
1336363	Organics	PCBs	20349465.2	Yes	No	No	NO	2.50E-02								
1336363	Organics	PCBs	20349465.2	No	No	No	NO	2.50E-02								
	Organics			Yes	Yes	Yes										
9016879	Organics			Yes	Yes	Yes	YES									
	Organics			Yes	Yes	Yes										
67747095	Organics		12589.25412	Yes	Yes	Yes	NO	3.10E-04								
26399360	Organics		380189.3963	Yes	Yes	Yes	NO	9.50E-03								
1610180	Organics		199.5262315	Yes	Yes	Yes	NO	5.00E-06								
7287196	Organics		316.227766	Yes	Yes	Yes	NO	7.90E-06								
1918167	Organics		151.3561248	Yes	Yes	Yes	NO	3.80E-06								
709988	Organics		1318.256739	Yes	Yes	Yes	NO	3.30E-05								
2312358	Organics		100000	Yes	Yes	Yes	NO	2.50E-03								
107197	Organics	PROPYN-1-OL 2(PROPARLGYL)	1.820581813	Yes	Yes	Yes	YES	1.00E-08								
139402	Organics		251.1886432	Yes	Yes	Yes	NO	6.30E-06								
122429	Organics		1584.893193	Yes	Yes	Yes	NO	4.00E-05								
60207901	Organics		3162.27766	Yes	Yes	Yes	NO	7.90E-05								
57556	Organics	PROPYLENE GLYCOL	0.331412206	Yes	Yes	Yes	NO	5.00E-10								
1569024	Organics			Yes	Yes	Yes	NO									

Information current as of October 27, 2000
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
152169	Organics	Octamethylpyrophosphoramide				1.50E+01	7.60E+01	29	29	29	29			
117840	Organics	Di-n-octyl phthalate				3.60E-05	1.80E-04	Calc. using kow		Calc. using kow	Calc. using kow			
19044883	Organics					2.00E-01	9.90E-01	29	29	29	29			
19666309	Organics					1.30E-02	6.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
23135220	Organics					1.50E+01	7.20E+01	Calc. using kow		Calc. using kow	Calc. using kow			
76738620	Organics					1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
1910425	Organics					2.20E+03	1.10E+04	Calc. using kow		Calc. using kow	Calc. using kow			
56382	Organics	Parathion, ethyl-				4.80E-02	2.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
36088229	Organics					1.30E-03	6.50E-03	Calc. using kow		Calc. using kow	Calc. using kow			
57117416	Organics	Pentachlorinated dibenzofuran, 2,3,4				8.90E-04	4.40E-03	Calc. using kow		Calc. using kow	Calc. using kow			
57117314	Organics					7.50E-04	3.70E-03	Calc. using kow		Calc. using kow	Calc. using kow			
1114712	Organics					4.60E-02	2.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
40487421	Organics					7.60E-03	3.80E-02	Calc. using kow		Calc. using kow	Calc. using kow			
32534819	Organics													
608935	Organics	Pentachlorobenzene				7.40E-03	3.70E-02	Calc. using kow		Calc. using kow	Calc. using kow			
25329355	Organics													
82688	Organics	Pentachloronitrobenzene				1.70E-02	8.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
87865	Organics	Pentachlorophenol				2.90E-03	1.40E-02	Calc. using kow		Calc. using kow	Calc. using kow			
71410	Organics					1.00E+00	5.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
52645531	Organics					7.20E-02	3.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
85018	Organics	Phenanthrene				1.70E-02	8.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
13684634	Organics					4.40E+01	2.20E+02	Calc. using kow		Calc. using kow	Calc. using kow			
108952	Organics	Phenol				1.00E+00	5.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
108452	Organics	Phenylenediamine, m-				2.10E+01	1.00E+02	Calc. using kow		Calc. using kow	Calc. using kow			
95545	Organics	PHENYLENE DIAMINE(-o)				4.30E+00	2.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
106503	Organics	PHENYLENE DIAMINE(-p)				3.80E+01	1.90E+02	Calc. using kow		Calc. using kow	Calc. using kow			
62384	Organics	Phenylmercuric acetate				3.00E+00	1.50E+01	Calc. using kow		Calc. using kow	Calc. using kow			
90437	Organics	PHENYLPHENOL P				1.20E-01	6.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
298022	Organics	Phorate				8.00E-01	3.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
732116	Organics					1.80E-01	9.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
100210	Organics	TEREPHTHALIC ACID				8.00E-01	3.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
85449	Organics	Phthalic anhydride				1.80E+01	8.70E+01	Calc. using kow		Calc. using kow	Calc. using kow			
1918021	Organics					3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
29232937	Organics					2.80E-02	1.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
	Organics													
1336363	Organics	PCBs				2.50E-03	1.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
1336363	Organics	PCBs				2.50E-03	1.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
1336363	Organics	PCBs				2.50E-03	1.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
	Organics													
9016879	Organics													
	Organics													
67747095	Organics					3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
26399360	Organics					4.50E-03	2.20E-02	29	29	29	29			
1610180	Organics					3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
7287196	Organics					2.70E-01	1.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
1918167	Organics					4.20E-01	2.10E+00	Calc. using kow		Calc. using kow	Calc. using kow			
709988	Organics					1.20E-01	5.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
2312358	Organics					9.70E-03	4.80E-02	Calc. using kow		Calc. using kow	Calc. using kow			
107197	Organics	PROPYN-1-OL 2(PROPARLGYL)				1.30E+01	6.30E+01	Calc. using kow		Calc. using kow	Calc. using kow			
139402	Organics					3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
122429	Organics					1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
60207901	Organics					7.20E-02	3.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
57556	Organics	PROPYLENE GLYCOL				7.50E+01	3.70E+02	Calc. using kow		Calc. using kow	Calc. using kow			
1569024	Organics													

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
152169	Organics	Octamethylpyrophosphoramide								
117840	Organics	Di-n-octyl phthalate								
19044883	Organics									
19666309	Organics									
23135220	Organics									
76738620	Organics									
1910425	Organics									
56382	Organics	Parathion, ethyl-								
36088229	Organics									
57117416	Organics	Pentachlorinated dibenzofuran, 2,3,4								
57117314	Organics									
1114712	Organics									
40487421	Organics									
32534819	Organics									
608935	Organics	Pentachlorobenzene								
25329355	Organics									
82688	Organics	Pentachloronitrobenzene								
87865	Organics	Pentachlorophenol								
71410	Organics									
52645531	Organics									
85018	Organics	Phenanthrene								
13684634	Organics									
108952	Organics	Phenol								
108452	Organics	Phenylenediamine, m-								
95545	Organics	PHENYLENE DIAMINE(-o)								
106503	Organics	PHENYLENE DIAMINE(-p)								
62384	Organics	Phenylmercuric acetate								
90437	Organics	PHENYLPHENOL P								
298022	Organics	Phorate								
732116	Organics									
100210	Organics	TEREPHTHALIC ACID								
85449	Organics	Phthalic anhydride								
1918021	Organics									
29232937	Organics									
	Organics									
1336363	Organics	PCBs								
1336363	Organics	PCBs								
1336363	Organics	PCBs								
	Organics									
9016879	Organics									
	Organics									
67747095	Organics									
26399360	Organics									
1610180	Organics									
7287196	Organics									
1918167	Organics									
709988	Organics									
2312358	Organics									
107197	Organics	PROPYN-1-OL 2(PROPARLGYL)								
139402	Organics									
122429	Organics									
60207901	Organics									
57556	Organics	PROPYLENE GLYCOL								
1569024	Organics									

Information current as of October 27, 2000
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on date of ction.

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
107982	Organics		2-Methoxy-1-propanol, Dowtherm 209		90			4.00E-04	Calc. using logkow
75569	Organics	PROPYLENE OXIDE			58.1			8.90E-04	Calc. using logkow
81335775	Organics								
51630581	Organics							7.20E-03	Calc. using logkow
129000	Organics	Pyrene	Pyrene, Benzo(def)phenanthrene					3.20E-01	Bast
110861	Organics	Pyridine	Pyridine, Azine, Azabenzene		79.1			5.30E-03	Calc. using logkow
13593038	Organics				298.3			4.20E-03	Calc. using logp
91225	Organics	Quinoline			129.16			9.60E-03	Calc. using logkow
	Organics								
10453868	Organics				338.45			1.80E+00	Calc. using logp
299843	Organics	Ronnel						8.70E-02	Calc. using logkow
83794	Organics							6.10E-03	Calc. using logkow
78587050	Organics								
7783008	Organics								
14124675	Organics								
630104	Organics	Selenourea							
74051802	Organics							2.50E-02	Calc. using logkow
122349	Organics		Princep 80W, 2-chloro-4,6-bix(ethylamino)-s-triazine, Simazine					4.10E-03	Calc. using logkow
62476599	Organics								
148185	Organics				172.27			2.60E-04	Calc. using logp
62748	Organics				100.03			9.70E-07	Calc. using logp
961115	Organics							3.60E-03	Calc. using logkow
57249	Organics	Strychnine						3.90E-04	Calc. using logkow
100425	Organics	Styrene	Styrene, Cinnamene, Styron		104.1			6.70E-01	Dermal Prin. and Apps.
88671890	Organics								
1746016	Organics	TCDD	2,3,7,8-Tetrachlorodibenzo-p-Dioxin, TCDD		322			1.40E+00	Calc. using logkow
51207319	Organics	Tetrachlorodibenzofuran, 2,3,7,8-	2,3,7,8-Tetrachlorodibenzo-p-Furan, TCDF					3.50E-01	Calc. using logkow
21564170	Organics							1.50E-02	Calc. using logkow
34014181	Organics		Spike, Tebuthiuron, N-(5-t-butyl-1,3,4-thiadiazol-2-yl)-dimethyl urea					9.90E-05	Calc. using logkow
3383968	Organics							4.60E-02	Calc. using logkow
5902512	Organics							2.00E-03	Calc. using logkow
13071799	Organics							1.40E-02	Calc. using logkow
886500	Organics							2.90E-02	Calc. using logkow
1920907	Organics								
95943	Organics	Tetrachlorobenzene, 1,2,4,5-	1,2,4,5-Tetrachlorobenzene		215.9			1.70E-01	Calc. using logkow
630206	Organics	Tetrachloroethane, 1,1,1,2-	1,1,1,2-Tetrachloroethane		168			2.40E-02	Calc. using logkow
79345	Organics	Tetrachloroethane, 1,1,2,2-	1,1,2,2-Tetracloroethane, Cellow		167.9			9.00E-03	Calc. using logkow
127184	Organics	Tetrachloroethylene	Tetrachloroethylene, Ankilostin, PCE		165.83			3.70E-01	Dermal Prin. and Apps.
58902	Organics	Tetrachlorophenol, 2,3,4,6-	2,3,4,6,-Tetrachlorophenol, Dowicide 6		231.9			6.00E-02	Calc. using logkow
5216251	Organics				229.92			1.30E-01	Calc. using logp
3689245	Organics	Tetraethyldithiopyrophosphate	Tetraetyl dithio pyrophosphate, Pirofos		322.34			2.80E-03	Calc. using logkow
78002	Organics	Tetraethyl lead			323.45			1.00E-03	Calc. using logp
811972	Organics				102.03			3.60E-03	Calc. using logkow
75741	Organics							5.70E-03	Calc. using logkow
3440753	Organics								
1314325	Organics		Thallic Oxide						
563688	Organics								
6533739	Organics							1.30E-02	Calc. using logkow
28249776	Organics								
302045	Organics							5.80E-06	Calc. using logkow
39196184	Organics							1.50E-04	Calc. using logkow
23564058	Organics							1.00E-03	Calc. using logp
137268	Organics	Thiram			240.43			4.50E-02	Dermal Prin. and Apps.
108883	Organics	Toluene	Toluene, Toluol		92.1				

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
107982	Organics		0.660693448	Yes	Yes	Yes	NO	1.70E-08								
75569	Organics	PROPYLENE OXIDE	1.720338862	Yes	Yes	Yes	YES	2.70E-08								
81335775	Organics			Yes	Yes	Yes	NO									
51630581	Organics		26302.67992	Yes	Yes	Yes	NO	6.60E-04								
129000	Organics	Pyrene	128824.9552	Yes	Yes	Yes	NO	2.00E-03								
110861	Organics	Pyridine	4.466835922	Yes	Yes	Yes	NO	5.00E-07								
13593038	Organics		1096.478196	Yes	Yes	Yes	NO	2.70E-05								
91225	Organics	Quinoline	107.1519305	Yes	Yes	Yes	NO	3.10E-06								
	Organics			Yes	Yes	Yes	NO									
10453868	Organics		12882495.52	Yes	Yes	Yes	NO	3.20E-01								
299843	Organics	Ronnel	117489.7555	Yes	Yes	Yes	NO	3.10E-03								
83794	Organics		12589.25412	Yes	Yes	Yes	NO	3.10E-04								
78587050	Organics			Yes	Yes	Yes	NO									
7783008	Organics			Yes	Yes	Yes	NO									
14124675	Organics			Yes	Yes	Yes	NO									
630104	Organics	Selenourea		Yes	Yes	Yes	NO									
74051802	Organics		23988.32919	Yes	Yes	Yes	NO	6.00E-04								
122349	Organics		158.4893193	Yes	Yes	Yes	NO	4.00E-06								
62476599	Organics			Yes	Yes	Yes	NO									
148185	Organics		1.862087137	Yes	Yes	Yes	NO	4.70E-08								
62748	Organics		0.000165959	Yes	Yes	Yes	NO	4.10E-12								
961115	Organics		3388.441561	Yes	Yes	Yes	NO	8.50E-05								
57249	Organics	Strychnine	85.11380382	Yes	Yes	Yes	NO	2.00E-06								
100425	Organics	Styrene	1445.439771	Yes	Yes	Yes	YES	2.00E-05								
88671890	Organics			Yes	Yes	Yes	NO									
1746016	Organics	TCDD	4365158.322	Yes	Yes	Yes	NO	1.60E-01								
51207319	Organics	Tetrachlorodibenzofuran, 2,3,7,8-	3388441.561	Yes	Yes	Yes	NO	1.70E-02								
21564170	Organics		1995.262315	Yes	Yes	Yes	NO	5.00E-05								
34014181	Organics		1.412537545	Yes	Yes	Yes	NO	3.50E-08								
3383968	Organics		912010.8394	Yes	Yes	Yes	NO	2.30E-02								
5902512	Organics		77.62471166	Yes	Yes	Yes	NO	1.90E-06								
13071799	Organics		4786.300923	Yes	Yes	Yes	NO	1.20E-04								
886500	Organics		5495.408739	Yes	Yes	Yes	NO	1.40E-04								
1920907	Organics			Yes	Yes	Yes	NO									
95943	Organics	Tetrachlorobenzene, 1,2,4,5-	32359.36569	Yes	Yes	Yes	NO	1.00E-03								
630206	Organics	Tetrachloroethane, 1,1,1,2-	426.5795188	Yes	Yes	Yes	YES	2.50E-05								
79345	Organics	Tetrachloroethane, 1,1,2,2-	363.0780548	Yes	Yes	Yes	YES	6.30E-06								
127184	Organics	Tetrachloroethylene	398.1071706	Yes	Yes	Yes	YES	1.00E-05								
58902	Organics	Tetrachlorophenol, 2,3,4,6-	57845.28964	Yes	Yes	Yes	NO	3.10E-04								
5216251	Organics		34673.68505	Yes	Yes	Yes	NO	8.70E-04								
3689245	Organics	Tetraethyldithiopyrophosphate	45.37441094	Yes	Yes	Yes	NO	2.50E-05								
78002	Organics	Tetraethyl lead	247.0910415	Yes	Yes	Yes	NO	6.20E-06								
811972	Organics		18.79316817	Yes	Yes	Yes	YES	4.70E-07								
75741	Organics		933.2543008	Yes	Yes	Yes	NO	2.30E-05								
3440753	Organics			Yes	Yes	Yes	NO									
1314325	Organics			Yes	Yes	Yes	NO									
563688	Organics			Yes	Yes	Yes	NO									
6533739	Organics			Yes	Yes	Yes	NO									
28249776	Organics		2511.886432	Yes	Yes	Yes	NO	6.30E-05								
302045	Organics			Yes	Yes	Yes										
39196184	Organics		0.021379621	Yes	Yes	Yes	NO	5.30E-10								
23564058	Organics		25.11886432	Yes	Yes	Yes	NO	6.30E-07								
137268	Organics	Thiram	50.11872336	Yes	Yes	Yes	NO	1.30E-06								
108883	Organics	Toluene	489.7788194	Yes	Yes	Yes	YES	1.30E-05								

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
107982	Organics					9.80E+00	4.80E+01	Calc. using kow		Calc. using kow	Calc. using kow			
75569	Organics	PROPYLENE OXIDE				7.40E+00	3.70E+01	Calc. using kow		Calc. using kow	Calc. using kow			
81335775	Organics													
51630581	Organics					2.10E-02	1.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
129000	Organics	Pyrene				1.10E-02	5.50E-02	Calc. using kow		Calc. using kow	Calc. using kow			
110861	Organics	Pyridine				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
13593038	Organics					1.30E-01	6.60E-01	29	29	29	29			
91225	Organics	Quinoline				4.70E-01	2.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
	Organics													
10453868	Organics					5.80E-04	2.90E-03	29	29	29	29			
299843	Organics	Ronnel				8.50E-03	4.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
83794	Organics					3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
78587050	Organics													
7783008	Organics													
14124675	Organics													
630104	Organics	Selenourea												
74051802	Organics					2.20E-02	1.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
122349	Organics					4.10E-01	2.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
62476599	Organics													
148185	Organics					5.40E+00	2.60E+01	29	29	29	29			
62748	Organics					1.20E+03	5.90E+03	29	29	29	29			
961115	Organics					6.90E-02	3.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
57249	Organics	Strychnine				6.10E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
100425	Organics	Styrene				1.60E-01	7.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
88671890	Organics													
1746016	Organics	TCDD				8.80E-04	4.30E-03	Calc. using kow		Calc. using kow	Calc. using kow			
51207319	Organics	Tetrachlorodibenzofuran, 2,3,7,8-				3.20E-03	1.60E-02	Calc. using kow		Calc. using kow	Calc. using kow			
21564170	Organics					9.40E-02	4.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
34014181	Organics					6.30E+00	3.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
3383968	Organics					2.70E-03	1.30E-02	Calc. using kow		Calc. using kow	Calc. using kow			
5902512	Organics					6.20E-01	3.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			
13071799	Organics					5.70E-02	2.80E-01	Calc. using kow		Calc. using kow	Calc. using kow			
886500	Organics					5.20E-02	2.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
1920907	Organics													
95943	Organics	Tetrachlorobenzene, 1,2,4,5-				1.70E-02	8.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
630206	Organics	Tetrachloroethane, 1,1,1,2-				1.40E-01	6.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
79345	Organics	Tetrachloroethane, 1,1,2,2-				3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
127184	Organics	Tetrachloroethylene				2.40E-01	1.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			
58902	Organics	Tetrachlorophenol, 2,3,4,6-				3.20E-02	1.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
5216251	Organics					1.80E-02	8.80E-02	29	29	29	29			
3689245	Organics	Tetraethyldithiopyrophosphate				1.40E-01	6.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
78002	Organics	Tetraethyl lead				3.20E-01	1.60E+00	29	29	29	29			
811972	Organics					1.40E+00	6.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75741	Organics					1.50E-01	7.20E-01	Calc. using kow		Calc. using kow	Calc. using kow			
3440753	Organics													
1314325	Organics													
563688	Organics													
6533739	Organics													
28249776	Organics					8.20E-02	4.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
302045	Organics													
39196184	Organics					7.20E+01	3.50E+02	Calc. using kow		Calc. using kow	Calc. using kow			
23564058	Organics					1.20E+00	5.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
137268	Organics	Thiram				8.00E-01	3.90E+00	29	29	29	29			
108883	Organics	Toluene				2.10E-01	1.00E+00	Calc. using kow		Calc. using kow	Calc. using kow			

Information current as of October 27, 2000
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
107982	Organics									
75569	Organics	PROPYLENE OXIDE								
81335775	Organics									
51630581	Organics									
129000	Organics	Pyrene								
110861	Organics	Pyridine								
13593038	Organics									
91225	Organics	Quinoline								
	Organics									
10453868	Organics									
299843	Organics	Ronnel								
83794	Organics									
78587050	Organics									
7783008	Organics									
14124675	Organics									
630104	Organics	Selenourea								
74051802	Organics									
122349	Organics									
62476599	Organics									
148185	Organics									
62748	Organics									
961115	Organics									
57249	Organics	Strychnine								
100425	Organics	Styrene								
88671890	Organics									
1746016	Organics	TCDD								
51207319	Organics	Tetrachlorodibenzofuran, 2,3,7,8-								
21564170	Organics									
34014181	Organics									
3383968	Organics									
5902512	Organics									
13071799	Organics									
886500	Organics									
1920907	Organics									
95943	Organics	Tetrachlorobenzene, 1,2,4,5-								
630206	Organics	Tetrachloroethane, 1,1,1,2-								
79345	Organics	Tetrachloroethane, 1,1,2,2-								
127184	Organics	Tetrachloroethylene								
58902	Organics	Tetrachlorophenol, 2,3,4,6-								
5216251	Organics									
3689245	Organics	Tetraethyldithiopyrophosphate								
78002	Organics	Tetraethyl lead								
811972	Organics									
75741	Organics									
3440753	Organics									
1314325	Organics									
563688	Organics									
6533739	Organics									
28249776	Organics									
302045	Organics									
39196184	Organics									
23564058	Organics									
137268	Organics	Thiram								
108883	Organics	Toluene								

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
26471625	Organics	TOLUENE DIISOCYANATE(2,4)			174.16			6.10E-02	Calc. using logkow
95807	Organics	Toluenediamine, 2,4-			122			6.00E-04	Calc. using logkow
95705	Organics				122.17			4.50E-04	Calc. using logp
823405	Organics	TOLUENEDIAMINE(2,6)			122.17			3.70E-03	Calc. using logp
95534	Organics	Toluidine, o-			107.17			3.70E-03	Calc. using logkow
106490	Organics	Toluidine, p-			107.17			1.10E-02	Calc. using logkow
8001352	Organics	Toxaphene	Toxaphene, Phenacide, Motox		414			1.50E-02	Calc. using logkow
66841256	Organics								
2303175	Organics							1.80E-02	Calc. using logkow
82097505	Organics								
615543	Organics				314.82			4.70E-02	Calc. using logp
594150	Organics								
49690940	Organics								
56359	Organics								
76131	Organics	Trichloro-1,2,2-Trifluoroethane, 1,1	Freon 113, Ucon 113		187.38			9.60E-03	Calc. using logkow
3380345	Organics							7.80E-02	Calc. using logkow
76039	Organics							1.70E-03	Calc. using logkow
33663502	Organics								
634935	Organics							3.80E-02	Calc. using logkow
120821	Organics	Trichlorobenzene, 1,2,4-	1,2,4-Trichlorobenzene, unsym-Trichlorobenzene		181.5			1.00E-01	Calc. using logkow
71556	Organics	Trichloroethane, 1,1,1-	1,1,1-Trichloroethane, Methyl chloroform		133.4			1.70E-02	Calc. using logkow
79005	Organics	Trichloroethane, 1,1,2-	1,1,2-Trichloroethane, Vinyl trichloride		133.4			8.40E-03	Calc. using logkow
79016	Organics	Trichloroethylene	Trichloroethylene, Vitran, TCE		131.4			1.60E-02	Dermal Prin. and Apps
75694	Organics	Trichlorofluoromethane	Trichloromonofluoromethane, Arcton 9, Freon 11		137.4			1.70E-02	Calc. using logkow
95954	Organics	Trichlorophenol, 2,4,5-	2,4,5-Trichlorophenol, Nurelle		197.45			5.90E-02	Calc. using logkow
88062	Organics	Trichlorophenol, 2,4,6-	2,4,6-Trichlorophenol, Omal		197.5			5.90E-02	Dermal Prin. and Apps
93721	Organics	TP, 2,4,5-	Silvex, Propon, Aqua-vex		269.51			2.50E-02	Calc. using logkow
93765	Organics	Trichlorophenoxyacetic acid, 2,4,5-			255.48			3.60E-02	Calc. using logkow
598776	Organics	TRICHLOROPROPANE(1,1,2)			147.43			3.60E-03	Calc. using logp
96184	Organics	Trichloropropane, 1,2,3-	1,2,3-Trichloropropane, NCI-C60220		147.4			4.40E-01	Calc. using logkow
96195	Organics				145.42			2.30E-02	Calc. using logp
2077465	Organics				195.48			1.80E-01	Calc. using logp
2014837	Organics								
58138082	Organics								
5224237	Organics								
121448	Organics	TRIETHYLAMINE			101.19			4.50E-03	Calc. using logkow
1582098	Organics	Trifluralin	Treflan a,a,a-trifluoro-2,6-dinitro-N-N'-dipropyl-p-toluidine		335.29			9.90E-02	Calc. using logkow
7442139	Organics							9.20E-05	Calc. using logkow
512561	Organics								
95636	Organics								
108678	Organics	TRIMETHYLBENZENE (1,3,5)			120.2			2.40E-01	Calc. using logp
1762261	Organics								
99354	Organics	Trinitrobenzene, 1,3,5-						6.80E-04	Calc. using logkow
479458	Organics							8.90E-04	Calc. using logkow
118967	Organics	Trinitrotoluene	TNT, Trinitrotoluene (dry)		227.1			3.40E-03	Calc. using logkow
6618037	Organics								
1929777	Organics							5.80E-02	Calc. using logkow
50471448	Organics							5.40E-03	Calc. using logkow
108054	Organics	Vinyl acetate	Vinyl acetate, 1-Acetoxyethylene		86.09			1.20E-02	Bast
593602	Organics	VINYL BROMIDE			107			5.50E-03	Calc. using logkow
75014	Organics	Vinyl chloride	Vinyl chloride, Monochloroethylene		62.5			7.30E-03	Calc. using logkow
81812	Organics	Warfarin			308.33			4.70E-03	Calc. using logkow
1330207	Organics	XYLENE	Xylene, Benzene (dimethyl)		106.2			9.50E-02	Calc. using logkow
106423	Organics	Xylene, p-	P-Xylene, 1,4-Dimethylbenzene		106.16			8.00E-02	Calc. using logkow

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
26471625	Organics	TOLUENE DIISOCYANATE(2,4)	6363836.307	Yes	Yes	Yes	YES	1.00E-04								
95807	Organics	Toluenediamine, 2,4-	28.50243737	Yes	Yes	Yes	NO	5.50E-08								
95705	Organics		1.445439771	Yes	Yes	Yes	NO	3.60E-08								
823405	Organics	TOLUENEDIAMINE(2,6)	28.50243737	Yes	Yes	Yes	NO	7.10E-07								
95534	Organics	Toluidine, o-	130.3983212	Yes	Yes	Yes	NO	5.00E-07								
106490	Organics	Toluidine, p-	24.54708916	Yes	Yes	Yes	NO	2.50E-06								
8001352	Organics	Toxaphene	1995.262315	Yes	Yes	Yes	NO	1.60E-03								
66841256	Organics			Yes	Yes	Yes	NO									
2303175	Organics		9549.92586	Yes	Yes	Yes	NO	2.40E-04								
82097505	Organics			Yes	Yes	Yes	NO									
615543	Organics		45708.81896	Yes	Yes	Yes	NO	1.10E-03								
594150	Organics			Yes	Yes	Yes	NO									
49690940	Organics			Yes	Yes	Yes	NO									
56359	Organics			Yes	Yes	Yes	NO									
76131	Organics	Trichloro-1,2,2-Trifluoroethane, 1,1	2859.018727	Yes	Yes	Yes	YES	1.00E-05								
3380345	Organics		57543.99373	Yes	Yes	Yes	NO	1.40E-03								
76039	Organics		21.3796209	Yes	Yes	Yes	NO	5.30E-07								
33663502	Organics			Yes	Yes	Yes	NO									
634935	Organics		3311.311215	Yes	Yes	Yes	NO	8.30E-05								
120821	Organics	Trichlorobenzene, 1,2,4-	9549.92586	Yes	Yes	Yes	YES	2.50E-04								
71556	Organics	Trichloroethane, 1,1,1-	309.0295433	Yes	Yes	Yes	YES	7.90E-06								
79005	Organics	Trichloroethane, 1,1,2-	147.9108388	Yes	Yes	Yes	YES	2.50E-06								
79016	Organics	Trichloroethylene	194.98446	Yes	Yes	Yes	YES	6.30E-06								
75694	Organics	Trichlorofluoromethane	338.8441561	Yes	Yes	Yes	YES	7.90E-06								
95954	Organics	Trichlorophenol, 2,4,5-	10039.31312	Yes	Yes	Yes	YES	1.60E-04								
88062	Organics	Trichlorophenol, 2,4,6-	4897.788194	Yes	Yes	Yes	NO	1.30E-04								
93721	Organics	TP, 2,4,5-	11814.02811	Yes	Yes	Yes	NO	2.00E-04								
93765	Organics	Trichlorophenoxyacetic acid, 2,4,5-	716.0741564	Yes	Yes	Yes	NO	2.50E-04								
598776	Organics	TRICHLOROPROPANE(1,1,2)	45.14368428	Yes	Yes	Yes	NO	1.10E-06								
96184	Organics	Trichloropropane, 1,2,3-	1.609331085	Yes	Yes	Yes	YES	1.00E-03								
96195	Organics		602.5595861	Yes	Yes	Yes	NO	1.50E-05								
2077465	Organics		29512.09227	Yes	Yes	Yes	NO	7.40E-04								
2014837	Organics			Yes	Yes	Yes	NO									
58138082	Organics			Yes	Yes	Yes	NO									
5224237	Organics			Yes	Yes	Yes	NO									
121448	Organics	TRIETHYLAMINE	228.695174	Yes	Yes	Yes	YES	6.30E-07								
1582098	Organics	Trifluralin	226540.5758	Yes	Yes	Yes	NO	5.00E-03								
7442139	Organics			Yes	Yes	Yes	NO									
512561	Organics		0.223872114	Yes	Yes	Yes	NO	5.60E-09								
95636	Organics			Yes	Yes	Yes	YES									
108678	Organics	TRIMETHYLBENZENE (1,3,5)	9993.669895	Yes	Yes	Yes	YES	2.50E-04								
1762261	Organics			Yes	Yes	Yes	NO									
99354	Organics	Trinitrobenzene, 1,3,5-	15.13561248	Yes	Yes	Yes	NO	4.00E-07								
479458	Organics		100	Yes	Yes	Yes	NO	2.50E-06								
118967	Organics	Trinitrotoluene	1	Yes	Yes	Yes	NO	5.00E-06								
6618037	Organics			Yes	Yes	Yes	NO									
1929777	Organics		6918.309709	Yes	Yes	Yes	NO	1.70E-04								
50471448	Organics		1258.925412	Yes	Yes	Yes	NO	3.10E-05								
108054	Organics	Vinyl acetate	8.516536264	Yes	Yes	Yes	YES	1.30E-07								
593602	Organics	VINYL BROMIDE	11.65362396	Yes	Yes	Yes	YES	1.00E-06								
75014	Organics	Vinyl chloride	1.148153622	Yes	Yes	Yes	YES	6.30E-07								
81812	Organics	Warfarin	243990.5466	Yes	Yes	Yes	NO	4.00E-05								
1330207	Organics	XYLENE	1412.537545	Yes	Yes	Yes	YES	5.00E-05								
106423	Organics	Xylene, p-	1412.537545	Yes	Yes	Yes	YES	4.00E-05								

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
26471625	Organics	TOLUENE DIISOCYANATE(2,4)				6.10E-02	3.00E-01	Calc. using kow		Calc. using kow	Calc. using kow			
95807	Organics	Toluenediamine, 2,4-				4.90E+00	2.40E+01	Calc. using kow		Calc. using kow	Calc. using kow			
95705	Organics					6.20E+00	3.10E+01	29	29	29	29			
823405	Organics	TOLUENEDIAMINE(2,6)				1.10E+00	5.40E+00	29	29	29	29			
95534	Organics	Toluidine, o-				1.40E+00	6.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
106490	Organics	Toluidine, p-				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
8001352	Organics	Toxaphene				1.30E-02	6.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
66841256	Organics													
2303175	Organics					3.80E-02	1.90E-01	Calc. using kow		Calc. using kow	Calc. using kow			
82097505	Organics													
615543	Organics					1.50E-02	7.50E-02	29	29	29	29			
594150	Organics													
49690940	Organics													
56359	Organics													
76131	Organics	Trichloro-1,2,2-Trifluoroethane, 1,1				2.40E-01	1.20E+00	Calc. using kow		Calc. using kow	Calc. using kow			
3380345	Organics					1.30E-02	6.60E-02	Calc. using kow		Calc. using kow	Calc. using kow			
76039	Organics					1.30E+00	6.40E+00	Calc. using kow		Calc. using kow	Calc. using kow			
33663502	Organics													
634935	Organics					7.00E-02	3.50E-01	Calc. using kow		Calc. using kow	Calc. using kow			
120821	Organics	Trichlorobenzene, 1,2,4-				3.70E-02	1.80E-01	Calc. using kow		Calc. using kow	Calc. using kow			
71556	Organics	Trichloroethane, 1,1,1-				2.70E-01	1.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
79005	Organics	Trichloroethane, 1,1,2-				5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
79016	Organics	Trichloroethylene				3.10E-01	1.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75694	Organics	Trichlorofluoromethane				2.70E-01	1.30E+00	Calc. using kow		Calc. using kow	Calc. using kow			
95954	Organics	Trichlorophenol, 2,4,5-				4.80E-02	2.40E-01	Calc. using kow		Calc. using kow	Calc. using kow			
88062	Organics	Trichlorophenol, 2,4,6-				5.50E-02	2.70E-01	Calc. using kow		Calc. using kow	Calc. using kow			
93721	Organics	TP, 2,4,5-				4.20E-02	2.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
93765	Organics	Trichlorophenoxyacetic acid, 2,4,5-				3.70E-02	1.80E-01	Calc. using kow		Calc. using kow	Calc. using kow			
598776	Organics	TRICHLOROPROPANE(1,1,2)				8.40E-01	4.20E+00	29	29	29	29			
96184	Organics	Trichloropropane, 1,2,3-				1.70E-02	8.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
96195	Organics					1.90E-01	9.30E-01	29	29	29	29			
2077465	Organics					2.00E-02	9.70E-02	29	29	29	29			
2014837	Organics													
58138082	Organics													
5224237	Organics													
121448	Organics	TRIETHYLAMINE				1.20E+00	5.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
1582098	Organics	Trifluralin				6.50E-03	3.20E-02	Calc. using kow		Calc. using kow	Calc. using kow			
7442139	Organics													
512561	Organics					1.80E+01	9.10E+01	Calc. using kow		Calc. using kow	Calc. using kow			
95636	Organics													
108678	Organics	TRIMETHYLBENZENE (1,3,5)				3.70E-02	1.80E-01	29	29	29	29			
1762261	Organics													
99354	Organics	Trinitrobenzene, 1,3,5-				1.60E+00	7.70E+00	Calc. using kow		Calc. using kow	Calc. using kow			
479458	Organics					5.30E-01	2.60E+00	Calc. using kow		Calc. using kow	Calc. using kow			
118967	Organics	Trinitrotoluene				3.60E-01	1.80E+00	Calc. using kow		Calc. using kow	Calc. using kow			
6618037	Organics													
1929777	Organics					4.60E-02	2.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
50471448	Organics					1.20E-01	6.10E-01	Calc. using kow		Calc. using kow	Calc. using kow			
108054	Organics	Vinyl acetate				2.90E+00	1.40E+01	Calc. using kow		Calc. using kow	Calc. using kow			
593602	Organics	VINYL BROMIDE				9.10E-01	4.50E+00	Calc. using kow		Calc. using kow	Calc. using kow			
75014	Organics	Vinyl chloride				1.20E+00	5.90E+00	Calc. using kow		Calc. using kow	Calc. using kow			
81812	Organics	Warfarin				1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
1330207	Organics	XYLENE				9.40E-02	4.60E-01	Calc. using kow		Calc. using kow	Calc. using kow			
106423	Organics	Xylene, p-				1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
26471625	Organics	TOLUENE DIISOCYANATE(2,4)								
95807	Organics	Toluenediamine, 2,4-								
95705	Organics									
823405	Organics	TOLUENEDIAMINE(2,6)								
95534	Organics	Toluidine, o-								
106490	Organics	Toluidine, p-								
8001352	Organics	Toxaphene								
66841256	Organics									
2303175	Organics									
82097505	Organics									
615543	Organics									
594150	Organics									
49690940	Organics									
56359	Organics									
76131	Organics	Trichloro-1,2,2-Trifluoroethane, 1,1								
3380345	Organics									
76039	Organics									
33663502	Organics									
634935	Organics									
120821	Organics	Trichlorobenzene, 1,2,4-								
71556	Organics	Trichloroethane, 1,1,1-								
79005	Organics	Trichloroethane, 1,1,2-								
79016	Organics	Trichloroethylene								
75694	Organics	Trichlorofluoromethane								
95954	Organics	Trichlorophenol, 2,4,5-								
88062	Organics	Trichlorophenol, 2,4,6-								
93721	Organics	TP, 2,4,5-								
93765	Organics	Trichlorophenoxyacetic acid, 2,4,5-								
598776	Organics	TRICHLOROPROPANE(1,1,2)								
96184	Organics	Trichloropropane, 1,2,3-								
96195	Organics									
2077465	Organics									
2014837	Organics									
58138082	Organics									
5224237	Organics									
121448	Organics	TRIETHYLAMINE								
1582098	Organics	Trifluralin								
7442139	Organics									
512561	Organics									
95636	Organics									
108678	Organics	TRIMETHYLBENZENE (1,3,5)								
1762261	Organics									
99354	Organics	Trinitrobenzene, 1,3,5-								
479458	Organics									
118967	Organics	Trinitrotoluene								
6618037	Organics									
1929777	Organics									
50471448	Organics									
108054	Organics	Vinyl acetate								
593602	Organics	VINYL BROMIDE								
75014	Organics	Vinyl chloride								
81812	Organics	Warfarin								
1330207	Organics	XYLENE								
106423	Organics	Xylene, p-								

Information current as of October 27, 2000
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
108383	Organics	Xylene, m-	m-Xylene, 1,3-Dimethylbenzene		106.16			8.00E-02	Calc. using logkow
95476	Organics	Xylene, o-	o-Xylene, 1,2-Dimethylbenzene		106.2			8.00E-02	Calc. using logkow
12122677	Organics				275.73			3.30E-04	Calc. using logp
135988	Organics								
104518	Organics	BUTYL BENZENE			134.22			2.10E-01	Calc. using logp
14265851	Radionuclides			Ac		D	1.00E+01		
14952400	Radionuclides			Ac		D	7.96E+03		
14952400	Radionuclides			Ac		D	7.96E+03		
14331830	Radionuclides			Ac		D	2.55E-01		
14928144	Radionuclides			Ag		D	4.13E+01		
14391652	Radionuclides	Silver 108m(+D) (radionuclide)		Ag		D	1.65E-03		
14391652	Radionuclides	Silver 108m(+D) (radionuclide)		Ag		D	4.64E+04		
14391652	Radionuclides	Silver 108m(+D) (radionuclide)		Ag		D	4.64E+04		
14378382	Radionuclides			Ag		D	4.58E-04		
14391765	Radionuclides	Silver 110m (radionuclide)		Ag		D	2.85E-04		
14391765	Radionuclides	Silver 110m (radionuclide)		Ag		D	2.50E+02		
15760040	Radionuclides			Ag		D	7.46E+00		
14596102	Radionuclides	Americium 241		Am		D	1.58E+05		
13981549	Radionuclides			Am		D	6.67E-01		
13981549	Radionuclides			Am		D	5.55E+04		
14993750	Radionuclides	Americium 243+D		Am		D	2.69E+06		
14993750	Radionuclides	Americium 243+D		Am		D	2.69E+06		
14163258	Radionuclides			Ar		D	7.63E-02		
17239906	Radionuclides			At		D	3.74E-07		
14914160	Radionuclides			Au		D	6.18E+00		
10043490	Radionuclides			Au		D	2.70E+00		
14914751	Radionuclides			Ba		D	1.18E+01		
13981414	Radionuclides			Ba		D	3.83E+03		
13981414	Radionuclides			Ba		D	1.62E+00		
13981970	Radionuclides			Ba		D	1.77E-03		
14378257	Radionuclides			Ba		D	5.77E-02		
14798084	Radionuclides			Ba		D	1.28E+01		
13966024	Radionuclides			Be		D	5.34E+01		
15776199	Radionuclides			Bi		D	6.24E+00		
13982382	Radionuclides			Bi		D	1.22E+04		
14331794	Radionuclides			Bi		D	5.01E+00		
15229375	Radionuclides			Bi		D	1.48E-03		
14913496	Radionuclides			Bi		D	4.21E-02		
15776202	Radionuclides			Bi		D	3.17E-02		
14733030	Radionuclides			Bi		D	1.38E-02		
14686692	Radionuclides			Br		D	1.47E+00		
14333336	Radionuclides			C		D	1.42E-02		
14762755	Radionuclides			C		D	2.09E+06		
15929234	Radionuclides			C		D	2.84E-05		
13966057	Radionuclides			Ca		D	1.63E+02		
14391992	Radionuclides			Ca		D	4.54E+00		
14109321	Radionuclides	Cadmium 109 (radionuclide)		Cd		D	4.64E+02		
14336686	Radionuclides			Cd		D	2.23E+00		
14336686	Radionuclides			Cd		D	4.46E+01		
13967743	Radionuclides			Ce-141		D	3.25E+01		
14119198	Radionuclides			Ce		D	1.38E+00		
14762788	Radionuclides			Ce-144		D	2.84E+02		
14762788	Radionuclides			Ce		D	2.84E+02		
13981436	Radionuclides			Cl		D	1.10E+08		

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
108383	Organics	Xylene, m-	1584.893193	Yes	Yes	Yes	YES	4.00E-05								
95476	Organics	Xylene, o-	891.2509381	Yes	Yes	Yes	YES	4.00E-05								
12122677	Organics		19.95262315	Yes	Yes	Yes	NO	5.00E-07								
135988	Organics			Yes	Yes	Yes	YES									
104518	Organics	BUTYL BENZENE	10689.68727	Yes	Yes	Yes	YES	2.70E-04								
14265851	Radionuclides			Yes	Yes	Yes	NO	2.50E-05								
14952400	Radionuclides			Yes	Yes	Yes	NO	2.50E-05								
14952400	Radionuclides			Yes	Yes	Yes	NO	4.80E-02								
14331830	Radionuclides			Yes	Yes	Yes	NO	2.50E-05								
14928144	Radionuclides			Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
14391652	Radionuclides	Silver 108m(+D) (radionuclide)		Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
14391652	Radionuclides	Silver 108m(+D) (radionuclide)		Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
14391652	Radionuclides	Silver 108m(+D) (radionuclide)		Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
14378382	Radionuclides			Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
14391765	Radionuclides	Silver 110m (radionuclide)		Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
14391765	Radionuclides	Silver 110m (radionuclide)		Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
15760040	Radionuclides			Yes	Yes	Yes	NO	3.00E-03	2.00E+00		2				0.003	5
14596102	Radionuclides	Americium 241		Yes	Yes	Yes	NO	4.00E-05	6.00E-03		0.006	0.004		0.000014	0.00004	30
13981549	Radionuclides			Yes	Yes	Yes	NO	4.00E-05	6.00E-03		0.006	0.004		0.000014	0.00004	30
13981549	Radionuclides			Yes	Yes	Yes	NO	4.00E-05	6.00E-03		0.006	0.004		0.000014	0.00004	30
14993750	Radionuclides	Americium 243+D		Yes	Yes	Yes	NO	4.00E-05	6.00E-03		0.006	0.004		0.000014	0.00004	30
14993750	Radionuclides	Americium 243+D		Yes	Yes	Yes	NO	1.00E-03	6.00E-03		0.006	0.004		0.000014	0.00004	30
14163258	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
17239906	Radionuclides			Yes	Yes	Yes	NO	1.00E-02								
14914160	Radionuclides			Yes	Yes	Yes	NO	5.00E-03								
10043490	Radionuclides			Yes	Yes	Yes	NO	5.00E-03								
14914751	Radionuclides			Yes	Yes	Yes	NO	2.00E-04	9.00E-03	5.80E-02	0.009	0.9	0.000013	0.0046	0.0002	4
13981414	Radionuclides			Yes	Yes	Yes	NO	2.00E-04	9.00E-03	5.80E-02	0.009	0.9	0.000013	0.0046	0.0002	4
13981414	Radionuclides			Yes	Yes	Yes	NO	2.00E-04	9.00E-03	5.80E-02	0.009	0.9	0.000013	0.0046	0.0002	4
13981970	Radionuclides			Yes	Yes	Yes	NO	2.00E-04	9.00E-03	5.80E-02	0.009	0.9	0.000013	0.0046	0.0002	4
14378257	Radionuclides			Yes	Yes	Yes	NO	2.00E-04	9.00E-03	5.80E-02	0.009	0.9	0.000013	0.0046	0.0002	4
14798084	Radionuclides			Yes	Yes	Yes	NO	2.00E-04	9.00E-03	5.80E-02	0.009	0.9	0.000013	0.0046	0.0002	4
13966024	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-03	6.30E-01						100
15776199	Radionuclides			Yes	Yes	Yes	NO	4.00E-04								10
13982382	Radionuclides			Yes	Yes	Yes	NO	4.00E-04								10
14331794	Radionuclides			Yes	Yes	Yes	NO	4.00E-04								10
15229375	Radionuclides			Yes	Yes	Yes	NO	4.00E-04								10
14913496	Radionuclides			Yes	Yes	Yes	NO	4.00E-04								10
15776202	Radionuclides			Yes	Yes	Yes	NO	4.00E-04								10
14733030	Radionuclides			Yes	Yes	Yes	NO	4.00E-04								10
14686692	Radionuclides			Yes	Yes	Yes	NO	2.50E-02								400
14333336	Radionuclides			Yes	Yes	Yes	NO									50000
14762755	Radionuclides			Yes	Yes	Yes	NO									50000
15929234	Radionuclides			Yes	Yes	Yes	NO									50000
13966057	Radionuclides			Yes	Yes	Yes	NO	2.00E-03	4.00E-02		0.04	0.4			0.002	
14391992	Radionuclides			Yes	Yes	Yes	NO	2.00E-03	4.00E-02		0.04	0.4			0.002	
14109321	Radionuclides	Cadmium 109 (radionuclide)		Yes	Yes	Yes	NO	4.00E-04	8.00E-01	7.40E-01	0.8	0.1			0.0004	
14336686	Radionuclides			Yes	Yes	Yes	NO	4.00E-04	8.00E-01	7.40E-01	0.8	0.1			0.0004	
14336686	Radionuclides			Yes	Yes	Yes	NO	4.00E-04	8.00E-01	7.40E-01	0.8	0.1			0.0004	
13967743	Radionuclides			Yes	Yes	Yes	NO	2.00E-05	2.00E-03		0.002	0.00004				
14119198	Radionuclides			Yes	Yes	Yes	NO	2.00E-05							0.00002	30
14762788	Radionuclides			Yes	Yes	Yes	NO	2.00E-05	4.00E-03		0.004	0.00009				
14762788	Radionuclides			Yes	Yes	Yes	NO	6.20E-04							0.00002	30
13981436	Radionuclides			Yes	Yes	Yes	NO	2.00E-02							0.02	

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
108383	Organics	Xylene, m-				1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
95476	Organics	Xylene, o-				1.10E-01	5.30E-01	Calc. using kow		Calc. using kow	Calc. using kow			
12122677	Organics					1.40E+00	6.70E+00	29	29	29	29			
135988	Organics													
104518	Organics	BUTYL BENZENE				3.50E-02	1.70E-01	29	29	29	29			
14265851	Radionuclides					8.80E-04	3.50E-03							
14952400	Radionuclides					8.80E-04	3.50E-03							
14952400	Radionuclides					1.90E-02	2.60E-01							
14331830	Radionuclides					8.80E-04	3.50E-03							
14928144	Radionuclides		0.02	0.00027	0.06	2.20E-05	1.00E+00					0.00005	0.003	IAEA, 1994
14391652	Radionuclides	Silver 108m(+D) (radionuclide)	0.02	0.00027	0.06	2.20E-05	1.00E+00					0.00005	0.003	IAEA, 1994
14391652	Radionuclides	Silver 108m(+D) (radionuclide)	0.02	0.00027	0.06	2.20E-05	1.00E+00					0.00005	0.003	IAEA, 1994
14391652	Radionuclides	Silver 108m(+D) (radionuclide)	0.02	0.00027	0.06	2.20E-05	1.00E+00					0.00005	0.003	IAEA, 1994
14378382	Radionuclides		0.02	0.00027	0.06	2.20E-05	1.00E+00					0.00005	0.003	IAEA, 1994
14391765	Radionuclides	Silver 110m (radionuclide)	0.02	0.00027	0.06	2.20E-05	1.00E+00					0.00005	0.003	IAEA, 1994
14391765	Radionuclides	Silver 110m (radionuclide)	0.02	0.00027	0.06	2.20E-05	1.00E+00					0.00005	0.003	IAEA, 1994
15760040	Radionuclides		0.02	0.00027	0.06	2.20E-05	1.00E+00					0.00005	0.003	IAEA, 1994
14596102	Radionuclides	Americium 241	0.00017	0.0041	0.000014	2.40E-05	1.20E-03					1.50E-06	0.00004	IAEA, 1994
13981549	Radionuclides		0.00017	0.0041	0.000014	2.40E-05	1.20E-03					1.50E-06	0.00004	IAEA, 1994
13981549	Radionuclides		0.00017	0.0041	0.000014	2.40E-05	1.20E-03					1.50E-06	0.00004	IAEA, 1994
14993750	Radionuclides	Americium 243+D	0.00017	0.0041	0.000014	2.40E-05	1.20E-03					1.50E-06	0.00004	IAEA, 1994
14993750	Radionuclides	Americium 243+D	0.00017	0.0041	0.000014	2.90E-03	7.00E-02					1.50E-06	0.00004	IAEA, 1994
14163258	Radionuclides					0.00E+00	0.00E+00							
17239906	Radionuclides					2.50E-01	1.00E+00							
14914160	Radionuclides					1.00E-01	4.00E-01							
10043490	Radionuclides					1.00E-01	4.00E-01							
14914751	Radionuclides					3.00E-03	1.00E-01					0.00048	0.0002	IAEA, 1994
13981414	Radionuclides					3.00E-03	1.00E-01					0.00048	0.0002	IAEA, 1994
13981414	Radionuclides					3.00E-03	1.00E-01					0.00048	0.0002	IAEA, 1994
13981970	Radionuclides					3.00E-03	1.00E-01					0.00048	0.0002	IAEA, 1994
14378257	Radionuclides					3.00E-03	1.00E-01					0.00048	0.0002	IAEA, 1994
14798084	Radionuclides					3.00E-03	1.00E-01					0.00048	0.0002	IAEA, 1994
13966024	Radionuclides					2.50E-03	1.00E-02							IAEA, 1994
15776199	Radionuclides					8.80E-03	3.50E-02							IAEA, 1994
13982382	Radionuclides					8.80E-03	3.50E-02							IAEA, 1994
14331794	Radionuclides					8.80E-03	3.50E-02							IAEA, 1994
15229375	Radionuclides					8.80E-03	3.50E-02							IAEA, 1994
14913496	Radionuclides					8.80E-03	3.50E-02							IAEA, 1994
15776202	Radionuclides					8.80E-03	3.50E-02							IAEA, 1994
14733030	Radionuclides					8.80E-03	3.50E-02							IAEA, 1994
14686692	Radionuclides					8.80E-03	3.50E-02							IAEA, 1994
14333336	Radionuclides					3.80E-01	1.50E+00							IAEA, 1994
14762755	Radionuclides													IAEA, 1994
15929234	Radionuclides													IAEA, 1994
13966057	Radionuclides					8.80E-01	3.50E+00					0.003	0.002	IAEA, 1994
14391992	Radionuclides					8.80E-01	3.50E+00					0.003	0.002	IAEA, 1994
14109321	Radionuclides	Cadmium 109 (radionuclide)	0.015			1.40E-01	5.50E-01						0.0004	IAEA, 1994
14336686	Radionuclides		0.015			1.40E-01	5.50E-01						0.0004	IAEA, 1994
14336686	Radionuclides		0.015			1.40E-01	5.50E-01						0.0004	IAEA, 1994
13967743	Radionuclides					3.00E-03	5.00E-02							IAEA, 1994
14119198	Radionuclides		0.0001	0.0002		3.00E-03	5.00E-02					0.00003	0.00002	IAEA, 1994
14762788	Radionuclides					3.00E-03	5.00E-02							IAEA, 1994
14762788	Radionuclides		0.0001	0.0002		7.00E-03	9.00E-02					0.00003	0.00002	IAEA, 1994
13981436	Radionuclides					1.80E+01	7.00E+01					0.017	0.02	IAEA, 1994

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
108383	Organics	Xylene, m-								
95476	Organics	Xylene, o-								
12122677	Organics									
135988	Organics									
104518	Organics	BUTYL BENZENE								
14265851	Radionuclides									
14952400	Radionuclides									
14952400	Radionuclides									
14331830	Radionuclides									
14928144	Radionuclides		IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
14391652	Radionuclides	Silver 108m(+D) (radionuclide)	IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
14391652	Radionuclides	Silver 108m(+D) (radionuclide)	IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
14391652	Radionuclides	Silver 108m(+D) (radionuclide)	IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
14378382	Radionuclides		IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
14391765	Radionuclides	Silver 110m (radionuclide)	IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
14391765	Radionuclides	Silver 110m (radionuclide)	IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
15760040	Radionuclides		IAEA, 1994	IAEA, 1994				IAEA, 1994	IAEA, 1994	IAEA, 1994
14596102	Radionuclides	Americium 241	IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13981549	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13981549	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14993750	Radionuclides	Americium 243+D	IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14993750	Radionuclides	Americium 243+D	IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14163258	Radionuclides									
17239906	Radionuclides									
14914160	Radionuclides									
10043490	Radionuclides									
14914751	Radionuclides			IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
13981414	Radionuclides			IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
13981414	Radionuclides			IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
13981970	Radionuclides			IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
14378257	Radionuclides			IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
14798084	Radionuclides			IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
13966024	Radionuclides									
15776199	Radionuclides									
13982382	Radionuclides									
14331794	Radionuclides									
15229375	Radionuclides									
14913496	Radionuclides									
15776202	Radionuclides									
14733030	Radionuclides									
14686692	Radionuclides									
14333336	Radionuclides									
14762755	Radionuclides									
15929234	Radionuclides									
13966057	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14391992	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14109321	Radionuclides	Cadmium 109 (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
14336686	Radionuclides			IAEA, 1994	IAEA, 1994			IAEA, 1994		
14336686	Radionuclides			IAEA, 1994	IAEA, 1994			IAEA, 1994		
13967743	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14119198	Radionuclides							IAEA, 1994	IAEA, 1994	
14762788	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14762788	Radionuclides							IAEA, 1994	IAEA, 1994	
13981436	Radionuclides									

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
14158340	Radionuclides			Cl		D	2.58E-02		
15510733	Radionuclides			Cm		D	1.63E+02		
15757876	Radionuclides			Cm		D	1.04E+04		
15757876	Radionuclides			Cm		D	1.04E+04		
13981152	Radionuclides			Cm		D	6.61E+03		
15621768	Radionuclides			Cm		D	3.10E+06		
15757901	Radionuclides			Cm		D	1.73E+06		
15758324	Radionuclides			Cm		D	5.69E+09		
15758335	Radionuclides			Cm		D	1.24E+08		
13981505	Radionuclides	Cobalt 57 (radionuclide)		Co		D	2.71E+02		
13981389	Radionuclides			Co		D	7.08E+01		
13981389	Radionuclides			Co		D	3.81E-01		
10198400	Radionuclides	Cobalt 60 (radionuclide)		Co		D	1.92E+03		
14392020	Radionuclides			Cr		D	2.77E+01		
14914762	Radionuclides			Cs		D	9.69E+00		
13967709	Radionuclides	Cesium 134 (radionuclide)		Cs		D	7.52E+02		
13967709	Radionuclides	Cesium 134 (radionuclide)		Cs		D	1.21E-01		
15726304	Radionuclides	Cesium 135 (radionuclide)		Cs		D	8.40E+08		
14234298	Radionuclides			Cs		D	1.32E+01		
10045973	Radionuclides	Cesium 137(+D) (radionuclide)		Cs		D	1.10E+04		
10045973	Radionuclides	Cesium 137(+D) (radionuclide)		Cs		D	1.10E+04		
15758299	Radionuclides			Cs		D	2.24E-02		
13981254	Radionuclides			Cu		D	5.29E-01		
13967641	Radionuclides			Dy		D	9.71E-02		
15840014	Radionuclides			Dy		D	3.40E+00		
15840138	Radionuclides			Er		D	9.40E+00		
14391458	Radionuclides			Er		D	3.13E-01		
14683239	Radionuclides			Eu		D	4.96E+03		
15585101	Radionuclides			Eu		D	3.21E+03		
14391163	Radionuclides			Eu		D	1.81E+03		
14280354	Radionuclides			Eu		D	1.52E+01		
13981561	Radionuclides			F		D	7.64E-02		
14681595	Radionuclides	Iron 55 (radionuclide)		Fe		D	9.86E+02		
14596124	Radionuclides			Fe		D	4.46E+01		
15756419	Radionuclides			Fr		D	3.33E-03		
15756986	Radionuclides			Fr		D	1.51E-03		
14119096	Radionuclides			Ga		D	3.26E+00		
13982224	Radionuclides			Ga		D	5.88E-01		
14276654	Radionuclides			Gd		D	2.42E+02		
14041420	Radionuclides			Gd		D	7.75E-01		
14374813	Radionuclides			Ge		D	1.18E+01		
10028178	Radionuclides	Tritium		H		D	4.49E+03		
13981516	Radionuclides			Hg		D	2.67E+00		
13982780	Radionuclides			Hg		D	4.66E+01		
13967652	Radionuclides			Ho		D	1.12E+00		
18287757	Radionuclides			I		D	2.51E-03		
15715089	Radionuclides			I		D	5.46E-01		
14158317	Radionuclides			I		D	6.01E+01		
14158328	Radionuclides			I		D	1.29E+01		
15046841	Radionuclides			I		D	5.73E+09		
14914024	Radionuclides			I		D	5.17E-01		
10043660	Radionuclides			I		D	8.04E+00		
14683160	Radionuclides			I		D	9.58E-02		
14834674	Radionuclides			I		D	8.67E-01		

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
14158340	Radionuclides			Yes	Yes	Yes	NO	2.00E-02							0.02	
15510733	Radionuclides			Yes	Yes	Yes	NO	2.00E-05								30
15757876	Radionuclides			Yes	Yes	Yes	NO	2.00E-05								30
15757876	Radionuclides			Yes	Yes	Yes	NO	4.80E-02								30
13981152	Radionuclides			Yes	Yes	Yes	NO	2.00E-05								30
15621768	Radionuclides			Yes	Yes	Yes	NO	2.00E-05								30
15757901	Radionuclides			Yes	Yes	Yes	NO	2.00E-05								30
15758324	Radionuclides			Yes	Yes	Yes	NO	2.00E-05								30
15758335	Radionuclides			Yes	Yes	Yes	NO	2.00E-05								30
13981505	Radionuclides	Cobalt 57 (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	2.00E+00		2	0.1			0.0001	300
13981389	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	2.00E+00		2	0.1			0.0001	300
13981389	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	2.00E+00		2	0.1			0.0001	300
10198400	Radionuclides	Cobalt 60 (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	2.00E+00		2	0.1			0.0001	300
14392020	Radionuclides			Yes	Yes	Yes	NO	9.00E-03	9.00E-03	7.80E-02					0.009	200
14914762	Radionuclides			Yes	Yes	Yes	NO	5.00E-02	1.00E+01		10	0.4	0.23	0.1	0.05	2000
13967709	Radionuclides	Cesium 134 (radionuclide)		Yes	Yes	Yes	NO	5.00E-02	1.00E+01		10	0.4	0.23	0.1	0.05	2000
13967709	Radionuclides	Cesium 134 (radionuclide)		Yes	Yes	Yes	NO	5.00E-02	1.00E+01		10	0.4	0.23	0.1	0.05	2000
15726304	Radionuclides	Cesium 135 (radionuclide)		Yes	Yes	Yes	NO	5.00E-02	1.00E+01		10	0.4	0.23	0.1	0.05	2000
14234298	Radionuclides			Yes	Yes	Yes	NO	5.00E-02	1.00E+01		10	0.4	0.23	0.1	0.05	2000
10045973	Radionuclides	Cesium 137(+D) (radionuclide)		Yes	Yes	Yes	NO	5.00E-02	1.00E+01		10	0.4	0.23	0.1	0.05	2000
10045973	Radionuclides	Cesium 137(+D) (radionuclide)		Yes	Yes	Yes	NO	5.00E-02	1.00E+01		10	0.4	0.23	0.1	0.05	2000
15758299	Radionuclides			Yes	Yes	Yes	NO	5.00E-02	1.00E+01		10	0.4	0.23	0.1	0.05	2000
13981254	Radionuclides			Yes	Yes	Yes	NO	9.00E-03	5.00E-01		0.5	0.5			0.009	200
13967641	Radionuclides			Yes	Yes	Yes	NO	5.50E-03								
15840014	Radionuclides			Yes	Yes	Yes	NO	5.50E-03								
15840138	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
14391458	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
14683239	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								50
15585101	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								50
14391163	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								50
14280354	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								50
13981561	Radionuclides			Yes	Yes	Yes	NO	1.50E-01								
14681595	Radionuclides	Iron 55 (radionuclide)		Yes	Yes	Yes	NO	2.00E-02	1.00E+00	6.10E-02	1	1			0.02	200
14596124	Radionuclides			Yes	Yes	Yes	NO	2.00E-02	1.00E+00	6.10E-02	1	1			0.02	200
15756419	Radionuclides			Yes	Yes	Yes	NO	2.50E-03								
15756986	Radionuclides			Yes	Yes	Yes	NO	2.50E-03								
14119096	Radionuclides			Yes	Yes	Yes	NO	3.00E-04								
13982224	Radionuclides			Yes	Yes	Yes	NO	3.00E-04								
14276654	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								
14041420	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								
14374813	Radionuclides			Yes	Yes	Yes	NO	7.00E-01								
10028178	Radionuclides	Tritium		Yes	Yes	Yes	NO									
13981516	Radionuclides			Yes	Yes	Yes	NO	1.00E-02	3.00E-02	1.50E-01	0.03					1000
13982780	Radionuclides			Yes	Yes	Yes	NO	1.00E-02	3.00E-02	1.50E-01	0.03					1000
13967652	Radionuclides			Yes	Yes	Yes	NO	4.50E-03								
18287757	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
15715089	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
14158317	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
14158328	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
15046841	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
14914024	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
10043660	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
14683160	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
14834674	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
14158340	Radionuclides					1.80E+01	7.00E+01					0.017	0.02	IAEA, 1994
15510733	Radionuclides					5.90E-05	1.10E-03							IAEA, 1994
15757876	Radionuclides					5.90E-05	1.10E-03							IAEA, 1994
15757876	Radionuclides					2.30E-02	4.40E-01							IAEA, 1994
13981152	Radionuclides					5.90E-05	1.10E-03							IAEA, 1994
15621768	Radionuclides					5.90E-05	1.10E-03							IAEA, 1994
15757901	Radionuclides					5.90E-05	1.10E-03							IAEA, 1994
15758324	Radionuclides					5.90E-05	1.10E-03							IAEA, 1994
15758335	Radionuclides					5.90E-05	1.10E-03							IAEA, 1994
13981505	Radionuclides	Cobalt 57 (radionuclide)	0.002	0.062		2.30E-02	5.40E-02					0.00007	0.0001	IAEA, 1994
13981389	Radionuclides		0.002	0.062		2.30E-02	5.40E-02					0.00007	0.0001	IAEA, 1994
13981389	Radionuclides		0.002	0.062		2.30E-02	5.40E-02					0.00007	0.0001	IAEA, 1994
10198400	Radionuclides	Cobalt 60 (radionuclide)	0.002	0.062		2.30E-02	5.40E-02					0.00007	0.0001	IAEA, 1994
14392020	Radionuclides					1.00E-04	4.00E-02					0.00001	0.009	IAEA, 1994
14914762	Radionuclides		0.24	0.49	0.058	1.40E-02	1.10E-01					0.0079	0.05	IAEA, 1994
13967709	Radionuclides	Cesium 134 (radionuclide)	0.24	0.49	0.058	1.40E-02	1.10E-01					0.0079	0.05	IAEA, 1994
13967709	Radionuclides	Cesium 134 (radionuclide)	0.24	0.49	0.058	1.40E-02	1.10E-01					0.0079	0.05	IAEA, 1994
15726304	Radionuclides	Cesium 135 (radionuclide)	0.24	0.49	0.058	1.40E-02	1.10E-01					0.0079	0.05	IAEA, 1994
14234298	Radionuclides		0.24	0.49	0.058	1.40E-02	1.10E-01					0.0079	0.05	IAEA, 1994
10045973	Radionuclides	Cesium 137(+D) (radionuclide)	0.24	0.49	0.058	1.40E-02	1.10E-01					0.0079	0.05	IAEA, 1994
10045973	Radionuclides	Cesium 137(+D) (radionuclide)	0.24	0.49	0.058	1.70E-02	2.10E-01					0.0079	0.05	IAEA, 1994
15758299	Radionuclides		0.24	0.49	0.058	1.40E-02	1.10E-01					0.0079	0.05	IAEA, 1994
13981254	Radionuclides		0.022	0.039		8.00E-02	8.00E-01						0.009	IAEA, 1994
13967641	Radionuclides					2.50E-03	1.00E-02							
15840014	Radionuclides					2.50E-03	1.00E-02							
15840138	Radionuclides					2.50E-03	1.00E-02							
14391458	Radionuclides					2.50E-03	1.00E-02							
14683239	Radionuclides					2.00E-03	5.00E-02							IAEA, 1994
15585101	Radionuclides					2.00E-03	5.00E-02							IAEA, 1994
14391163	Radionuclides					2.00E-03	5.00E-02							IAEA, 1994
14280354	Radionuclides					2.00E-03	5.00E-02							IAEA, 1994
13981561	Radionuclides					1.50E-02	6.00E-02							
14681595	Radionuclides	Iron 55 (radionuclide)	0.026	0.073		4.00E-04	1.00E-02					0.00003	0.02	IAEA, 1994
14596124	Radionuclides		0.026	0.073		4.00E-04	1.00E-02					0.00003	0.02	IAEA, 1994
15756419	Radionuclides					7.50E-03	3.00E-02							
15756986	Radionuclides					7.50E-03	3.00E-02							
14119096	Radionuclides					3.00E-03	1.00E-02							
13982224	Radionuclides					3.00E-03	1.00E-02							
14276654	Radionuclides					2.00E-03	5.00E-02							
14041420	Radionuclides					2.00E-03	5.00E-02							
14374813	Radionuclides					1.00E-01	4.00E-01							
10028178	Radionuclides	Tritium												
13981516	Radionuclides					3.00E-01	1.00E+00					0.00047		IAEA, 1994
13982780	Radionuclides					3.00E-01	1.00E+00					0.00047		IAEA, 1994
13967652	Radionuclides					2.50E-03	1.00E-02							
18287757	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
15715089	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
14158317	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
14158328	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
15046841	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
14914024	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
10043660	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
14683160	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
14834674	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
14158340	Radionuclides									
15510733	Radionuclides									
15757876	Radionuclides									
15757876	Radionuclides									
13981152	Radionuclides									
15621768	Radionuclides									
15757901	Radionuclides									
15758324	Radionuclides									
15758335	Radionuclides									
13981505	Radionuclides	Cobalt 57 (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
13981389	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
13981389	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
10198400	Radionuclides	Cobalt 60 (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
14392020	Radionuclides									
14914762	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13967709	Radionuclides	Cesium 134 (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13967709	Radionuclides	Cesium 134 (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
15726304	Radionuclides	Cesium 135 (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14234298	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
10045973	Radionuclides	Cesium 137(+D) (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
10045973	Radionuclides	Cesium 137(+D) (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
15758299	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13981254	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
13967641	Radionuclides									
15840014	Radionuclides									
15840138	Radionuclides									
14391458	Radionuclides									
14683239	Radionuclides									
15585101	Radionuclides									
14391163	Radionuclides									
14280354	Radionuclides									
13981561	Radionuclides									
14681595	Radionuclides	Iron 55 (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
14596124	Radionuclides			IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
15756419	Radionuclides									
15756986	Radionuclides									
14119096	Radionuclides									
13982224	Radionuclides									
14276654	Radionuclides									
14041420	Radionuclides									
14374813	Radionuclides									
10028178	Radionuclides	Tritium								
13981516	Radionuclides			IAEA, 1994						
13982780	Radionuclides			IAEA, 1994						
13967652	Radionuclides									
18287757	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
15715089	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14158317	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14158328	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
15046841	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14914024	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
10043660	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14683160	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14834674	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
14914273	Radionuclides			I		D	3.65E-02		
14834685	Radionuclides			I		D	2.75E-01		
14885780	Radionuclides			In		D	6.92E-02		
13981550	Radionuclides			In		D	8.32E-04		
13981550	Radionuclides			In		D	4.95E+01		
14191710	Radionuclides			In		D	1.68E+18		
14191710	Radionuclides			In		D	1.82E-01		
14981910	Radionuclides			Ir		D	1.18E+01		
14158351	Radionuclides			Ir		D	8.00E-01		
13966002	Radionuclides	Potassium 40 (radionuclide)		K		D	4.67E+11		
14378213	Radionuclides			K		D	5.17E-01		
13965985	Radionuclides			Kr		D	7.63E-02		
13983272	Radionuclides			Kr		D	3.91E+03		
13983272	Radionuclides			Kr		D	1.87E-01		
14809688	Radionuclides			Kr		D	5.30E-02		
14995610	Radionuclides			Kr		D	1.18E-01		
16316033	Radionuclides			Kr		D	2.19E-03		
15741136	Radionuclides			Kr		D	3.74E-04		
13981287	Radionuclides			La		D	1.68E+00		
14265759	Radionuclides			Lu		D	6.71E+00		
14092990	Radionuclides			Mn		D	5.59E+00		
13966319	Radionuclides	Manganese 54 (radionuclide)		Mn		D	3.13E+02		
14681528	Radionuclides			Mn		D	1.08E-01		
14119154	Radionuclides			Mo		D	2.75E+00		
13966320	Radionuclides	Sodium 22 (radionuclide)		Na		D	9.49E+02		
13982042	Radionuclides			Na		D	6.25E-01		
7440031	Radionuclides			Nb		D	5.33E+03		
14681631	Radionuclides			Nb		D	7.41E+06		
13967765	Radionuclides			Nb		D	3.51E+01		
13967765	Radionuclides			Nb		D	3.61E+00		
18496043	Radionuclides			Nb		D	5.01E-02		
18496043	Radionuclides			Nb		D	6.94E-04		
14269740	Radionuclides			Nd		D	1.10E+01		
15749812	Radionuclides			Nd		D	7.21E-02		
14336700	Radionuclides	Nickel 59 (radionuclide)		Ni		D	2.74E+07		
13981378	Radionuclides	Nickel 63 (radionuclide)		Ni		D	3.65E+04		
14833499	Radionuclides			Ni		D	1.05E-01		
15700364	Radionuclides			Np		D	4.20E+07		
13994202	Radionuclides			Np		D	7.81E+08		
13994202	Radionuclides			Np		D	7.81E+08		
15766253	Radionuclides			Np		D	2.12E+00		
13968597	Radionuclides			Np		D	2.36E+00		
15690843	Radionuclides			Np		D	4.51E-02		
15690843	Radionuclides			Np		D	5.14E-03		
15766504	Radionuclides			Os		D	9.36E+01		
14119245	Radionuclides			Os		D	1.54E+01		
14119245	Radionuclides			Os		D	5.42E-01		
16057775	Radionuclides			Os		D	1.25E+00		
14596373	Radionuclides			P		D	1.43E+01		
15749663	Radionuclides			P		D	2.54E+01		
14331852	Radionuclides			Pa		D	1.36E+07		
13981141	Radionuclides			Pa		D	2.70E+01		
15100284	Radionuclides			Pa		D	2.79E-01		
15100284	Radionuclides			Pa		D	8.13E-04		

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
14914273	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
14834685	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	1.00E-02		0.01	3		0.43	0.04	40
14885780	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
13981550	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
13981550	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
14191710	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
14191710	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
14981910	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								
14158351	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								
13966002	Radionuclides	Potassium 40 (radionuclide)		Yes	Yes	Yes	NO	2.00E-02				1			0.02	
14378213	Radionuclides			Yes	Yes	Yes	NO	2.00E-02				1			0.02	
13965985	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
13983272	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
13983272	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
14809688	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
14995610	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
16316033	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
15741136	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
13981287	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	1.00E-01		0.1	0.009				30
14265759	Radionuclides			Yes	Yes	Yes	NO	4.50E-03								
14092990	Radionuclides			Yes	Yes	Yes	NO	5.00E-04	5.00E-02	6.40E-02	0.05	0.06			0.0005	400
13966319	Radionuclides	Manganese 54 (radionuclide)		Yes	Yes	Yes	NO	5.00E-04	5.00E-02	6.40E-02	0.05	0.06			0.0005	400
14681528	Radionuclides			Yes	Yes	Yes	NO	5.00E-04	5.00E-02	6.40E-02	0.05	0.06			0.0005	400
14119154	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E+00		1	0.9		0.009	0.001	10
13966320	Radionuclides	Sodium 22 (radionuclide)		Yes	Yes	Yes	NO	8.00E-02				6			0.08	20
13982042	Radionuclides			Yes	Yes	Yes	NO	8.00E-02				6			0.08	20
7440031	Radionuclides			Yes	Yes	Yes	NO	3.00E-07	3.00E-04		0.0003	0.001	0.00006	6.40E-06	3.00E-07	300
14681631	Radionuclides			Yes	Yes	Yes	NO	3.00E-07	3.00E-04		0.0003	0.001	0.00006	6.40E-06	3.00E-07	300
13967765	Radionuclides			Yes	Yes	Yes	NO	3.00E-07	3.00E-04		0.0003	0.001	0.00006	6.40E-06	3.00E-07	300
13967765	Radionuclides			Yes	Yes	Yes	NO	3.00E-07	3.00E-04		0.0003	0.001	0.00006	6.40E-06	3.00E-07	300
18496043	Radionuclides			Yes	Yes	Yes	NO	3.00E-07	3.00E-04		0.0003	0.001	0.00006	6.40E-06	3.00E-07	300
18496043	Radionuclides			Yes	Yes	Yes	NO	3.00E-07	3.00E-04		0.0003	0.001	0.00006	6.40E-06	3.00E-07	300
14269740	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	9.00E-02		0.09	0.0003				100
15749812	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	9.00E-02		0.09	0.0003				100
14336700	Radionuclides	Nickel 59 (radionuclide)		Yes	Yes	Yes	NO	5.00E-03							0.005	100
13981378	Radionuclides	Nickel 63 (radionuclide)		Yes	Yes	Yes	NO	5.00E-03							0.005	100
14833499	Radionuclides			Yes	Yes	Yes	NO	5.00E-03							0.005	100
15700364	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-03	1.00E+00				0.0001	0.001	30
13994202	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-03	1.00E+00				0.0001	0.001	30
13994202	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-03	1.00E+00				0.0001	0.001	30
15766253	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-03	1.00E+00				0.0001	0.001	30
13968597	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-03	1.00E+00				0.0001	0.001	30
15690843	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-03	1.00E+00				0.0001	0.001	30
15690843	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-03	1.00E+00				0.0001	0.001	30
15766504	Radionuclides			Yes	Yes	Yes	NO	4.00E-01								
14119245	Radionuclides			Yes	Yes	Yes	NO	4.00E-01								
14119245	Radionuclides			Yes	Yes	Yes	NO	4.00E-01								
16057775	Radionuclides			Yes	Yes	Yes	NO	4.00E-01								
14596373	Radionuclides			Yes	Yes	Yes	NO	5.00E-02							0.05	50000
15749663	Radionuclides			Yes	Yes	Yes	NO	5.00E-02							0.05	50000
14331852	Radionuclides			Yes	Yes	Yes	NO	1.00E-05								10
13981141	Radionuclides			Yes	Yes	Yes	NO	1.00E-05								10
15100284	Radionuclides			Yes	Yes	Yes	NO	1.00E-05								10
15100284	Radionuclides			Yes	Yes	Yes	NO	1.00E-05								10

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
14914273	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
14834685	Radionuclides		0.0033	0.03	0.49	2.00E-03	3.40E-03					0.01	0.04	IAEA, 1994
14885780	Radionuclides					3.00E-03	1.00E-02							
13981550	Radionuclides					3.00E-03	1.00E-02							
13981550	Radionuclides					3.00E-03	1.00E-02							
14191710	Radionuclides					3.00E-03	1.00E-02							
14191710	Radionuclides					3.00E-03	1.00E-02							
14981910	Radionuclides					3.00E-02	2.00E-01							
14158351	Radionuclides					3.00E-02	2.00E-01							
13966002	Radionuclides	Potassium 40 (radionuclide)				3.00E-01	3.00E+00					0.0072	0.02	IAEA, 1994
14378213	Radionuclides					3.00E-01	3.00E+00					0.0072	0.02	IAEA, 1994
13965985	Radionuclides					0.00E+00	0.00E+00							
13983272	Radionuclides					0.00E+00	0.00E+00							
13983272	Radionuclides					0.00E+00	0.00E+00							
14809688	Radionuclides					0.00E+00	0.00E+00							
14995610	Radionuclides					0.00E+00	0.00E+00							
16316033	Radionuclides					0.00E+00	0.00E+00							
15741136	Radionuclides					0.00E+00	0.00E+00							
13981287	Radionuclides					4.00E-04	5.20E-03							IAEA, 1994
14265759	Radionuclides					2.50E-03	1.00E-02							
14092990	Radionuclides		0.0036	0.0059		6.90E-02	6.80E-01					0.00003	0.0005	IAEA, 1994
13966319	Radionuclides	Manganese 54 (radionuclide)	0.0036	0.0059		6.90E-02	6.80E-01					0.00003	0.0005	IAEA, 1994
14681528	Radionuclides		0.0036	0.0059		6.90E-02	6.80E-01					0.00003	0.0005	IAEA, 1994
14119154	Radionuclides					8.00E-02	4.00E-01					0.0017	0.001	IAEA, 1994
13966320	Radionuclides	Sodium 22 (radionuclide)				3.00E-02	2.00E-01					0.016	0.08	IAEA, 1994
13982042	Radionuclides					3.00E-02	2.00E-01					0.016	0.08	IAEA, 1994
7440031	Radionuclides		0.0002	0.0003		4.30E-03	1.00E-01					4.10E-07	3.00E-07	IAEA, 1994
14681631	Radionuclides		0.0002	0.0003		4.30E-03	1.00E-01					4.10E-07	3.00E-07	IAEA, 1994
13967765	Radionuclides		0.0002	0.0003		4.30E-03	1.00E-01					4.10E-07	3.00E-07	IAEA, 1994
13967765	Radionuclides		0.0002	0.0003		4.30E-03	1.00E-01					4.10E-07	3.00E-07	IAEA, 1994
18496043	Radionuclides		0.0002	0.0003		4.30E-03	1.00E-01					4.10E-07	3.00E-07	IAEA, 1994
18496043	Radionuclides		0.0002	0.0003		4.30E-03	1.00E-01					4.10E-07	3.00E-07	IAEA, 1994
14269740	Radionuclides					2.00E-03	2.00E-02							IAEA, 1994
15749812	Radionuclides					2.00E-03	2.00E-02							IAEA, 1994
14336700	Radionuclides	Nickel 59 (radionuclide)				5.00E-02	1.80E-01					0.016	0.005	IAEA, 1994
13981378	Radionuclides	Nickel 63 (radionuclide)				5.00E-02	1.80E-01					0.016	0.005	IAEA, 1994
14833499	Radionuclides					5.00E-02	1.80E-01					0.016	0.005	IAEA, 1994
15700364	Radionuclides					2.90E-03	6.90E-02					5.00E-06	0.001	IAEA, 1994
13994202	Radionuclides					2.90E-03	6.90E-02					5.00E-06	0.001	IAEA, 1994
13994202	Radionuclides					3.50E-03	7.20E-02					5.00E-06	0.001	IAEA, 1994
15766253	Radionuclides					2.90E-03	6.90E-02					5.00E-06	0.001	IAEA, 1994
13968597	Radionuclides					2.90E-03	6.90E-02					5.00E-06	0.001	IAEA, 1994
15690843	Radionuclides					2.90E-03	6.90E-02					5.00E-06	0.001	IAEA, 1994
15690843	Radionuclides					2.90E-03	6.90E-02					5.00E-06	0.001	IAEA, 1994
15766504	Radionuclides					3.80E-03	1.50E-02							
14119245	Radionuclides					3.80E-03	1.50E-02							
14119245	Radionuclides					3.80E-03	1.50E-02							
16057775	Radionuclides					3.80E-03	1.50E-02							
14596373	Radionuclides					1.00E+00	3.00E+00					0.016	0.05	IAEA, 1994
15749663	Radionuclides					1.00E+00	3.00E+00					0.016	0.05	IAEA, 1994
14331852	Radionuclides					6.30E-04	2.50E-03							IAEA, 1994
13981141	Radionuclides					6.30E-04	2.50E-03							IAEA, 1994
15100284	Radionuclides					6.30E-04	2.50E-03							IAEA, 1994
15100284	Radionuclides					6.30E-04	2.50E-03							IAEA, 1994

Information current as of October 27, 2000.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
14914273	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14834685	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14885780	Radionuclides									
13981550	Radionuclides									
13981550	Radionuclides									
14191710	Radionuclides									
14191710	Radionuclides									
14981910	Radionuclides									
14158351	Radionuclides									
13966002	Radionuclides	Potassium 40 (radionuclide)			IAEA, 1994					
14378213	Radionuclides				IAEA, 1994					
13965985	Radionuclides									
13983272	Radionuclides									
13983272	Radionuclides									
14809688	Radionuclides									
14995610	Radionuclides									
16316033	Radionuclides									
15741136	Radionuclides									
13981287	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14265759	Radionuclides									
14092990	Radionuclides			IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
13966319	Radionuclides	Manganese 54 (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
14681528	Radionuclides			IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
14119154	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994			
13966320	Radionuclides	Sodium 22 (radionuclide)			IAEA, 1994					
13982042	Radionuclides				IAEA, 1994					
7440031	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	
14681631	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	
13967765	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	
13967765	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	
18496043	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	
18496043	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	
14269740	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
15749812	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14336700	Radionuclides	Nickel 59 (radionuclide)								
13981378	Radionuclides	Nickel 63 (radionuclide)								
14833499	Radionuclides									
15700364	Radionuclides						IAEA, 1994			
13994202	Radionuclides						IAEA, 1994			
13994202	Radionuclides						IAEA, 1994			
15766253	Radionuclides						IAEA, 1994			
13968597	Radionuclides						IAEA, 1994			
15690843	Radionuclides						IAEA, 1994			
15690843	Radionuclides						IAEA, 1994			
15766504	Radionuclides									
14119245	Radionuclides									
14119245	Radionuclides									
16057775	Radionuclides									
14596373	Radionuclides									
15749663	Radionuclides									
14331852	Radionuclides									
13981141	Radionuclides									
15100284	Radionuclides									
15100284	Radionuclides									

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Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
14687253	Radionuclides			Pb		D	2.17E+00		
14119303	Radionuclides			Pb		D	1.35E-01		
14255040	Radionuclides	Lead 210(+D) (radionuclide)		Pb		D	8.14E+03		
14255040	Radionuclides	Lead 210(+D) (radionuclide)		Pb		D	8.14E+03		
15816770	Radionuclides			Pb		D	2.51E-02		
15092941	Radionuclides			Pb		D	4.42E-01		
15067284	Radionuclides			Pb		D	1.86E-02		
15690694	Radionuclides			Pd		D	3.64E+00		
15749549	Radionuclides			Pd		D	3.53E-01		
14967681	Radionuclides			Pd		D	1.70E+01		
17637999	Radionuclides			Pd		D	2.37E+09		
14981647	Radionuclides			Pd		D	5.63E-01		
14380757	Radionuclides			Pm		D	9.56E+02		
14683193	Radionuclides			Pm		D	5.37E+00		
14683193	Radionuclides			Pm		D	4.13E+01		
15765318	Radionuclides			Pm		D	2.21E+00		
13981527	Radionuclides			Po		D	1.38E+02		
15389341	Radionuclides			Po		D	3.45E-12		
15756577	Radionuclides			Po		D	4.86E-11		
15735678	Radionuclides			Po		D	1.90E-09		
15706522	Radionuclides			Po		D	2.06E-08		
15756588	Radionuclides			Po		D	1.69E-06		
15422249	Radionuclides			Po		D	2.12E-03		
14191641	Radionuclides			Pr		D	7.96E-01		
14981794	Radionuclides			Pr		D	1.36E+01		
14119052	Radionuclides			Pr		D	1.20E-02		
14119052	Radionuclides			Pr		D	5.00E-03		
15706362	Radionuclides			Pt		D	2.71E+00		
15735703	Radionuclides			Pt		D	1.83E+04		
15735703	Radionuclides			Pt		D	4.33E+00		
15735747	Radionuclides			Pt		D	7.63E-01		
15735747	Radionuclides			Pt		D	6.56E-02		
15411924	Radionuclides	Plutonium 236 (radionuclide)		Pu		D	1.04E+03		
13981163	Radionuclides	Plutonium 238 (radionuclide)		Pu		D	3.20E+04		
15117483	Radionuclides	Plutonium 239 (radionuclide)		Pu		D	8.80E+06		
14119336	Radionuclides	Plutonium 240 (radionuclide)		Pu		D	2.40E+06		
14119325	Radionuclides	Plutonium 241(+D) (radionuclide)		Pu		D	5.26E+03		
14119325	Radionuclides	Plutonium 241(+D) (radionuclide)		Pu		D	5.26E+03		
13982100	Radionuclides	Plutonium 242 (radionuclide)		Pu		D	1.37E+08		
15706373	Radionuclides	Plutonium 243 (radionuclide)		Pu		D	2.07E-01		
14119347	Radionuclides	Plutonium 244(+D) (radionuclide)		Pu		D	3.01E+10		
14119347	Radionuclides	Plutonium 244(+D) (radionuclide)		Pu		D	3.01E+10		
15623457	Radionuclides			Ra		D	1.14E+01		
13233324	Radionuclides			Ra		D	3.62E+00		
13981538	Radionuclides			Ra		D	1.48E+01		
13982633	Radionuclides	Radium 226(+D) (radionuclide)		Ra		D	5.84E+05		
13982633	Radionuclides	Radium 226(+D) (radionuclide)		Ra		D	5.84E+05		
15262201	Radionuclides	Radium 228(+D) (Radionuclide)		Ra		D	2.10E+03		
15262201	Radionuclides	Radium 228(+D) (Radionuclide)		Ra		D	2.10E+03		
14391630	Radionuclides			Rb		D	8.68E-04		
14932537	Radionuclides			Rb		D	1.87E+01		
13982133	Radionuclides			Rb		D	1.73E+13		
14928360	Radionuclides			Rb		D	1.24E-02		
14191652	Radionuclides			Rb		D	1.07E-02		

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Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
14687253	Radionuclides			Yes	Yes	Yes	NO	4.00E-04	4.00E-04	7.20E-02					0.0004	300
14119303	Radionuclides			Yes	Yes	Yes	NO	4.00E-04	4.00E-04	7.20E-02					0.0004	300
14255040	Radionuclides	Lead 210(+D) (radionuclide)		Yes	Yes	Yes	NO	4.00E-04	4.00E-04	7.20E-02					0.0004	300
14255040	Radionuclides	Lead 210(+D) (radionuclide)		Yes	Yes	Yes	NO	5.80E-03	4.00E-04	7.20E-02					0.0004	300
15816770	Radionuclides			Yes	Yes	Yes	NO	4.00E-04	4.00E-04	7.20E-02					0.0004	300
15092941	Radionuclides			Yes	Yes	Yes	NO	4.00E-04	4.00E-04	7.20E-02					0.0004	300
15067284	Radionuclides			Yes	Yes	Yes	NO	4.00E-04	4.00E-04	7.20E-02					0.0004	300
15690694	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
15749549	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
14967681	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
17637999	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
14981647	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
14380757	Radionuclides			Yes	Yes	Yes	NO	5.00E-03	2.00E-03		0.002	0.02				30
14683193	Radionuclides			Yes	Yes	Yes	NO	5.00E-03	2.00E-03		0.002	0.02				30
14683193	Radionuclides			Yes	Yes	Yes	NO	5.00E-03	2.00E-03		0.002	0.02				30
15765318	Radionuclides			Yes	Yes	Yes	NO	5.00E-03	2.00E-03		0.002	0.02				30
13981527	Radionuclides			Yes	Yes	Yes	NO	5.00E-03							0.005	50
15389341	Radionuclides			Yes	Yes	Yes	NO	5.00E-03							0.005	50
15756577	Radionuclides			Yes	Yes	Yes	NO	5.00E-03							0.005	50
15735678	Radionuclides			Yes	Yes	Yes	NO	5.00E-03							0.005	50
15706522	Radionuclides			Yes	Yes	Yes	NO	5.00E-03							0.005	50
15756588	Radionuclides			Yes	Yes	Yes	NO	5.00E-03							0.005	50
15422249	Radionuclides			Yes	Yes	Yes	NO	5.00E-03							0.005	50
14191641	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	3.00E-02		0.03	0.005				100
14981794	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	3.00E-02		0.03	0.005				100
14119052	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	3.00E-02		0.03	0.005				100
14119052	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	3.00E-02		0.03	0.005				100
15706362	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
15735703	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
15735703	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
15735747	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
15735747	Radionuclides			Yes	Yes	Yes	NO	4.00E-03								
15411924	Radionuclides	Plutonium 236 (radionuclide)		Yes	Yes	Yes	NO	1.00E-05	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
13981163	Radionuclides	Plutonium 238 (radionuclide)		Yes	Yes	Yes	NO	1.00E-05	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
15117483	Radionuclides	Plutonium 239 (radionuclide)		Yes	Yes	Yes	NO	1.00E-05	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
14119336	Radionuclides	Plutonium 240 (radionuclide)		Yes	Yes	Yes	NO	1.00E-05	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
14119325	Radionuclides	Plutonium 241(+D) (radionuclide)		Yes	Yes	Yes	NO	1.00E-05	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
14119325	Radionuclides	Plutonium 241(+D) (radionuclide)		Yes	Yes	Yes	NO	3.50E-04	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
13982100	Radionuclides	Plutonium 242 (radionuclide)		Yes	Yes	Yes	NO	1.00E-05	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
15706373	Radionuclides	Plutonium 243 (radionuclide)		Yes	Yes	Yes	NO	1.00E-05	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
14119347	Radionuclides	Plutonium 244(+D) (radionuclide)		Yes	Yes	Yes	NO	1.00E-05	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
14119347	Radionuclides	Plutonium 244(+D) (radionuclide)		Yes	Yes	Yes	NO	1.30E-03	3.00E-03	2.50E+00	0.003	0.0005		9.40E-06	0.00001	30
15623457	Radionuclides			Yes	Yes	Yes	NO	9.00E-04							0.0009	50
13233324	Radionuclides			Yes	Yes	Yes	NO	9.00E-04							0.0009	50
13981538	Radionuclides			Yes	Yes	Yes	NO	9.00E-04							0.0009	50
13982633	Radionuclides	Radium 226(+D) (radionuclide)		Yes	Yes	Yes	NO	9.00E-04							0.0009	50
13982633	Radionuclides	Radium 226(+D) (radionuclide)		Yes	Yes	Yes	NO	1.20E-02							0.0009	50
15262201	Radionuclides	Radium 228(+D) (Radionuclide)		Yes	Yes	Yes	NO	9.00E-04							0.0009	50
15262201	Radionuclides	Radium 228(+D) (Radionuclide)		Yes	Yes	Yes	NO	9.30E-04							0.0009	50
14391630	Radionuclides			Yes	Yes	Yes	NO	1.00E-02							0.01	2000
14932537	Radionuclides			Yes	Yes	Yes	NO	1.00E-02							0.01	2000
13982133	Radionuclides			Yes	Yes	Yes	NO	1.00E-02							0.01	2000
14928360	Radionuclides			Yes	Yes	Yes	NO	1.00E-02							0.01	2000
14191652	Radionuclides			Yes	Yes	Yes	NO	1.00E-02							0.01	2000

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Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
14687253	Radionuclides					7.60E-04	9.00E-02						0.0004	IAEA, 1994
14119303	Radionuclides					7.60E-04	9.00E-02						0.0004	IAEA, 1994
14255040	Radionuclides	Lead 210(+D) (radionuclide)				7.60E-04	9.00E-02						0.0004	IAEA, 1994
14255040	Radionuclides	Lead 210(+D) (radionuclide)				9.60E-03	2.20E-01						0.0004	IAEA, 1994
15816770	Radionuclides					7.60E-04	9.00E-02						0.0004	IAEA, 1994
15092941	Radionuclides					7.60E-04	9.00E-02						0.0004	IAEA, 1994
15067284	Radionuclides					7.60E-04	9.00E-02						0.0004	IAEA, 1994
15690694	Radionuclides					3.80E-02	1.50E-01							
15749549	Radionuclides					3.80E-02	1.50E-01							
14967681	Radionuclides					3.80E-02	1.50E-01							
17637999	Radionuclides					3.80E-02	1.50E-01							
14981647	Radionuclides					3.80E-02	1.50E-01							
14380757	Radionuclides					2.50E-03	1.00E-02							IAEA, 1994
14683193	Radionuclides					2.50E-03	1.00E-02							IAEA, 1994
14683193	Radionuclides					2.50E-03	1.00E-02							IAEA, 1994
15765318	Radionuclides					2.50E-03	1.00E-02							IAEA, 1994
13981527	Radionuclides					9.10E-05	9.00E-02					0.00034	0.005	IAEA, 1994
15389341	Radionuclides					9.10E-05	9.00E-02					0.00034	0.005	IAEA, 1994
15756577	Radionuclides					9.10E-05	9.00E-02					0.00034	0.005	IAEA, 1994
15735678	Radionuclides					9.10E-05	9.00E-02					0.00034	0.005	IAEA, 1994
15706522	Radionuclides					9.10E-05	9.00E-02					0.00034	0.005	IAEA, 1994
15756588	Radionuclides					9.10E-05	9.00E-02					0.00034	0.005	IAEA, 1994
15422249	Radionuclides					9.10E-05	9.00E-02					0.00034	0.005	IAEA, 1994
14191641	Radionuclides					2.00E-03	2.00E-02							IAEA, 1994
14981794	Radionuclides					2.00E-03	2.00E-02							IAEA, 1994
14119052	Radionuclides					2.00E-03	2.00E-02							IAEA, 1994
14119052	Radionuclides					2.00E-03	2.00E-02							IAEA, 1994
15706362	Radionuclides					2.40E-02	9.50E-02							
15735703	Radionuclides					2.40E-02	9.50E-02							
15735703	Radionuclides					2.40E-02	9.50E-02							
15735747	Radionuclides					2.40E-02	9.50E-02							
15735747	Radionuclides					2.40E-02	9.50E-02							
15411924	Radionuclides	Plutonium 236 (radionuclide)	0.00008	0.0031	9.40E-06	4.90E-06	3.40E-04					1.10E-06	0.00001	IAEA, 1994
13981163	Radionuclides	Plutonium 238 (radionuclide)	0.00008	0.0031	9.40E-06	4.90E-06	3.40E-04					1.10E-06	0.00001	IAEA, 1994
15117483	Radionuclides	Plutonium 239 (radionuclide)	0.00008	0.0031	9.40E-06	4.90E-06	3.40E-04					1.10E-06	0.00001	IAEA, 1994
14119336	Radionuclides	Plutonium 240 (radionuclide)	0.00008	0.0031	9.40E-06	4.90E-06	3.40E-04					1.10E-06	0.00001	IAEA, 1994
14119325	Radionuclides	Plutonium 241(+D) (radionuclide)	0.00008	0.0031	9.40E-06	4.90E-06	3.40E-04					1.10E-06	0.00001	IAEA, 1994
14119325	Radionuclides	Plutonium 241(+D) (radionuclide)	0.00008	0.0031	9.40E-06	6.60E-04	2.50E-02					1.10E-06	0.00001	IAEA, 1994
13982100	Radionuclides	Plutonium 242 (radionuclide)	0.00008	0.0031	9.40E-06	4.90E-06	3.40E-04					1.10E-06	0.00001	IAEA, 1994
15706373	Radionuclides	Plutonium 243 (radionuclide)	0.00008	0.0031	9.40E-06	4.90E-06	3.40E-04					1.10E-06	0.00001	IAEA, 1994
14119347	Radionuclides	Plutonium 244(+D) (radionuclide)	0.00008	0.0031	9.40E-06	4.90E-06	3.40E-04					1.10E-06	0.00001	IAEA, 1994
14119347	Radionuclides	Plutonium 244(+D) (radionuclide)	0.00008	0.0031	9.40E-06	3.50E-03	9.20E-02					0.0013	0.0009	IAEA, 1994
15623457	Radionuclides					9.30E-03	8.00E-02					0.0013	0.0009	IAEA, 1994
13233324	Radionuclides					9.30E-03	8.00E-02					0.0013	0.0009	IAEA, 1994
13981538	Radionuclides					9.30E-03	8.00E-02					0.0013	0.0009	IAEA, 1994
13982633	Radionuclides	Radium 226(+D) (radionuclide)				9.30E-03	8.00E-02					0.0013	0.0009	IAEA, 1994
13982633	Radionuclides	Radium 226(+D) (radionuclide)				1.90E-02	3.90E-01					0.0013	0.0009	IAEA, 1994
15262201	Radionuclides	Radium 228(+D) (Radionuclide)				9.30E-03	8.00E-02					0.0013	0.0009	IAEA, 1994
15262201	Radionuclides	Radium 228(+D) (Radionuclide)				1.00E-02	8.40E-02					0.0013	0.0009	IAEA, 1994
14391630	Radionuclides			0.69		9.00E-02	9.00E-01					0.012	0.01	IAEA, 1994
14932537	Radionuclides			0.69		9.00E-02	9.00E-01					0.012	0.01	IAEA, 1994
13982133	Radionuclides			0.69		9.00E-02	9.00E-01					0.012	0.01	IAEA, 1994
14928360	Radionuclides			0.69		9.00E-02	9.00E-01					0.012	0.01	IAEA, 1994
14191652	Radionuclides			0.69		9.00E-02	9.00E-01					0.012	0.01	IAEA, 1994

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
14687253	Radionuclides									
14119303	Radionuclides									
14255040	Radionuclides	Lead 210(+D) (radionuclide)								
14255040	Radionuclides	Lead 210(+D) (radionuclide)								
15816770	Radionuclides									
15092941	Radionuclides									
15067284	Radionuclides									
15690694	Radionuclides									
15749549	Radionuclides									
14967681	Radionuclides									
17637999	Radionuclides									
14981647	Radionuclides									
14380757	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14683193	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14683193	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
15765318	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
13981527	Radionuclides									
15389341	Radionuclides									
15756577	Radionuclides									
15735678	Radionuclides									
15706522	Radionuclides									
15756588	Radionuclides									
15422249	Radionuclides									
14191641	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14981794	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14119052	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14119052	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
15706362	Radionuclides									
15735703	Radionuclides									
15735703	Radionuclides									
15735747	Radionuclides									
15735747	Radionuclides									
15411924	Radionuclides	Plutonium 236 (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13981163	Radionuclides	Plutonium 238 (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
15117483	Radionuclides	Plutonium 239 (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14119336	Radionuclides	Plutonium 240 (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14119325	Radionuclides	Plutonium 241(+D) (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14119325	Radionuclides	Plutonium 241(+D) (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13982100	Radionuclides	Plutonium 242 (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
15706373	Radionuclides	Plutonium 243 (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14119347	Radionuclides	Plutonium 244(+D) (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14119347	Radionuclides	Plutonium 244(+D) (radionuclide)		IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
15623457	Radionuclides									
13233324	Radionuclides									
13981538	Radionuclides									
13982633	Radionuclides	Radium 226(+D) (radionuclide)								
13982633	Radionuclides	Radium 226(+D) (radionuclide)								
15262201	Radionuclides	Radium 228(+D) (Radionuclide)								
15262201	Radionuclides	Radium 228(+D) (Radionuclide)								
14391630	Radionuclides								IAEA, 1994	
14932537	Radionuclides								IAEA, 1994	
13982133	Radionuclides								IAEA, 1994	
14928360	Radionuclides								IAEA, 1994	
14191652	Radionuclides								IAEA, 1994	

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
7440166	Radionuclides			Rh		D	3.90E-02		
14913894	Radionuclides			Rh		D	1.48E+00		
14913894	Radionuclides			Rh		D	5.21E-04		
14234345	Radionuclides			Rh		D	3.46E-04		
14835020	Radionuclides			Rn		D	4.58E-05		
22481487	Radionuclides			Rn		D	6.44E-04		
14859677	Radionuclides	Radon 222(+D) (radionuclide)		Rn		D	3.82E+00		
13968531	Radionuclides			Ru		D	3.94E+01		
14331954	Radionuclides			Ru		D	1.85E-01		
13967481	Radionuclides			Ru		D	3.68E+02		
13967481	Radionuclides			Ru		D	3.68E+02		
15758357	Radionuclides			Ru		D	2.90E+00		
15117530	Radionuclides			S		D	8.74E+01		
14374799	Radionuclides			Sb		D	2.70E+00		
14683104	Radionuclides			Sb		D	6.02E+01		
14234356	Radionuclides	Antimony 125(+D) (radionuclide)		Sb		D	1.01E+03		
14234356	Radionuclides	Antimony 125(+D) (radionuclide)		Sb		D	1.01E+03		
15756328	Radionuclides			Sb		D	1.24E+01		
15756328	Radionuclides			Sb		D	1.32E-02		
13968508	Radionuclides			Sb		D	3.85E+00		
14331885	Radionuclides			Sb		D	1.83E-01		
13967630	Radionuclides			Sc		D	8.38E+01		
14391969	Radionuclides			Sc		D	3.42E+00		
14391867	Radionuclides			Sc		D	1.82E+00		
14265715	Radionuclides			Se		D	1.20E+02		
14276494	Radionuclides			Si		D	1.09E-01		
14392337	Radionuclides			Sm		D	3.87E+13		
15715943	Radionuclides			Sm		D	3.29E+04		
15766004	Radionuclides			Sm		D	1.95E+00		
13966068	Radionuclides			Sn		D	1.15E+02		
14683068	Radionuclides			Sn		D	1.13E+00		
14683068	Radionuclides			Sn		D	2.03E+04		
14683080	Radionuclides			Sn		D	9.64E+00		
15832505	Radionuclides			Sn		D	3.65E+07		
14809508	Radionuclides			Sr		D	2.50E+01		
13967732	Radionuclides			Sr		D	6.48E+01		
13967732	Radionuclides			Sr		D	4.70E-02		
14158271	Radionuclides	Strontium 89 (radionuclide)		Sr		D	5.06E+01		
10098972	Radionuclides	Strontium 90(+D) (radionuclide)		Sr		D	1.04E+04		
10098972	Radionuclides	Strontium 90(+D) (radionuclide)		Sr		D	1.04E+04		
14331910	Radionuclides			Sr		D	3.96E-01		
14928291	Radionuclides			Sr		D	1.13E-01		
13982008	Radionuclides			Ta		D	1.15E+02		
15759554	Radionuclides			Tb		D	5.48E+04		
13981298	Radionuclides			Tb		D	7.23E+01		
14809564	Radionuclides			Tc		D	8.33E-01		
14809564	Radionuclides			Tc		D	6.10E+01		
14808447	Radionuclides			Tc		D	4.28E+00		
14808447	Radionuclides			Tc		D	3.58E-02		
15759350	Radionuclides			Tc		D	9.49E+08		
15759350	Radionuclides			Tc		D	8.90E+01		
14133767	Radionuclides			Tc		D	7.77E+07		
14133767	Radionuclides			Tc		D	2.51E-01		
14390739	Radionuclides			Te		D	5.80E+01		

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
7440166	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								10
14913894	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								10
14913894	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								10
14234345	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								10
14835020	Radionuclides			Yes	Yes	Yes	NO									
22481487	Radionuclides			Yes	Yes	Yes	NO									
14859677	Radionuclides	Radon 222(+D) (radionuclide)		Yes	Yes	Yes	NO	1.10E-02								
13968531	Radionuclides			Yes	Yes	Yes	NO	5.10E-02	8.00E+00		8	0.005			0.05	10
14331954	Radionuclides			Yes	Yes	Yes	NO	5.10E-02	8.00E+00		8	0.005			0.05	10
13967481	Radionuclides			Yes	Yes	Yes	NO	5.10E-02	8.00E+00		8	0.005			0.05	10
13967481	Radionuclides			Yes	Yes	Yes	NO	5.30E-02	8.00E+00		8	0.005			0.05	10
15758357	Radionuclides			Yes	Yes	Yes	NO	5.10E-02	8.00E+00		8	0.005			0.05	10
15117530	Radionuclides			Yes	Yes	Yes	NO	2.00E-01								800
14374799	Radionuclides			Yes	Yes	Yes	NO	4.00E-05	4.00E-05	1.00E+00					0.00004	100
14683104	Radionuclides			Yes	Yes	Yes	NO	4.00E-05	4.00E-05	1.00E+00					0.00004	100
14234356	Radionuclides	Antimony 125(+D) (radionuclide)		Yes	Yes	Yes	NO	4.00E-05	4.00E-05	1.00E+00					0.00004	100
14234356	Radionuclides	Antimony 125(+D) (radionuclide)		Yes	Yes	Yes	NO	7.00E-03	4.00E-05	1.00E+00					0.00004	100
15756328	Radionuclides			Yes	Yes	Yes	NO	4.00E-05	4.00E-05	1.00E+00					0.00004	100
15756328	Radionuclides			Yes	Yes	Yes	NO	4.00E-05	4.00E-05	1.00E+00					0.00004	100
13968508	Radionuclides			Yes	Yes	Yes	NO	4.00E-05	4.00E-05	1.00E+00					0.00004	100
14331885	Radionuclides			Yes	Yes	Yes	NO	4.00E-05	4.00E-05	1.00E+00					0.00004	100
13967630	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								100
14391969	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								100
14391867	Radionuclides			Yes	Yes	Yes	NO	2.00E-03								100
14265715	Radionuclides			Yes	Yes	Yes	NO	1.00E-01	9.00E+00		9	9				
14276494	Radionuclides			Yes	Yes	Yes	NO	4.00E-05								
14392337	Radionuclides			Yes	Yes	Yes	NO	5.00E-03								
15715943	Radionuclides			Yes	Yes	Yes	NO	5.00E-03								
15766004	Radionuclides			Yes	Yes	Yes	NO	5.00E-03								
13966068	Radionuclides			Yes	Yes	Yes	NO	1.00E-02								3000
14683068	Radionuclides			Yes	Yes	Yes	NO	1.00E-02								3000
14683068	Radionuclides			Yes	Yes	Yes	NO	1.00E-02								3000
14683080	Radionuclides			Yes	Yes	Yes	NO	1.00E-02								3000
15832505	Radionuclides			Yes	Yes	Yes	NO	1.00E-02								3000
14809508	Radionuclides			Yes	Yes	Yes	NO	8.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
13967732	Radionuclides			Yes	Yes	Yes	NO	8.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
13967732	Radionuclides			Yes	Yes	Yes	NO	8.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
14158271	Radionuclides	Strontium 89 (radionuclide)		Yes	Yes	Yes	NO	8.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
10098972	Radionuclides	Strontium 90(+D) (radionuclide)		Yes	Yes	Yes	NO	8.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
10098972	Radionuclides	Strontium 90(+D) (radionuclide)		Yes	Yes	Yes	NO	9.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
14331910	Radionuclides			Yes	Yes	Yes	NO	8.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
14928291	Radionuclides			Yes	Yes	Yes	NO	8.00E-03	8.00E-02		0.08	0.2	0.0028	0.028	0.008	60
13982008	Radionuclides			Yes	Yes	Yes	NO	6.00E-04								100
15759554	Radionuclides			Yes	Yes	Yes	NO	4.50E-03								
13981298	Radionuclides			Yes	Yes	Yes	NO	4.50E-03								
14809564	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	3.00E-02		0.03	3	0.00022	0.011	1.00E-06	20
14809564	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	3.00E-02		0.03	3	0.00022	0.011	1.00E-06	20
14808447	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	3.00E-02		0.03	3	0.00022	0.011	1.00E-06	20
14808447	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	3.00E-02		0.03	3	0.00022	0.011	1.00E-06	20
15759350	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	3.00E-02		0.03	3	0.00022	0.011	1.00E-06	20
15759350	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	3.00E-02		0.03	3	0.00022	0.011	1.00E-06	20
14133767	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	3.00E-02		0.03	3	0.00022	0.011	1.00E-06	20
14133767	Radionuclides			Yes	Yes	Yes	NO	1.00E-04	3.00E-02		0.03	3	0.00022	0.011	1.00E-06	20
14390739	Radionuclides			Yes	Yes	Yes	NO	7.00E-03	6.00E-01		0.6	5	0.0024	0.0044	0.007	400

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
7440166	Radionuclides					9.00E-02	9.00E-01							IAEA, 1994
14913894	Radionuclides					9.00E-02	9.00E-01							IAEA, 1994
14913894	Radionuclides					9.00E-02	9.00E-01							IAEA, 1994
14234345	Radionuclides					9.00E-02	9.00E-01							IAEA, 1994
14835020	Radionuclides													
22481487	Radionuclides													
14859677	Radionuclides	Radon 222(+D) (radionuclide)				9.70E-03	3.10E-01							
13968531	Radionuclides		0.66	1.5		2.40E-02	2.00E-01					3.30E-06	0.05	IAEA, 1994
14331954	Radionuclides		0.66	1.5		2.40E-02	2.00E-01					3.30E-06	0.05	IAEA, 1994
13967481	Radionuclides		0.66	1.5		2.40E-02	2.00E-01					3.30E-06	0.05	IAEA, 1994
13967481	Radionuclides		0.66	1.5		1.10E-01	1.10E+00					3.30E-06	0.05	IAEA, 1994
15758357	Radionuclides		0.66	1.5		2.40E-02	2.00E-01					3.30E-06	0.05	IAEA, 1994
15117530	Radionuclides			1.4		6.00E-01	2.00E+00					0.016		IAEA, 1994
14374799	Radionuclides					1.00E-02	5.00E-02					0.000025	0.00004	IAEA, 1994
14683104	Radionuclides					1.00E-02	5.00E-02					0.000025	0.00004	IAEA, 1994
14234356	Radionuclides	Antimony 125(+D) (radionuclide)				1.00E-02	5.00E-02					0.000025	0.00004	IAEA, 1994
14234356	Radionuclides	Antimony 125(+D) (radionuclide)				7.10E-01	7.10E+00					0.000025	0.00004	IAEA, 1994
15756328	Radionuclides					1.00E-02	5.00E-02					0.000025	0.00004	IAEA, 1994
15756328	Radionuclides					1.00E-02	5.00E-02					0.000025	0.00004	IAEA, 1994
13968508	Radionuclides					1.00E-02	5.00E-02					0.000025	0.00004	IAEA, 1994
14331885	Radionuclides					1.00E-02	5.00E-02					0.000025	0.00004	IAEA, 1994
13967630	Radionuclides					2.00E-03	1.00E-02							IAEA, 1994
14391969	Radionuclides					2.00E-03	1.00E-02							IAEA, 1994
14391867	Radionuclides					2.00E-03	1.00E-02							IAEA, 1994
14265715	Radionuclides		0.32			1.00E-01	5.00E-01							IAEA, 1994
14276494	Radionuclides					8.80E-02	3.50E-01							
14392337	Radionuclides					2.50E-03	1.00E-02							
15715943	Radionuclides					2.50E-03	1.00E-02							
15766004	Radionuclides					2.50E-03	1.00E-02							
13966068	Radionuclides					3.00E-01	1.00E+00							IAEA, 1994
14683068	Radionuclides					3.00E-01	1.00E+00							IAEA, 1994
14683068	Radionuclides					3.00E-01	1.00E+00							IAEA, 1994
14683080	Radionuclides					3.00E-01	1.00E+00							IAEA, 1994
15832505	Radionuclides					3.00E-01	1.00E+00							IAEA, 1994
14809508	Radionuclides		0.04	0.33	0.056	2.10E-01	1.10E+00					0.0028	0.008	IAEA, 1994
13967732	Radionuclides		0.04	0.33	0.056	2.10E-01	1.10E+00					0.0028	0.008	IAEA, 1994
13967732	Radionuclides		0.04	0.33	0.056	2.10E-01	1.10E+00					0.0028	0.008	IAEA, 1994
14158271	Radionuclides	Strontium 89 (radionuclide)	0.04	0.33	0.056	2.10E-01	1.10E+00					0.0028	0.008	IAEA, 1994
10098972	Radionuclides	Strontium 90(+D) (radionuclide)	0.04	0.33	0.056	2.10E-01	1.10E+00					0.0028	0.008	IAEA, 1994
10098972	Radionuclides	Strontium 90(+D) (radionuclide)	0.04	0.33	0.056	2.10E-01	1.10E+00					0.0028	0.008	IAEA, 1994
14331910	Radionuclides		0.04	0.33	0.056	2.10E-01	1.10E+00					0.0028	0.008	IAEA, 1994
14928291	Radionuclides		0.04	0.33	0.056	2.10E-01	1.10E+00					0.0028	0.008	IAEA, 1994
13982008	Radionuclides					2.50E-03	1.00E-02							IAEA, 1994
15759554	Radionuclides					2.50E-03	1.00E-02							
13981298	Radionuclides					2.50E-03	1.00E-02							
14809564	Radionuclides		0.00015			2.10E+02	7.60E+01					0.000023	1.00E-06	IAEA, 1994
14809564	Radionuclides		0.00015			2.10E+02	7.60E+01					0.000023	1.00E-06	IAEA, 1994
14808447	Radionuclides		0.00015			2.10E+02	7.60E+01					0.000023	1.00E-06	IAEA, 1994
14808447	Radionuclides		0.00015			2.10E+02	7.60E+01					0.000023	1.00E-06	IAEA, 1994
15759350	Radionuclides		0.00015			2.10E+02	7.60E+01					0.000023	1.00E-06	IAEA, 1994
15759350	Radionuclides		0.00015			2.10E+02	7.60E+01					0.000023	1.00E-06	IAEA, 1994
14133767	Radionuclides		0.00015			2.10E+02	7.60E+01					0.000023	1.00E-06	IAEA, 1994
14133767	Radionuclides		0.00015			2.10E+02	7.60E+01					0.000023	1.00E-06	IAEA, 1994
14390739	Radionuclides					7.00E-01	7.00E+00					0.00045	0.007	IAEA, 1994

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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
7440166	Radionuclides									
14913894	Radionuclides									
14913894	Radionuclides									
14234345	Radionuclides									
14835020	Radionuclides									
22481487	Radionuclides									
14859677	Radionuclides	Radon 222(+D) (radionuclide)								
13968531	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
14331954	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
13967481	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
13967481	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
15758357	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994	IAEA, 1994	
15117530	Radionuclides								IAEA, 1994	
14374799	Radionuclides									
14683104	Radionuclides									
14234356	Radionuclides	Antimony 125(+D) (radionuclide)								
14234356	Radionuclides	Antimony 125(+D) (radionuclide)								
15756328	Radionuclides									
15756328	Radionuclides									
13968508	Radionuclides									
14331885	Radionuclides									
13967630	Radionuclides									
14391969	Radionuclides									
14391867	Radionuclides									
14265715	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994			IAEA, 1994		
14276494	Radionuclides									
14392337	Radionuclides									
15715943	Radionuclides									
15766004	Radionuclides									
13966068	Radionuclides									
14683068	Radionuclides									
14683068	Radionuclides									
14683080	Radionuclides									
15832505	Radionuclides									
14809508	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13967732	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13967732	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14158271	Radionuclides	Strontium 89 (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
10098972	Radionuclides	Strontium 90(+D) (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
10098972	Radionuclides	Strontium 90(+D) (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14331910	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
14928291	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994
13982008	Radionuclides									
15759554	Radionuclides									
13981298	Radionuclides									
14809564	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994		
14809564	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994		
14808447	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994		
14808447	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994		
15759350	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994		
15759350	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994		
14133767	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994		
14133767	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994		
14390739	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			

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Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
13981492	Radionuclides			Te		D	3.90E-01		
13981492	Radionuclides			Te		D	1.09E+02		
14269717	Radionuclides			Te		D	4.83E-02		
14269717	Radionuclides			Te		D	3.36E+01		
14683126	Radionuclides			Te		D	1.74E-02		
14683126	Radionuclides			Te		D	1.25E+00		
14234287	Radionuclides			Te		D	3.26E+00		
15623479	Radionuclides	Thorium 227 (radionuclide)		Th		D	1.87E+01		
14274829	Radionuclides	Thorium 228(+D) (radionuclide)		Th		D	6.97E+02		
14274829	Radionuclides	Thorium 228(+D) (radionuclide)		Th		D	6.97E+02		
15594544	Radionuclides	Thorium 229(+D) (radionuclide)		Th		D	2.68E+06		
15594544	Radionuclides	Thorium 229(+D) (radionuclide)		Th		D	2.68E+06		
14269637	Radionuclides	Thorium 230 (radionuclide)		Th		D	2.81E+07		
14932402	Radionuclides	Thorium 231 (radionuclide)		Th		D	1.06E+00		
7440291	Radionuclides	Thorium 232 (radionuclide)		Th		D	5.15E+12		
15065108	Radionuclides	Thorium 234 (radionuclide)		Th		D	2.41E+01		
15720577	Radionuclides			Tl		D	1.22E+01		
13968519	Radionuclides	Thallium 204 (radionuclide)		Tl		D	1.38E+03		
14913509	Radionuclides			Tl		D	2.12E-03		
15690730	Radionuclides			Tl		D	1.53E-03		
13981301	Radionuclides			Tm		D	1.29E+02		
14333450	Radionuclides			Tm		D	7.01E+02		
14158293	Radionuclides	Uranium 232 (radionuclide)		U		D	2.63E+04		
13968553	Radionuclides	Uranium 233 (radionuclide)		U		D	5.80E+07		
13966295	Radionuclides	Uranium 234 (radionuclide)		U		D	8.94E+07		
15117961	Radionuclides	Uranium 235(+D) (radionuclide)		U		D	2.57E+11		
15117961	Radionuclides	Uranium 235(+D) (radionuclide)		U		D	2.57E+11		
13982702	Radionuclides	Uranium 236(+D) (radionuclide)		U		D	8.54E+09		
14269751	Radionuclides			U		D	6.75E+00		
7440611	Radionuclides	Uranium 238(+D) (radionuclide)	Uranium, Pyrophoric	U		D	1.63E+12		
7440611	Radionuclides	Uranium 238(+D) (radionuclide)	Uranium, Pyrophoric	U		D	1.63E+12		
15687533	Radionuclides			U		D	5.88E-01		
14331976	Radionuclides			V		D	1.60E+01		
15749469	Radionuclides			W		D	1.21E+02		
14932413	Radionuclides			W		D	7.51E+01		
14983483	Radionuclides			W		D	9.92E-01		
15151094	Radionuclides			Xe		D	8.38E-01		
15700104	Radionuclides			Xe		D	8.92E-02		
13994188	Radionuclides			Xe		D	7.00E-01		
13994199	Radionuclides			Xe		D	3.64E+01		
13965996	Radionuclides			Xe		D	8.89E+00		
14683115	Radionuclides			Xe		D	1.18E+01		
14932424	Radionuclides			Xe		D	5.25E+00		
14932424	Radionuclides			Xe		D	2.19E+00		
14995621	Radionuclides			Xe		D	3.80E-01		
14995621	Radionuclides			Xe		D	1.07E-02		
14835213	Radionuclides			Xe		D	2.66E-03		
15751812	Radionuclides			Xe		D	9.79E-03		
10098916	Radionuclides			Y		D	2.67E+00		
14234243	Radionuclides			Y		D	5.85E+01		
14234243	Radionuclides			Y		D	3.45E-02		
15751594	Radionuclides			Y		D	1.48E-01		
14981705	Radionuclides			Y		D	4.21E-01		
13982393	Radionuclides	Zinc 65 (radionuclide)		Zn		D	2.44E+02		

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Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
13981492	Radionuclides			Yes	Yes	Yes	NO	7.00E-03	6.00E-01		0.6	5	0.0024	0.0044	0.007	400
13981492	Radionuclides			Yes	Yes	Yes	NO	7.00E-03	6.00E-01		0.6	5	0.0024	0.0044	0.007	400
14269717	Radionuclides			Yes	Yes	Yes	NO	7.00E-03	6.00E-01		0.6	5	0.0024	0.0044	0.007	400
14269717	Radionuclides			Yes	Yes	Yes	NO	7.00E-03	6.00E-01		0.6	5	0.0024	0.0044	0.007	400
14683126	Radionuclides			Yes	Yes	Yes	NO	7.00E-03	6.00E-01		0.6	5	0.0024	0.0044	0.007	400
14683126	Radionuclides			Yes	Yes	Yes	NO	7.00E-03	6.00E-01		0.6	5	0.0024	0.0044	0.007	400
14234287	Radionuclides			Yes	Yes	Yes	NO	7.00E-03	6.00E-01		0.6	5	0.0024	0.0044	0.007	400
15623479	Radionuclides	Thorium 227 (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	5.20E-02	1.00E+00						100
14274829	Radionuclides	Thorium 228(+D) (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	1.00E-04	1.00E+00						100
14274829	Radionuclides	Thorium 228(+D) (radionuclide)		Yes	Yes	Yes	NO	5.20E-02	1.00E-04	1.00E+00						100
15594544	Radionuclides	Thorium 229(+D) (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	1.00E-04	1.00E+00						100
15594544	Radionuclides	Thorium 229(+D) (radionuclide)		Yes	Yes	Yes	NO	2.00E-02	1.00E-04	1.00E+00						100
14269637	Radionuclides	Thorium 230 (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	1.00E-04	1.00E+00						100
14932402	Radionuclides	Thorium 231 (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	1.00E-04	1.00E+00						100
7440291	Radionuclides	Thorium 232 (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	1.00E-04	1.00E+00						100
15065108	Radionuclides	Thorium 234 (radionuclide)		Yes	Yes	Yes	NO	1.00E-04	1.00E-04	1.00E+00						100
15720577	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	4.00E-02	0.00E+00						
13968519	Radionuclides	Thallium 204 (radionuclide)		Yes	Yes	Yes	NO	4.00E-02	4.00E-02	0.00E+00						
14913509	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	4.00E-02	0.00E+00						
15690730	Radionuclides			Yes	Yes	Yes	NO	4.00E-02	4.00E-02	0.00E+00						
13981301	Radionuclides			Yes	Yes	Yes	NO	4.50E-03								
14333450	Radionuclides			Yes	Yes	Yes	NO	4.50E-03								
14158293	Radionuclides	Uranium 232 (radionuclide)		Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
13968553	Radionuclides	Uranium 233 (radionuclide)		Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
13966295	Radionuclides	Uranium 234 (radionuclide)		Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
15117961	Radionuclides	Uranium 235(+D) (radionuclide)		Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
15117961	Radionuclides	Uranium 235(+D) (radionuclide)		Yes	Yes	Yes	NO	4.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
13982702	Radionuclides	Uranium 236(+D) (radionuclide)		Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
14269751	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
7440611	Radionuclides	Uranium 238(+D) (radionuclide)		Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
7440611	Radionuclides	Uranium 238(+D) (radionuclide)		Yes	Yes	Yes	NO	4.20E-04	1.00E+00	9.20E-02	1	1			0.0003	10
15687533	Radionuclides			Yes	Yes	Yes	NO	3.00E-04	1.00E+00	9.20E-02	1	1			0.0003	10
14331976	Radionuclides			Yes	Yes	Yes	NO	2.50E-03	2.50E-03	6.70E-02						
15749469	Radionuclides			Yes	Yes	Yes	NO	4.00E-02							0.04	10
14932413	Radionuclides			Yes	Yes	Yes	NO	4.00E-02							0.04	10
14983483	Radionuclides			Yes	Yes	Yes	NO	4.00E-02							0.04	10
15151094	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
15700104	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
13994188	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
13994199	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
13965996	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
14683115	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
14932424	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
14932424	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
14995621	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
14995621	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
14835213	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
15751812	Radionuclides			Yes	Yes	Yes	NO	0.00E+00								
10098916	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-02		0.01	0.002			0.001	30
14234243	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-02		0.01	0.002			0.001	30
14234243	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-02		0.01	0.002			0.001	30
15751594	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-02		0.01	0.002			0.001	30
14981705	Radionuclides			Yes	Yes	Yes	NO	1.00E-03	1.00E-02		0.01	0.002			0.001	30
13982393	Radionuclides	Zinc 65 (radionuclide)		Yes	Yes	Yes	NO	1.00E-01	7.00E+00		7	3		0.027	0.1	1000

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Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
13981492	Radionuclides					7.00E-01	7.00E+00					0.00045	0.007	IAEA, 1994
13981492	Radionuclides					7.00E-01	7.00E+00					0.00045	0.007	IAEA, 1994
14269717	Radionuclides					7.00E-01	7.00E+00					0.00045	0.007	IAEA, 1994
14269717	Radionuclides					7.00E-01	7.00E+00					0.00045	0.007	IAEA, 1994
14683126	Radionuclides					7.00E-01	7.00E+00					0.00045	0.007	IAEA, 1994
14683126	Radionuclides					7.00E-01	7.00E+00					0.00045	0.007	IAEA, 1994
14234287	Radionuclides					7.00E-01	7.00E+00					0.00045	0.007	IAEA, 1994
15623479	Radionuclides	Thorium 227 (radionuclide)				1.40E-04	1.10E-02							IAEA, 1994
14274829	Radionuclides	Thorium 228(+D) (radionuclide)				1.40E-04	1.10E-02							IAEA, 1994
14274829	Radionuclides	Thorium 228(+D) (radionuclide)				2.00E-02	4.00E-01							IAEA, 1994
15594544	Radionuclides	Thorium 229(+D) (radionuclide)				1.40E-04	1.10E-02							IAEA, 1994
15594544	Radionuclides	Thorium 229(+D) (radionuclide)				2.90E-01	1.40E+00							IAEA, 1994
14269637	Radionuclides	Thorium 230 (radionuclide)				1.40E-04	1.10E-02							IAEA, 1994
14932402	Radionuclides	Thorium 231 (radionuclide)				1.40E-04	1.10E-02							IAEA, 1994
7440291	Radionuclides	Thorium 232 (radionuclide)				1.40E-04	1.10E-02							IAEA, 1994
15065108	Radionuclides	Thorium 234 (radionuclide)				1.40E-04	1.10E-02							IAEA, 1994
15720577	Radionuclides					1.00E-03	4.00E-03							
13968519	Radionuclides	Thallium 204 (radionuclide)				1.00E-03	4.00E-03							
14913509	Radionuclides					1.00E-03	4.00E-03							
15690730	Radionuclides					1.00E-03	4.00E-03							
13981301	Radionuclides					2.50E-03	1.00E-02							
14333450	Radionuclides					2.50E-03	1.00E-02							
14158293	Radionuclides	Uranium 232 (radionuclide)	0.062			6.30E-04	2.30E-02					0.0004	0.0003	IAEA, 1994
13968553	Radionuclides	Uranium 233 (radionuclide)	0.062			6.30E-04	2.30E-02					0.0004	0.0003	IAEA, 1994
13966295	Radionuclides	Uranium 234 (radionuclide)	0.062			6.30E-04	2.30E-02					0.0004	0.0003	IAEA, 1994
15117961	Radionuclides	Uranium 235(+D) (radionuclide)	0.062			6.30E-04	2.30E-02					0.0004	0.0003	IAEA, 1994
15117961	Radionuclides	Uranium 235(+D) (radionuclide)	0.062			7.70E-04	3.40E-02					0.0004	0.0003	IAEA, 1994
13982702	Radionuclides	Uranium 236(+D) (radionuclide)	0.062			6.30E-04	2.30E-02					0.0004	0.0003	IAEA, 1994
14269751	Radionuclides		0.062			6.30E-04	2.30E-02					0.0004	0.0003	IAEA, 1994
7440611	Radionuclides	Uranium 238(+D) (radionuclide)	0.062			6.30E-04	2.30E-02					0.0004	0.0003	IAEA, 1994
7440611	Radionuclides	Uranium 238(+D) (radionuclide)	0.062			2.00E-03	3.90E-02					0.0004	0.0003	IAEA, 1994
15687533	Radionuclides		0.062			6.30E-04	2.30E-02					0.0004	0.0003	IAEA, 1994
14331976	Radionuclides					1.40E-03	5.50E-03							
15749469	Radionuclides					1.00E-02	3.00E+00						0.04	IAEA, 1994
14932413	Radionuclides					1.00E-02	3.00E+00						0.04	IAEA, 1994
14983483	Radionuclides					1.00E-02	3.00E+00						0.04	IAEA, 1994
15151094	Radionuclides					0.00E+00	0.00E+00							
15700104	Radionuclides					0.00E+00	0.00E+00							
13994188	Radionuclides					0.00E+00	0.00E+00							
13994199	Radionuclides					0.00E+00	0.00E+00							
13965996	Radionuclides					0.00E+00	0.00E+00							
14683115	Radionuclides					0.00E+00	0.00E+00							
14932424	Radionuclides					0.00E+00	0.00E+00							
14932424	Radionuclides					0.00E+00	0.00E+00							
14995621	Radionuclides					0.00E+00	0.00E+00							
14995621	Radionuclides					0.00E+00	0.00E+00							
14835213	Radionuclides					0.00E+00	0.00E+00							
15751812	Radionuclides					0.00E+00	0.00E+00							
10098916	Radionuclides					1.00E-03	1.00E-02						0.001	IAEA, 1994
14234243	Radionuclides					1.00E-03	1.00E-02						0.001	IAEA, 1994
14234243	Radionuclides					1.00E-03	1.00E-02						0.001	IAEA, 1994
15751594	Radionuclides					1.00E-03	1.00E-02						0.001	IAEA, 1994
14981705	Radionuclides					1.00E-03	1.00E-02						0.001	IAEA, 1994
13982393	Radionuclides	Zinc 65 (radionuclide)	0.15	4.1		2.60E-01	9.90E-01						0.1	IAEA, 1994

Information current as of October 27, 2000.
Contact RAWG for references.
Blank cells indicates information was not available on date of production.

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
13981492	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
13981492	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
14269717	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
14269717	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
14683126	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
14683126	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
14234287	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
15623479	Radionuclides	Thorium 227 (radionuclide)								
14274829	Radionuclides	Thorium 228(+D) (radionuclide)								
14274829	Radionuclides	Thorium 228(+D) (radionuclide)								
15594544	Radionuclides	Thorium 229(+D) (radionuclide)								
15594544	Radionuclides	Thorium 229(+D) (radionuclide)								
14269637	Radionuclides	Thorium 230 (radionuclide)								
14932402	Radionuclides	Thorium 231 (radionuclide)								
7440291	Radionuclides	Thorium 232 (radionuclide)								
15065108	Radionuclides	Thorium 234 (radionuclide)								
15720577	Radionuclides									
13968519	Radionuclides	Thallium 204 (radionuclide)								
14913509	Radionuclides									
15690730	Radionuclides									
13981301	Radionuclides									
14333450	Radionuclides									
14158293	Radionuclides	Uranium 232 (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
13968553	Radionuclides	Uranium 233 (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
13966295	Radionuclides	Uranium 234 (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
15117961	Radionuclides	Uranium 235(+D) (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
15117961	Radionuclides	Uranium 235(+D) (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
13982702	Radionuclides	Uranium 236(+D) (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
14269751	Radionuclides			IAEA, 1994	IAEA, 1994			IAEA, 1994		
7440611	Radionuclides	Uranium 238(+D) (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
7440611	Radionuclides	Uranium 238(+D) (radionuclide)		IAEA, 1994	IAEA, 1994			IAEA, 1994		
15687533	Radionuclides			IAEA, 1994	IAEA, 1994			IAEA, 1994		
14331976	Radionuclides									
15749469	Radionuclides									
14932413	Radionuclides									
14983483	Radionuclides									
15151094	Radionuclides									
15700104	Radionuclides									
13994188	Radionuclides									
13994199	Radionuclides									
13965996	Radionuclides									
14683115	Radionuclides									
14932424	Radionuclides									
14932424	Radionuclides									
14995621	Radionuclides									
14995621	Radionuclides									
14835213	Radionuclides									
15751812	Radionuclides									
10098916	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14234243	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14234243	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
15751594	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
14981705	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994					
13982393	Radionuclides	Zinc 65 (radionuclide)	IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	

Information current as of October 27, 2000
Contact RAWG for references
Blank cells indicates information was not available
on date e tion

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Synonyms	Element	Molecular Weight	HALFUNIT	Radionuclide Half-life	Permeability Factor	Reference Permeability Factor
13982235	Radionuclides			Zn		D	3.86E-02		
13982235	Radionuclides			Zn		D	5.75E-01		
15751776	Radionuclides			Zr		D	5.58E+08		
13967710	Radionuclides			Zr		D	6.40E+01		
14928304	Radionuclides			Zr		D	7.04E-01		

Information current as of October 27, 2000
Contact RAWG for references.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	KOW	Water Use Flag	Soil Use Flag	Food Use Flag	Volatile Organic Flag	Beef BTF	Quail BTF	Worm BTF	Chicken BTF	Egg BTF	Goat BTF	Goat Milk BTF	Deer BTF	Fish BAF
13982235	Radionuclides			Yes	Yes	Yes	NO	1.00E-01	7.00E+00		7	3		0.027	0.1	1000
13982235	Radionuclides			Yes	Yes	Yes	NO	1.00E-01	7.00E+00		7	3		0.027	0.1	1000
15751776	Radionuclides			Yes	Yes	Yes	NO	1.00E-06	6.00E-05		0.00006	0.0002	0.00002	5.50E-06	1.00E-06	300
13967710	Radionuclides			Yes	Yes	Yes	NO	1.00E-06	6.00E-05		0.00006	0.0002	0.00002	5.50E-06	1.00E-06	300
14928304	Radionuclides			Yes	Yes	Yes	NO	1.00E-06	6.00E-05		0.00006	0.0002	0.00002	5.50E-06	1.00E-06	300

Information current as of October 27, 2000.
Contact RAWG for references.
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Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Pork BTF	Sheep BTF	Sheep Milk BTF	Soil to Plant Uptake Wet Weight	Soil to Plant Uptake Dry Weight	Reference BV Dry	Reference BV Wet	Reference Beef BTF	Reference Milk BTF	MILK	BEEF	Reference Beef BTF
13982235	Radionuclides		0.15	4.1		2.60E-01	9.90E-01						0.1	IAEA, 1994
13982235	Radionuclides		0.15	4.1		2.60E-01	9.90E-01						0.1	IAEA, 1994
15751776	Radionuclides					1.00E-04	1.00E-03					5.50E-07	1.00E-06	IAEA, 1994
13967710	Radionuclides					1.00E-04	1.00E-03					5.50E-07	1.00E-06	IAEA, 1994
14928304	Radionuclides					1.00E-04	1.00E-03					5.50E-07	1.00E-06	IAEA, 1994

Information current as of October 27, 2000.
Contact RAWG for references.
Blank cells indicates information was not available on date of production.

Appendix D: Part 2 Chemical-specific Values

Chemical Abstract Service Number	Analytical Type (ANATYPE)	Analyte Name	Reference Quail BTF	Reference Chicken BTF	Reference Egg BTF	Reference Goat BTF	Reference Goat Milk BTF	Reference Pork BTF	Reference Sheep BTF	Reference Sheep Milk BTF
13982235	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	
13982235	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994		IAEA, 1994	IAEA, 1994	IAEA, 1994	
15751776	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
13967710	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			
14928304	Radionuclides		IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994	IAEA, 1994			

Information current as of October 27, 2000.
Contact RAWG for references.
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APPENDIX E

Additional Information

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Additional Information

This appendix contains copies of reports, memoranda, and articles that are useful in developing exposure assessments for the Paducah Gaseous Diffusion Plant (PGDP) and justifying various assumptions made when completing risk assessments and analyses. These include:

- Letter and survey form used during the Phase I Site Investigation (CH2M Hill 1991) to determine groundwater use near PGDP;

- Summary of the interview with Mr. Kenny E. Perry, Agricultural Extension Agent, Ballard County, Kentucky, regarding agricultural practices in Ballard County held in February 1994;

- Summary of the interview with Mr. Douglas A. Wilson, Agricultural Extension Agent, McCracken County, Kentucky, regarding agricultural practices in McCracken County held in February 1994;

- Letter dated February 24, 1994, from Mr. Douglas A. Wilson, Agriculture Extension Agent, McCracken County, Kentucky, to Mr. Fred Dolislager, Risk Analyst, Oak Ridge National Laboratory, regarding area of crop land in McCracken County;

- Questionnaire dated October 26, 1995, sent to Mr. Charles Logsdon, Kentucky Department of Fish and Wildlife, by FMSM Engineers, Inc., regarding recreational use of Little and Big Bayou Creeks near PGDP;

- Facsimile dated November 8, 1995, sent to Mr. Stephen Scott, FMSM Engineers, Inc., containing responses from Mr. Charles Logsdon, Kentucky Department of Fish and Wildlife, to the aforementioned questionnaire;

- Letter dated April 5, 1994, from Kentucky Department of Fish and Wildlife to Mr. Fred Dolislager, Risk Analyst, Oak Ridge National Laboratory, containing annual harvests of geese, ducks, turkeys, and deer in McCracken and Ballard Counties, Kentucky; and

- Reports entitled "Planning Issues for Superfund Site Remediation" and "Quantitative Decision Making in Superfund: A Data Quality Objectives Case Study" from *Hazardous Materials Control* regarding use of exposure units in risk calculations and remedial decisions.

CH2M HILL
Engineers
Planners
Economists
Scientists

February 7, 1990

SED28178

Dear Resident:

The discovery of groundwater contamination occurring at the Paducah Gaseous Diffusion Plant has prompted an extensive environmental study in and around the plant. The study is being done by the U.S. Department of Energy (DOE) and Martin Marietta Energy Systems (Energy Systems) under an agreement between DOE and the U.S. Environmental Protection Agency (EPA). The DOE owns the Paducah Gaseous Diffusion Plant; Energy Systems manages the plant for DOE.

Energy Systems contracted CH2M HILL, an international environmental engineering firm, to conduct the main study of the groundwater contamination. CH2M HILL is implementing a "Work Plan" that spells out details of the study. The Work Plan was agreed to and approved by DOE and EPA.

One part of the Work Plan is to determine the location and number of residents within four miles of the plant boundary who use groundwater for drinking water or other reasons such as irrigation. To fulfill this portion of the Work Plan, we are asking people who may live within four miles of the plant boundary to complete the attached Water Users Survey as soon as possible and return it to CH2M HILL in the enclosed stamped, self-addressed envelope.

Questions on the survey include the source of your water supply and, if you have a private well, the particular construction of your well. Many residents may not have all of the information requested, but any information you can provide will be extremely helpful. Your information will be used in reports describing the findings of the environmental study, but your name and address will be kept confidential.

If you have any questions regarding the Water Users Survey, please contact Debbie Wattier, Manager, Public Relations Department, Paducah Gaseous Diffusion Plant, at (502) 441-6271, or Lori Kincaid, CH2M HILL, at (615) 483-9032. Your cooperation in completing the survey is greatly appreciated and will help in the ongoing efforts to remedy the groundwater contamination occurring at the plant.

Sincerely,

CH2M HILL

James B. Moore

James B. Moore

OROC1/078.50

WATER USERS SURVEY
for the
PADUCAH GASEOUS DIFFUSION PLANT
PADUCAH, KENTUCKY

Name _____
(for surveys mailed to businesses, please include name of business)

Address _____

1. If your residence (or business) is located in the area shown on the attached map, please mark its approximate location with an "X."

2. What is the source of your water supply? (Check all that apply)

   Private well _____
   Municipal water _____ supplied by _____
   Other (explain) _____

3. Do you have a well on your property that is not in use?

   Yes _____ No _____

   If yes, when was the well last used? _____

4. If you do not use well water for any purpose, you need not complete the rest of the survey. Thank you for your help.

5. Is your water supply well located at the address listed above?

   Yes _____ No _____

   If not, where is the well located?

   _____

6. Does anyone else (other than residents at your address or employees of your business) use the same well?

   Yes _____ No _____

   If yes, please identify the other users in the space provided on the back of this form.

7. What do you use well water for? (Check all that apply)

   Drinking water _____
   Irrigation _____
   Industrial use _____
   Domestic use (laundry, etc.) _____
   Watering livestock _____
   Other (explain) _____

8. How is your well constructed?

   Depth (feet) _____
   Material (steel, plastic, tile, etc.) _____
   Diameter (inches) _____
   Screened interval (feet): From _____ to _____

9. Do you have a holding tank?

   Yes _____ No _____

   If yes, what size? _____ gallons

Additional Users of the Well Described in this Survey

Name _____

Address _____

Name _____

Address _____

Name _____

Address _____

Name _____

Address _____

Name _____

Address _____

If you do not know the names or addresses of other users, please estimate how many other homes or businesses may be using the same well:

Number of homes _____
Number of businesses _____

Do you have any additional comments?

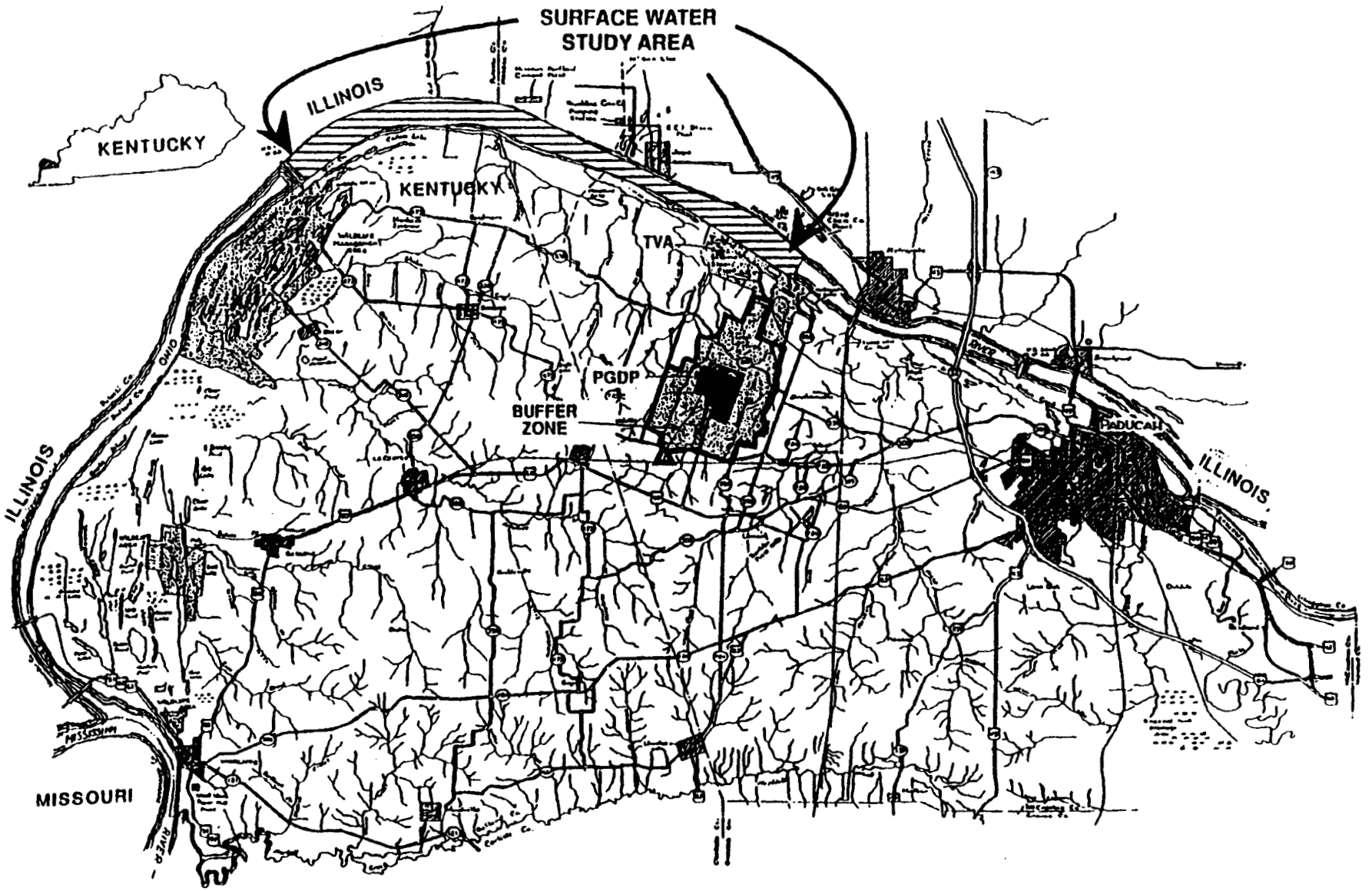
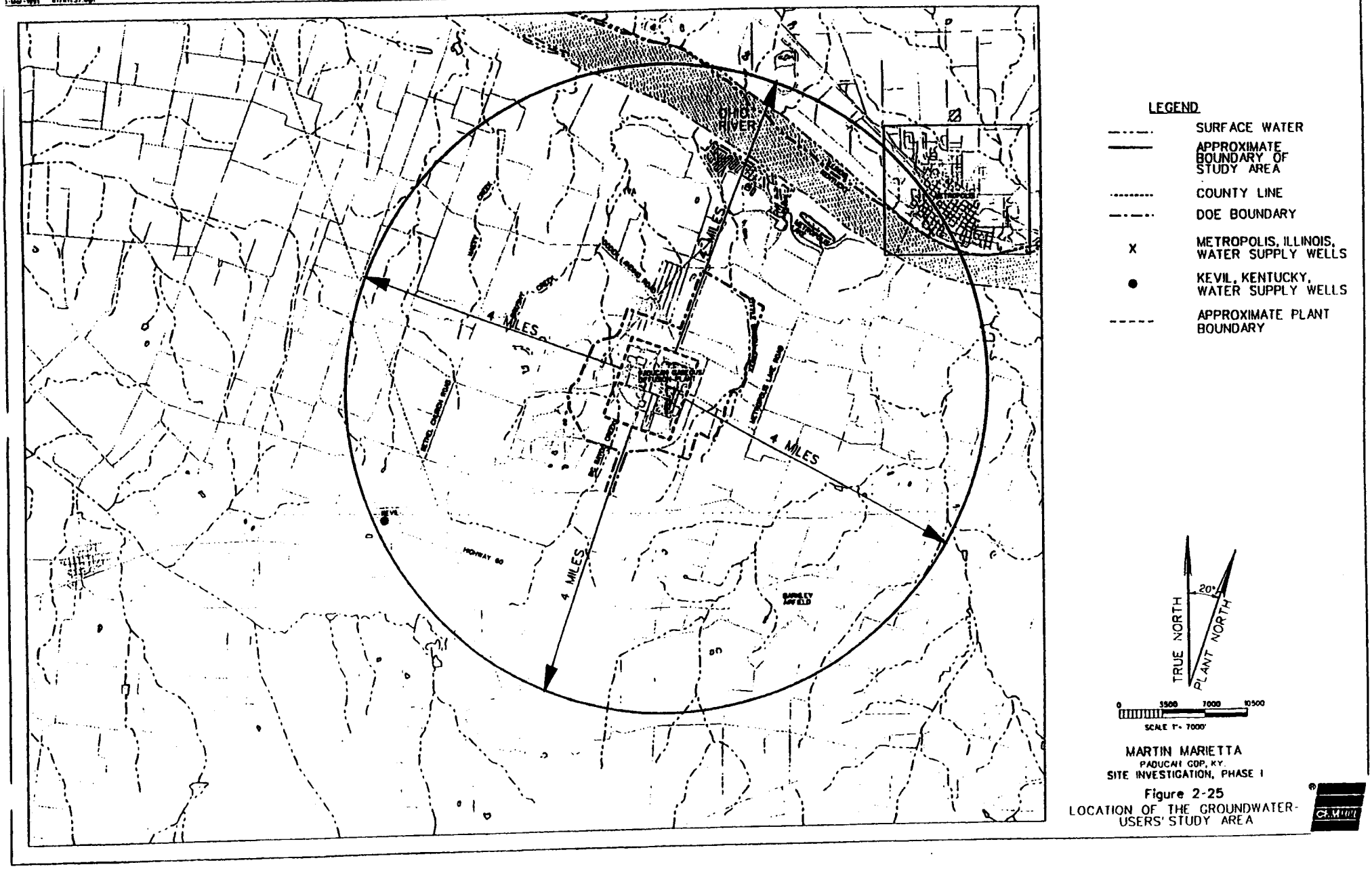


Figure 2-26
LOCATION OF STUDY AREA FOR
SURFACE WATER INTAKE, MARCH 1989

Source: I .I Marietta Energy Systems (1973)



MARTIN MARIETTA
PADUCAH GDP, KY.
SITE INVESTIGATION, PHASE I

Figure 2-25
LOCATION OF THE GROUNDWATER-USERS' STUDY AREA

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Ballard County Residential and Agricultural Information

Population

1) 8,000 population
2) 2.6 people per family

Gardening

1) 50% of the population has a garden
2) common grown garden vegetables are squash, corn, tomatoes, green beans, and peas
3) the average garden size is ¼ acre
4) approximately .1to .2 pounds of garden grown vegetables are consumed per individual per day
5) approximately 80% of gardeners can their produce
6) growing season is april 5 to october 12; 4560 hours

Crop Farming

1) 65,000 tillable acres in the county; 160,000 total acres
2) north of HWY 60 logging has been occurring for 20 years
3) 5% acres tobacco, 25% acres corn, 25% acres wheat and soybeans (double cropped) , [25% timber, and 20% pasture]- not considered tillable
4) 1% of the crops receive overhead irrigation; 90% from surface water; 1 in 5 tobacco plots are irrigated
5) approximately 5 inches of water per year is deposited as irrigation
6) 900 tobacco plots in the county
7) the average plot is 1.5 acres; 10 acres dark tobacco and rest burley
8) 2400 pounds are produced per acre
9) 35 acres of cucumbers are farmed with drip irrigation
10) One roadside stand

Livestock Farming

1) beef, dairy, swine and poultry farming was valued at $10,000,000 in the county
2) 11,000 cattle are in the county; 100 dairy cows per farm, 8 farms
3) commercial dairy farms use silage, homegrown hay, rotational grazing, and 13% is improved pasture
4) 15% get meat locally but 60% of total consumption is store bought
5) approximately 13,125 pounds of milk are produced per cow per year
6) there are 40 poultry barns with 20-30,000 broilers; turn around is approximately 6x/year
7) poultry are fed bought feed
8) there are 12 hog farms averaging 1,700/farm; 12-18 small farms have around 3 sows/farm
9) swine are fed locally grown corn and additives

Ballard County Residential and Agricultural Information cont.

Fish Farming

1) there are several catfish ponds in the county of which 0 are pay lakes
2) channel catfish fingerlings are the fish stocked
3) the ponds average 2 acres
4) approximately 4000 pounds of catfish are harvested per year in the county
5) building ponds is not economically feasible; 1 pond uses a groundwater pump
6) harvested weights of the catfish range from 1.5 to 2 pounds
7) a pond can be turned over in 1.5 years
8) fish are generally fed bought food.

The above information is a correct representation of Ballard County

Kenny Perry
signature

Kenny E. Perry
Ballard county extension agent for agriculture
P.O. Box 237
200 Broadway
La Center, KY 42056

McCracken County Residential and Agricultural Information

Population

1) 60,000 population
2) 2.5 people per family

Gardening

1) 35-40% of the population has a garden
2) common grown garden vegetables are squash, corn, tomatoes, green beans, and lettuce
3) the average garden size is ¼ acre
4) during harvest season (3 months) approximately 2 pounds of garden grown vegetables are consumed per individual per day
5) approximately all gardeners can their produce

Crop Farming

1) 65,000 tillable acres in the county
2) since 1984 there has been a steady decrease in the number of acres farmed for corn, wheat, soybeans, and tobacco from 58,711 in 1984 to 39,900 in 1993
3) 440 acres tobacco, 15,000 acres corn, 7000 acres wheat, and 22,000 acres soybeans
4) horticulture crops are trickle irrigated (20 acres)
5) 150 tobacco plots in the county
6) the average plot is 2 acres
7) 2500 pounds are produced per acre
8) plots are spray irrigated very infrequently and mainly flooded

Livestock Farming

1) beef, dairy, swine and poultry farming are only of minor importance to the county
2) 3 commercial beef farms(6,200 head), 3 commercial dairy farms (500 head holsteins), 2 commercial swine farms (3600 head), 14 broiler barns (28000 birds with a 6x/year turn-around, and approximately 25 farms have 2 hogs or 2 cows
3) stored feed usage is rare, mostly hay and unimproved pasture
4) home slaughtering of cattle, chickens, and swine is insignificant
5) ingestion of home milk and eggs is insignificant
6) total milk production was 3,600,000 pounds in 1992
7) 5% of farms consume 60% of their beef from homegrown livestock

McCracken County Residential and Agricultural Information cont.

Fish Farming

1) there are 5-10 catfish ponds in the county of which 2 are pay lakes
2) channel catfish fingerlings are the fish stocked
3) the ponds average 1 acre and 4 feet deep
4) approximately 4000 pounds of catfish are harvested per year
5) approximately 100% of the fish harvested stay in the county
6) harvested weights of the catfish range from 1 to 2 pounds
7) a pond can be turned over in 2 years
8) fish are generally fed bought food.

The above information is a correct representation of McCracken County

Doug Wilson
signature

Douglas A. Wilson
McCracken county extension agent for agriculture
2705 Olivet Church Road
Paducah, KY 42001-9755

UNIVERSITY OF KENTUCKY
COLLEGE OF AGRICULTURE
Lexington, Kentucky 40546

COOPERATIVE EXTENSION SERVICE

RESIDENT INSTRUCTION
AGRICULTURAL EXPERIMENT STATION
COOPERATIVE EXTENSION SERVICE

REPLY TO:
McCracken Co. Extension Center
2705 Olivet Church Road
Paducah KY 42001-9755
Phone: (502)554-9520/554-9522
Fax: (502) 554-8283
February 24, 1994

Fred Dolislager
2924 Williams Road
Knoxville, TN 37932

Dear Fred:

Following the information you requested regarding crop land use in McCracken County since 1984:

YEAR	ACRES IN CROP
1984	58711
1985	58071
1986	58000
1987	57401
1988	54000
1989	41800
1990	40800
1991	39792
1992	40245
1993	39900

This is a total of corn-wheat-soybeans and tobacco.

Sincerely,

Douglas A. Wilson
County Extension Agent
for Agriculture

DW/mh

Educational programs of the Kentucky Cooperative Extension Service serve all people regardless of race, color, age, sex, religion, handicap, or national origin.

UNIVERSITY OF KENTUCKY, KENTUCKY STATE UNIVERSITY, U.S. DEPARTMENT OF AGRICULTURE, AND KENTUCKY COUNTIES, COOPERATING

409
North Forbes Road
Lexington, Kentucky
40511-2050

606-233-0574
606-254-4800 FAX

Fuller Mossbarger Scott & May
FMSM
ENGINEERS

October 26, 1995

O.1.1.94355L05

Mr. Charles Logsdon
Kentucky Department of Fish and Wildlife Resources
10535 Ogden Landing Road
Kevil, Kentucky 42053

Re: PCB Risk Calculations
Paducah Gaseous Diffusion Plant

Dear Mr. Logsdon:

FMSM is conducting a preliminary risk calculation for the Little Bayou and Big Bayou areas around the Paducah Gaseous Diffusion Plant. This subject was discussed at a meeting in which you attended on September 7, 1995. During that meeting you indicated that your office could provide information on the recreational use of these areas. In response to your suggestion, we have developed the following list of questions. Please try to research your site use data and answer as many of these questions as possible. If data is not directly available to answer these questions we would appreciate an estimate based on your best professional judgment.

Big Bayou

1. What is the average number of visitors per year to Big Bayou?

2. Of this number, how many are adults and how many are children?

3. Are most of your visitors repeat or one-time visitors on a yearly basis?

4. What is the average time (hours) spent in Big Bayou? Is there a difference in average time spent between adult and child usage?

5. What are the common recreational usages in the area? What is the percentage breakdown of usages by the visitors (i.e. what percentage of visitors fish, hunt, hike, swim, etc.)?

6. What is the number of repeat visits per year by any one individual or group of individuals? What is the average time spent (hours) in the area by the higher frequency visitors?

7. For individuals who are fishing in the area, are they mostly bank fishing or wade fishing? Can you estimate the percentage breakdown between the two? What is the average time spent in the area by a fisherman?

8. Is there a harvestable fish population in Big Bayou? If there is, is there enough to support subsistence fishing (i.e., 0.284 kilograms of meat flesh/meal) for one person to eat 128 meals a year? If not, how much fish, and how often could a person best expect to harvest a meal for consumption?

Little Bayou

I realize that during the September 7th meeting, you stated there is little to no recreational use of the Little Bayou areas. However, it would be helpful if you could answer the same questions about Little Bayou, as asked of Little Bayou. Therefore, we are repeating the following questions.

1. What is the average number of visitors per year to Little Bayou?

2. Of this number, how many are adults and how many are children?

3. Are most of your visitors repeat or one-time visitors on a yearly basis?

4. What is the average time (hours) spent in Little Bayou? Is there a difference in average time spent between adult and child usage?

5. What are the common recreational usages in the area? What is the percentage breakdown of usages by the visitors (i.e. what percentage of visitors fish, hunt, hike, swim, etc.)?

6. What is the number of repeat visits per year by any one individual or group of individuals? What is the average time spent (hours) in the area by the higher frequency visitors?

7. For individuals who are fishing in the area, are they mostly bank fishing or wade fishing? Can you estimate the percentage breakdown between the two? What is the average time spent in the area by a fisherman?

8. Is there a harvestable fish population in Little Bayou? If there is, is there enough to support subsistence fishing (i.e., 0.284 kilograms of meat flesh/meal) for one person to eat 128 meals a year? If not, how much fish, and how often could a person best expect to harvest a meal for consumption?

We appreciate your help in answering these questions. After you have reviewed these, if you have any questions, or if the questions need clarification, please call.

Sincerely,

FULLER, MOSSBARGER, SCOTT AND MAY
ENGINEERS, INC.

Stephen L. Scott, P.E.
Project Manager

/esh

c: David Asburn
Tom McGee
Bob Sneed
David Brancato

facsimile
TRANSMITTAL

[redacted]

to: Stephen Scott, P.E.
fax #: 606-254-4800
re: Big Bayou & Little Bayou
date: November 8, 1995
pages: 4, including this cover sheet.

From the desk of...

Charlie Logsdon
WMA Supervisor
Ky. Dept. Of Fish & Wildlife Resources
10535 Ogden Landing Rd.
Kevil, KY. 42053

(502)488-3233
Fax

Stephen Scott, P.E.
Fuller, Mossbarger, Scott and May
Engineers, Inc.
1409 North Forbes Road
Lexington, Ky. 40511-2050

Dear Mr. Scott:

I have answered these question as accurately as possible. If you have any other questions, or questions about my answers feel free to contact me. Sorry about the delay, but you're letter came during some of our deer hunting seasons.

Sincerely,

Charlie Logsdon

Charlie Logsdon

cc: Wayne Davis
Don Walker

Little Bayou

1. The number of people visiting Little Bayou is essentially zero, with the exception of PGDP personnel and a few fishermen(maybe, 20 visits annually) that fish a large beaver pond above the outfalls of the plant. A few people (bowhunters and dog trainers) may cross the creek occasionally, but these visits would be brief(the majority would be measured in seconds or minutes). Field trial galleries do cross the creek(over a large dirt-covered culvert) north of McCaw Road, however, they do not enter the creek and the whole process takes seconds.

2. The visitors would be adults.

3. Refer to Big Bayou question 3. Visitors to Little Bayou would be repeat users, probably less than 10 visits per year and most of them in the brief encounter scenario described in question 1.

4. Most encounters with Little Bayou would be measured in seconds. Fishermen that use the beaver pond above the outfalls, may fish on average 2 hours.

5. See Big Bayou question 5.

6. Field trials that cross the creek may occur 12-15 weekends of the year. Most of the participants would be repeat users. The sum of all the encounters with Little Bayou would be measured in minutes for the most frequent user and most would only cross the creek on the culvert and dirt crossings.

7. All fishermen in the beaver pond would be bank fishermen as the pond is too deep to wade.

8. Other than the beaver pond above the outfalls, it would be nearly impossible to catch 0.284 kgs of fish from Little Bayou. There is a fish population, but most would fall in the minnow category and are not desirable by fishermen. In the beaver pond, it would be possible to catch this amount, but it would not support subsistence fishing(128 meals/year).

Big Bayou

Question 1: The number of visits by people using Big Bayou specifically, is estimated to be 150 visits. This is for a specific activity involving Big Bayou, such as fishing. More people may be in the vicinity while using the WKWMA, but their use of Big Bayou maybe for only an instant(i.e., using a log to cross Big Bayou to hunt on the other side of the creek).

Question 2: Of the 150 visits of people using Big Bayou, 100 are adults and 50 are children. This is an estimate based on our observations of people using the area.

Question 3: Most of these people would be one time users. However, 10% of the total number of users could be classified as repeat users. The highest number of visits by one person specifically using Big Bayou, would probably be <10.

Question 4: The average time spent in Big Bayou by users is unknown. However, I feel the amount of time spent/trip would be similar to other activities. During 1994, the average number of hours spent/trip for the following activities were: Quail hunting - 3.49 hrs/trip(n= 158), rabbit hunting - 3.25(n=168), bowhunting for deer - 3.48(n=1115), duck hunting - 2.4(n=69), and racooon hunting - 2.63(n=20). Raccoon hunting and duck hunting would be the activities most likely associated with Big Bayou. There would be little, if any, difference between adult and child usage of the area.

Question 5: This question is difficult to answer. Do you mean for WKWMA or Big Bayou? WKWMA is heavily used by a wide variety of users. Annually, the estimated number of visits for the following activities are: fishing - 5000 visits/year, hunting and dog training 4-6000, field trials - 1500, hiking - 100, berry & nut picking - 200, driving through for a variety of reasons - 50,000.
For activities involving Big Bayou alone: fishing - 150, hunting - ?(explained in question 1).

Question 6: Refer to questions 3 and 4.

Question 7. Most, if not all would be bank fishermen. Most of the fishing would occur at 3 points: 1) where the iron bridge in tract 4 crosses Big Bayou, 2) where the collapsed bridge in tract 4 crosses Big Bayou(by weir constructed by PGDP), and 3) where the concrete crossing bridges Big Bayou in tract 6. While it may occur, no wade fishing has been observed. No actual data is available, but should be similar to the length of visits noted in question 4.

Question 8: There is a harvestable fish population in Big Bayou. A person could potentially expect to catch 0.284 kgs of fish on a regular basis(depending on the skill of the fisherman), however, this is assuming that the person is not culling(throwing back extremely small fish). The frequency of being able to catch 0.248 kgs of fish would increase as one approaches the mouth of Big Bayou. Also, the only way the creek could support 128 meals a year is if there was major influx of fish from the Ohio River. This does occur when there is a backwater. During the backwater periods catches of 50 to several hundred pounds of catfish can be taken(this has been observed) on trotlines. This would not be indicative of risks associated with the plant.

FISH & WILDLIFE COMMISSION
Mike Boatwright, Paducah
Sam C. Potter, Jr., Bowling Green
George H. Foster, Louisville
Charles E. Bale, Hodgenville
nes R. Rich, Taylor Mill
ank Brown, Richmond
aul Lyon, Salyersville
Dr. Roland L. Burns, Rush
David H.Godby, Somerset

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF FISH AND WILDLIFE RESOURCES
C. THOMAS BENNETT, COMMISSIONER

April 5, 1994

Mr. Fred Dolislager
2924 William Road
Knoxville, TN 37932

Dear Mr Dolislager:

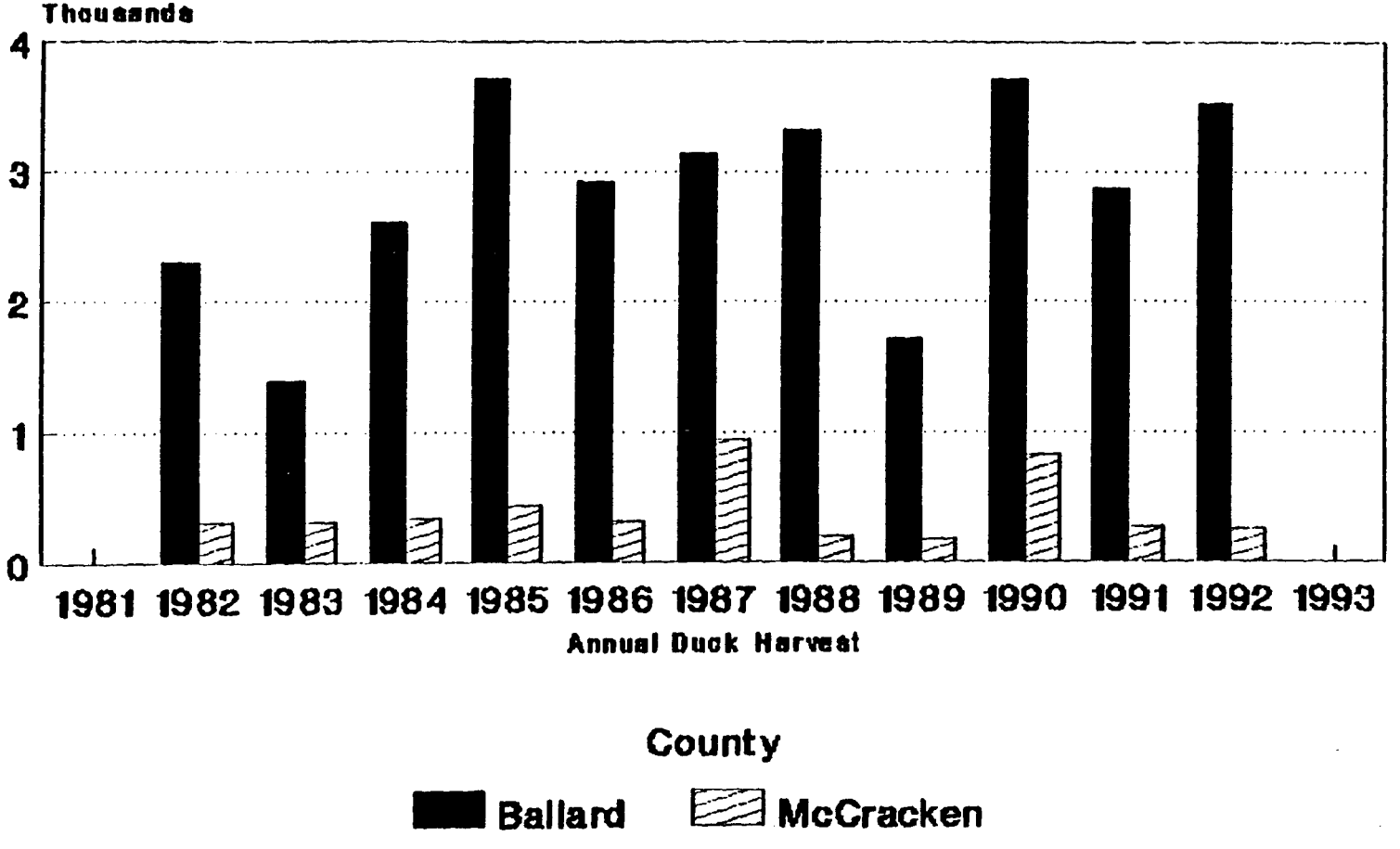
Enclosed is the information you requested. I created some graphs of annual harvest for ducks and geese in each county. Harvest estimates were used for the last 11 years because this is most representative of current hunting activities in Ballard and McCracken counties. Mean annual duck harvest in Ballard and McCracken counties is 2,834 and 396 birds, respectively. Mean annual goose harvest is 7,623 and 233 for Ballard and McCracken counties, respectively. This does not include 1993-94 harvest estimates which have not been tabulated yet. Below is a table of duck and goose harvests for each county by year.

	McCracken		Ballard	
Year	Ducks	Geese	Ducks	Geese
1982	311	171	2,293	5,272
1983	311	171	1,378	7,214
1984	339	188	2,600	6,095
1985	436	69	3,711	6,567
1986	311	171	2,918	6,956
1987	937	580	3,147	8,698
1988	197	160	3,316	13,119
1989	179	178	1.710	17,228
1990	815	245	3,712	4,574
1991	263	463	2,869	4,712
1992	259	171	3.518	2.959
1982-92 Mean	396	233	2,834	7,623

I hope this information is what you need. If you need anything else feel free to give me a call.

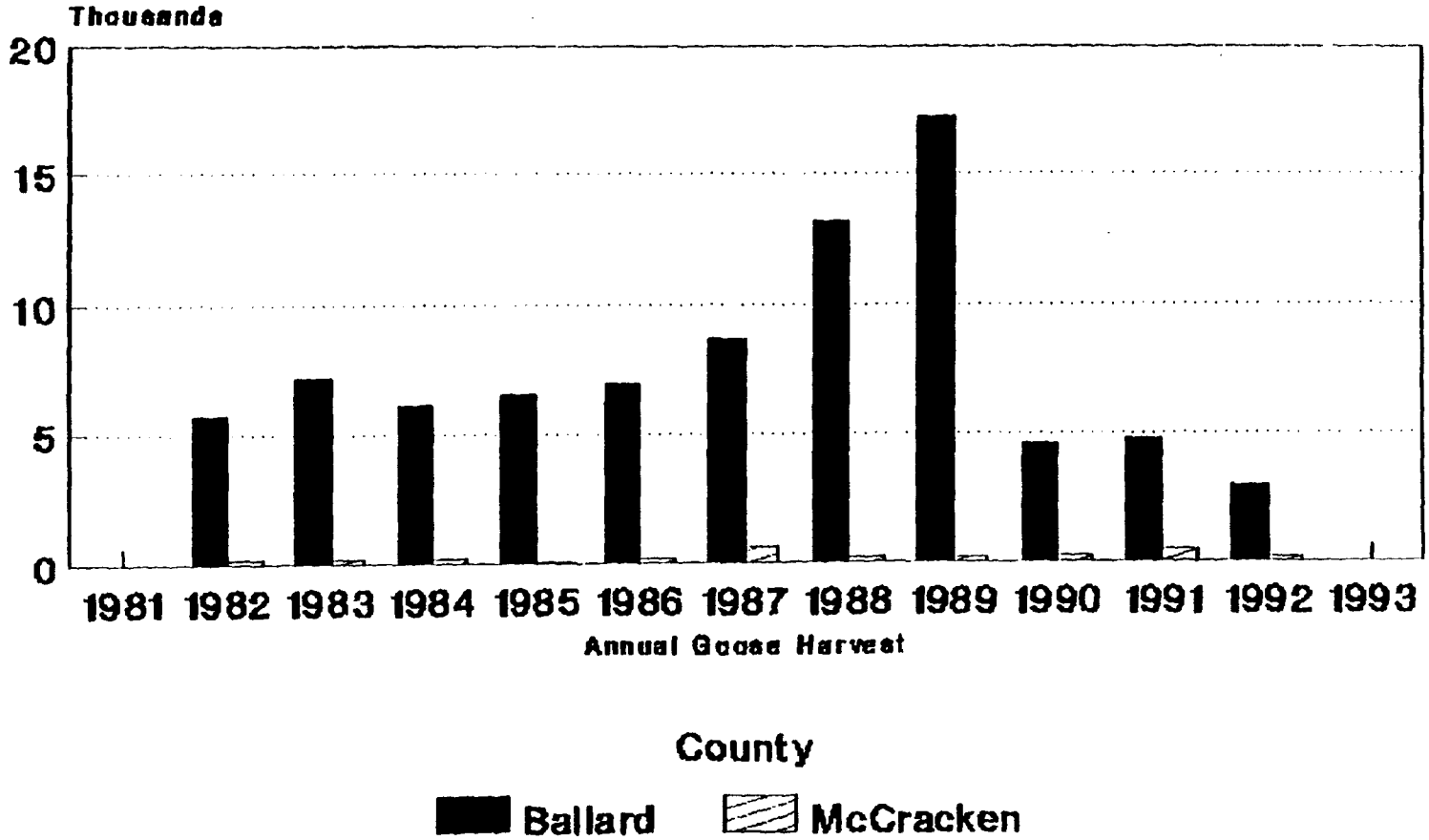
Sincerely,

TOTAL DUCK HARVEST IN BALLARD AND McCRACKEN COUNTIES FROM 1982 - 1992.

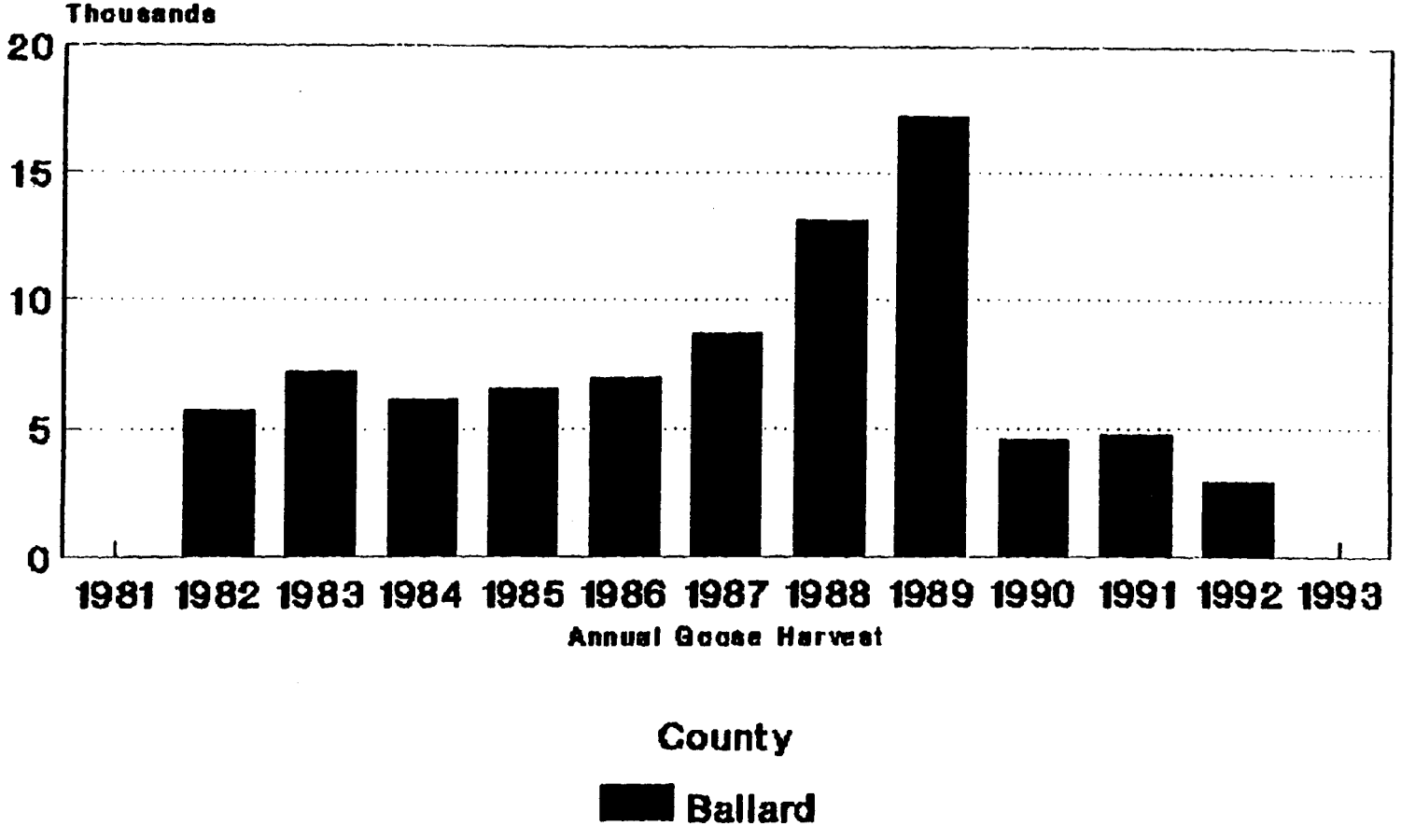


McCracken totals for 1982, 1983 and 1986 were estimated from averaging 11 years of annual harvest for the county

TOTAL GOOSE HARVEST IN BALLARD AND McCRACKEN COUNTIES FROM 1982 - 1992.

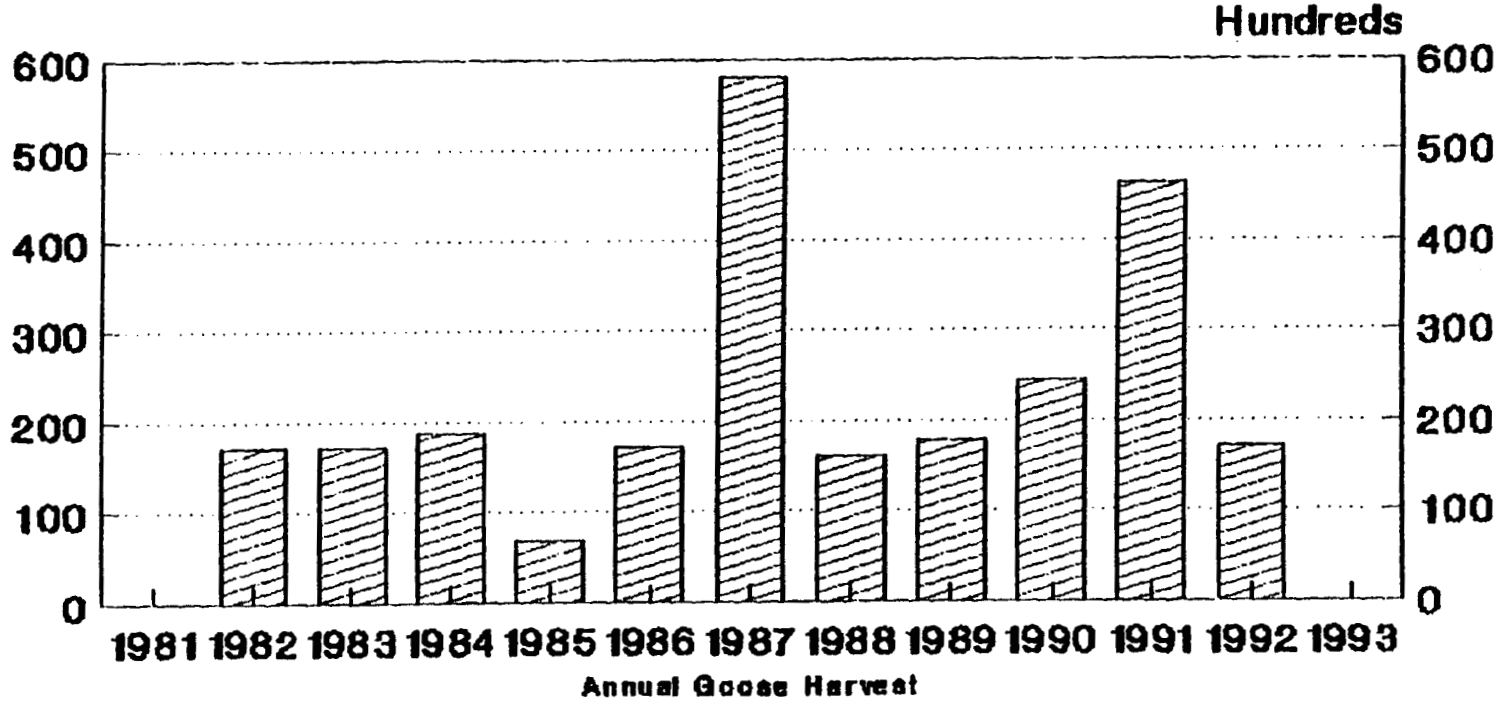


TOTAL GOOSE HARVEST IN BALLARD AND McCRACKEN COUNTIES FROM 1982 - 1992.



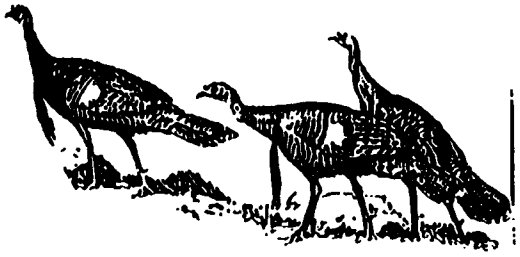
McCracken totals for 1982, 83, 86 & 92 were estimated from averaging 11 years of annual harvest for the county

TOTAL GOOSE HARVEST IN BALLARD AND McCRACKEN COUNTIES FROM 1982 - 1992.



McCracken totals for 1982, 83, 86 & 92

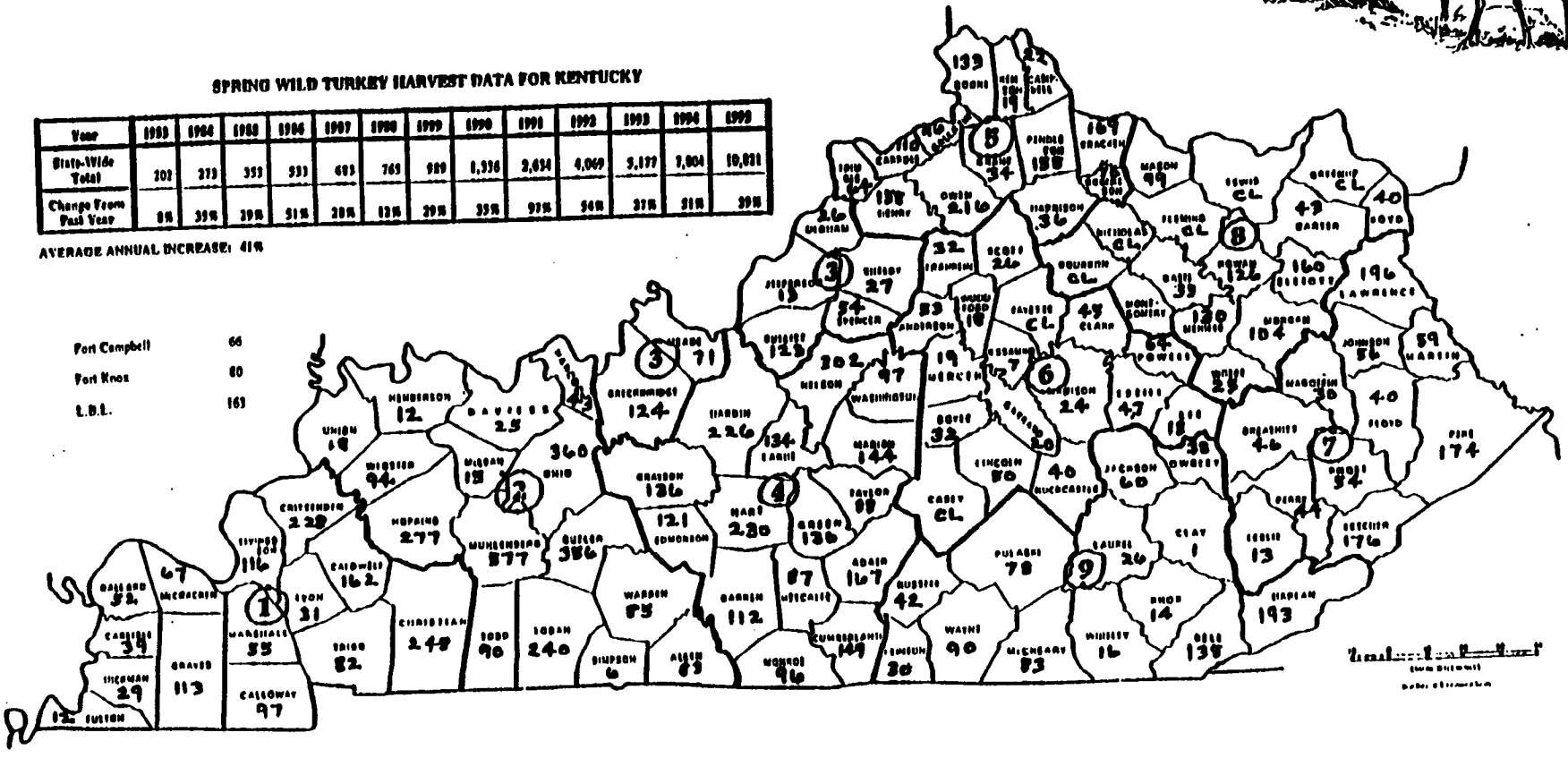
KENTUCKY
WILD TURKEY HARVEST
BY COUNTY
1995



SPRING WILD TURKEY HARVEST DATA FOR KENTUCKY

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
State-Wide Total	202	273	353	533	693	765	989	1,336	2,634	4,069	5,177	7,004	10,021
Change From Past Year	0%	35%	29%	51%	30%	13%	29%	35%	97%	54%	27%	91%	39%

AVERAGE ANNUAL INCREASE: 41%



This data was provided by the Kentucky Department of Fish and Wildlife Resources, and compiled in the present form by:

939 Belle Fork Road
Rush, KY 41168
(606) 928-6978

DR. ROLAND L. BURNS
6TH DISTRICT COMMISSION MEMBER

Table 7b. Kentucky Antlered Buck Harvest 1986-1994.

COUNTY	YEAR 1986	1987	1988	1989	1990	1991	1992	1993	1994
ADAIR	303	358	666	464	580	517	653	581	489
ALLEN	408	582	661	478	512	534	534	497	310
ANDERSON	360	465	570	499	414	450	496	390	528
BALLARD	289	451	441	284	411	311	287	331	420
BARREN	174	265	407	322	309	326	379	369	345
BATH	139	188	246	287	351	281	337	422	309
BELL	17	24	37	57	114	96	102	135	174
BOONE	415	514	555	503	614	653	475	471	665
BOURBON	8	4	9	16	12	21	36	46	51
BOYD	172	331	385	469	488	439	420	562	472
BOYLE	96	145	175	160	110	299	177	156	148
BRACKEN	264	370	479	346	411	493	366	309	422
BREATHITT	33	40	57	80	80	66	123	157	124
BRECKINRIDGE	657	997	737	831	818	806	799	604	735
BULLITT	160	192	248	249	273	255	310	301	297
BUTLER	604	804	557	650	664	567	574	541	733
CALDWELL	520	707	502	499	588	508	545	460	556
CALLOWAY	208	304	292	370	447	384	300	303	357
CAMPBELL	83	153	180	173	218	199	244	204	194
CARLISLE	208	268	319	247	214	198	181	281	239
CARROLL	205	369	306	304	348	372	274	253	331
CARTER	245	383	493	600	619	1032	838	827	788
CASEY	370	508	495	606	518	518	648	418	485
CHRISTIAN	896	1046	908	904	958	1037	863	850	953
CLARK	50	99	127	123	176	182	204	176	231
CLAY	0	0	104	114	96	130	191	165	200
CLINTON	33	57	38	45	120	112	170	163	124
CRITTENDEN	654	1040	883	903	944	706	877	847	820
CUMBERLAND	188	275	299	343	386	388	469	418	463
DAVIESS	241	221	386	354	314	282	333	327	420
EDMONSON	119	141	124	213	150	185	164	197	214
ELLIOTT	171	231	282	322	352	609	325	316	312
ESTILL	0	0	0	0	0	0	0	84	90
FAYETTE	1	4	4	7	8	14	19	15	29
FLEMING	64	82	79	146	155	126	206	203	275
FLOYD	16	53	39	113	152	134	171	133	199
FRANKLIN	451	421	487	459	440	611	467	557	475
FULTON	120	120	165	165	126	121	167	153	173
GALLATIN	233	324	330	278	317	382	261	233	283
GARRARD	11	13	20	30	53	65	87	96	107
GRANT	261	311	416	382	466	451	387	400	457
GRAVES	469	663	689	496	580	468	527	552	608
GRAYSON	332	387	513	451	499	591	530	574	674
GREEN	220	325	415	359	324	385	388	434	388
GREENUP	144	262	338	369	543	667	597	618	559
HANCOCK	406	366	359	394	384	380	413	371	321
HARDIN	356	452	540	581	586	591	710	704	719
HARLAN	45	55	68	117	63	131	135	134	195
HARRISON	194	251	262	333	231	354	236	270	325
HART	98	105	98	255	258	325	375	365	425
HENDERSON	420	515	511	497	460	417	423	429	535
HENRY	502	348	591	556	602	747	492	447	539

ole 7b. Kentucky Antlered Buck Harvest 1986-1994.

	YEAR								
OUNTY	1986	1987	1988	1989	1990	1991	1992	1993	1994
CKMAN	190	330	329	257	242	227	220	346	267
OPKINS	940	983	936	987	1028	779	906	591	992
ACKSON	60	98	144	130	142	205	208	209	295
EFFERSON	100	153	194	183	207	256	241	261	267
ESSAMINE	16	13	21	36	35	73	53	33	102
OHNSON	11	27	29	79	106	154	184	160	233
ENTON	45	92	95	86	114	144	132	128	165
NOTT	55	78	57	110	119	133	149	168	185
NOX	0	0	0	0	0	218	149	139	178
ARUE	231	321	352	370	384	322	341	314	321
AUREL	57	79	135	131	112	184	158	179	258
AWRENCE	322	632	782	1034	1165	1098	935	928	822
EE	22	36	31	55	79	81	85	52	92
ESLIE	39	52	60	121	46	65	59	37	121
ETCHER	0	0	0	0	48	61	81	88	112
EWIS	72	83	66	122	208	277	338	341	420
INCOLN	49	68	71	137	135	169	205	157	180
IVINGSTON	431	653	541	496	567	467	483	453	484
OGAN	618	847	608	624	710	555	561	627	695
YON	94	63	228	161	145	149	152	125	185
MACCRACKEN	170	175	365	250	189	225	229	190	202
MACCREARY	126	181	184	252	192	143	212	249	232
MACLEAN	339	334	455	278	404	259	289	347	347
MADISON	30	32	41	112	191	339	228	170	183
MAGOFFIN	9	12	18	0	0	0	0	173	192
MARION	335	506	486	508	468	475	440	423	486
MARSHALL	59	129	157	158	157	165	138	147	168
MARTIN	16	34	47	87	106	149	217	213	273
MASON	156	191	123	196	284	317	243	287	287
MEADE	234	203	396	327	393	356	343	332	382
MENIFEE	115	150	136	271	319	362	263	248	277
MERCER	103	183	203	210	238	182	211	179	207
METCALFE	164	263	265	299	355	271	317	380	420
MONROE	123	142	149	259	283	286	339	302	327
MONTGOMERY	8	16	18	32	61	55	81	84	110
MORGAN	123	183	235	289	332	364	533	428	551
MUHLENBURG	760	738	542	640	725	738	817	462	875
NELSON	446	580	639	685	690	580	634	552	683
NICHOLAS	85	140	127	177	189	205	170	164	175
OHIO	867	1266	893	906	874	1042	1029	1083	1325
OLDHAM	252	324	403	361	411	462	380	383	309
OWEN	670	800	912	812	864	901	676	889	810
OWSLEY	24	30	35	50	53	60	67	60	144
PENDLETON	399	460	514	516	511	481	463	513	542
PERRY	0	0	0	0	50	74	67	59	62
PIKE	23	37	26	55	64	100	0	0	0
POWELL	21	35	34	43	73	89	106	93	104
PULASKI	174	248	282	424	455	383	486	450	491
ROBERTSON	128	114	242	186	143	195	202	215	213
ROCKCASTLE	37	37	36	49	70	81	86	91	106
ROWAN	136	159	241	294	386	299	432	393	456
RUSSELL	144	218	111	241	228	247	246	128	273

ıble 7b. Kentucky Antlered Buck Harvest 1986-1994.

COUNTY	YEAR 1986	1987	1988	1989	1990	1991	1992	1993	1994
SCOTT	297	382	396	511	407	412	351	286	586
SHELBY	321	404	522	401	584	611	520	496	536
SIMPSON	50	59	55	92	89	98	103	105	139
SPENCER	230	276	348	371	328	303	241	303	369
TAYLOR	185	289	275	349	351	321	328	311	254
TODD	497	633	487	571	549	419	472	509	704
TRIGG	189	192	337	235	326	330	309	248	311
TRIMBLE	241	245	298	277	310	351	272	303	289
UNION	257	336	338	371	396	317	186	245	302
WARREN	275	285	440	383	379	255	343	341	346
WASHINGTON	298	349	445	430	339	459	336	236	432
WAYNE	156	201	206	293	288	264	299	301	348
WEBSTER	553	855	777	823	872	775	655	690	680
WHITLEY	66	110	91	153	205	221	232	252	271
WOLFE	23	46	33	70	124	191	159	122	176
WOODFORD	99	92	141	189	221	172	210	191	258
TOTALS	26022	33671	36065	37303	39910	40929	39868	38781	43848

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According to two reports received by the risk analysis section, industrial workers range 0.5 acres a day. This area is where the worker may be exposed to contamination. This area is called an exposure unit. In this risk assessment, it was reasoned an exposure unit of 0.5 acres is consistent with the activities at PGDP. Exposure was weighted based on the size of the SWMU and the 0.5 acre exposure unit. If the size of the SWMU was smaller than the 0.5 acre exposure unit, then the fraction was introduced into the CDI equation. The fraction; however, cannot exceed 1. Copies of the two reports are provided as references.

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PLANNING ISSUES FOR SUPERFUND SITE REMEDIATION

Randall T. Ryti
Dean Neptune

One function of the Superfund program is to assess the risk posed by hazardous waste sites. Sites that merit inclusion on the National Priorities List (NPL) are analyzed intensively through the Remedial Investigation/Feasibility Studies (RI/FS) process, which provides estimates of the risk posed by the site and the cost of cleanup. In this article we will review the planning issues for RI/FS through a case study of a specific Superfund site—a former transformer storage and rehabilitation facility in North Carolina.

The planning process used for this example is the Data Quality Objectives (DQO) process, which consists of the following steps: define the problem, define the question, define the data needs (the domain and decision rule), and define the data performance for the main question (*1,2*).

The planning approach is flexible; we have successfully

Abandoned drums located behind the "burn shed" at the site

applied the DQO process to two other Superfund sites. This site differed in the complexity of the problem, as well as the time frame within the Superfund assessment and cleanup process. We have observed that using the DQO process has not increased the resources expended (either time or money). Indeed, the process has resulted in substantial savings at a dioxin site in Missouri (*3,4*).

Another advantage of the planning process is that data collection can be focused. If one or a few contaminants are of interest, then more specific tests can be used. The planning process also sets goals for data collection, so that a criterion for the adequacy of data collection can be specified. The question of "how much is enough" develops naturally during the planning process.

Site history

The site is a former transformer storage and rehabilitation facility located on 4.8 acres of swampy terrain. The site lies within the 100 year floodplain of the Cape Fear River. Rebuilding of transformers was discontinued in 1982, but storage of transformers continued until 1986 when the site was abandoned. The initial sampling in 1978 found chlorobenzene in the well water on the site. Adjacent residences were placed on city water at that time. In 1979, PCBs were found in both the soil and well water, but no other action was taken. An Emergency Removal Action (ERA) was conducted in 1984 to remove contaminated soil. Sampling after the ERA detected PCBs at up to 140 ppm in the sub-surface soil.

The United States Environmental Protection Agency (EPA) Region 4 is administering the assessment and cleanup activities at the site. Discussions with the Region indicated that there were two phases to these activities. In Phase 1, the short list of contaminants of concern (COCs) and the general location of these COCs are determined. In Phase 2, the locations of the COCs are determined more precisely and the costs of various remedial alternatives are estimated. Through the steps of the DQO process, these general statements were refined and quantitative error tolerances were specified.

Phase 1

Discussion with EPA Region 4 indicated that Phase 1 of the assessment should answer two questions: What is the list of COCs at the Carolina Transformer site, and what is the x, y and z location of these contaminants?

Determining the list of COCs and the spatial scale of the contamination are essentially interrelated. For example, a "hot spot" of dioxin at a concentration of 10 ppb, but only in a few grams of soil at one location is not a threat to human health. Thus a contaminant causes concern if it exists above a specific concentration over an area where exposure is possible.

What logic can be used to define the area and concentration that makes a particular contaminant a concern? One approach is to compute the concentration and exposure area from a risk perspective. A second approach is to consider the way that the contaminant came to be distributed on the site.

EPA policy puts an acceptable risk level between 1 in 10,000 and 1 in 10,000,000 additional cancers (*5*). In this case, Region 4 decided that an acceptable risk is an additional 1 in 1,000,000 cancer incidence.

For PCBs in soil, the likely exposure route is through ingestion of contaminated soil. Exposure scenarios were investigated for adult workers on the site or children trespassers.

A risk scenario is based on assumptions about the absorption rate of the contaminant, the soil ingestion rate, and the length of the exposure. For example, a 70 kg adult is assumed to absorb 30% of the PCBs ingested. Adults are assumed to ingest a total of 100 mg of soil per day. These PCBs accumulate over 30 years, where the worker is present at the site 5 days a week for 50 weeks a year. Based on laboratory models and these exposure assumptions, an additional one in one million risk is equivalent to a PCB concentration of 1 ppm in the soil. For children trespassers, the end concentration is roughly the same, although the assumptions are different.

Over what area is this exposure accumulated? Some construction workers work over (and thus integrate exposure) an area of 1/2 acre. Children playing on a baseball field would also cover about 1/2 acre. We define an exposure unit (EU) as 1/2 acre. Since exposure is integrated over a large area (1/2 acre), small "hot spots" are only important if the overall average in a 1/2 acre area is greater than 1 ppm.

The preceding scenario was based on ingestion of surface soil. Based on CFR guidelines (an ARAR for PCBs), subsurface soil can be backfilled with clean soil if the concentration of PCBs are less than 10 ppm at a depth of 10 inches; thus <1 ppm PCBs is acceptable for soil in the 0–10 in. layer, and <10 ppm PCBs is acceptable below 10 in.

The likely source of the contamin was from leaking transformers. Thus a "hot spot" could result from a single leaking transformer. The Region decided that a leaking transformer would likely result in a 10 ft by 10 ft footprint. This implies that the smallest area that should need remediation is also a 10-ft square. The spatial scale is now bounded between 100 ft^2 and 22,500 ft^2. (1/2 acre). What concentration of PCBs in 100 ft^2 would result in an average of 1 ppm over 1/2 acre? If the remainder of the 1/2 acre were clean, then a single hot spot would have to measure more than 225 ppm for that EU to pose an unacceptable risk.

The main goal of Phase 1 is to define the list of COCs for the site and estimate the risk posed to the public. To address these goals, some information on the spatial distribution of the contaminants must be collected. Based on the historical use of the site and aerial photos, the site was divided into three areas: administration, operations and storage. PCB contamination was expected to be lowest in administration, intermediate in storage, and highest in operations. This stratification should lead to a e precise estimate of the average P concentration on the site. The lis COCs was confirmed on a subset samples submitted for the full scan analysis. Region 4 had expected that PCBs would be the sole COC on the site. The initial data also indicated that PCBs were much greater than 1 ppm in the surface soil. If these expectations are met, then the data collected in Phase 1 will only have to describe the general location of PCBs across the site.

Because no reliable information on the distribution of PCBs and the presence of other contaminants was available, a pilot study was recommended. In the case that the problem was truly as simple as described above, the pilot study could give enough information to lead to the second phase of the RI/FS.

Before describing the development of the pilot and the results obtained, let us consider the decision rule and the data quality required in Phase 1. The decision is to find if any area of the Carolina Transformer site poses n- acceptable health risk to the pub. ne data quality for the decision are the acceptable probabilities of maki e positive or false negative errors. e positive is where the actual risk posed by the site is less than 1 in 1,000,000 addi-

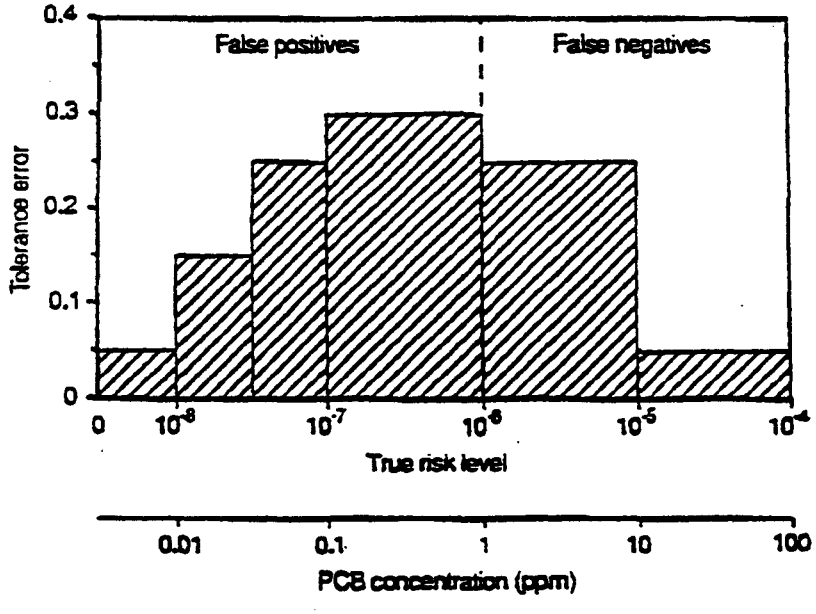
TABLE 1

ssumptions about the site used to design the pilot

Sub-unit	Area/acres	Probability 10' x 10' is contaminated	Number of samples
Administration	0.75	0.05	5
Storage	1.5	0.25	15
Operations	0.75	0.50	25

FIGURE 1

"Discomfort curve," or acceptable error rate for decision



onal cancers, but the risk is measured as being greater than 1 in 1,000,000 additional cancers. The consequences of a false positive are that resources (time and money) are diverted to sites that do not pose a significant risk. The possible consequences of a false negative (actual risk posed by the site is greater than 1 in 1,000,000 additional cancers but is measured as less) are additional cancers. Region 4 stated their quantitative discomfort with various magnitudes of false negatives and false positives (Figure 1).

The pilot survey was designed by using simple assumptions about the site. Based on the historical activities at the site, PCBs were assumed to be the most important (or only) contaminants on the site. Thus the Region agreed to run most of the soil samples through a quick-turnaround (QT) analysis procedure for PCBs. In addition to providing results more quickly, the QT method was also less expensive per analysis than the total contaminant list (TCL) scan ($150 vs. $1250). Based on the amount of data collected in other RI/FS Phase 1 surveys, approximately 45 QT soil samples could be analyzed. This amount is based on $30,000 total for Phase 1 analyses; spending one-half of the total in the pilot at $350 per analysis. An additional 10 samples were run by the TCL method to search for other contaminants. The 45 QT samples were allocated based on simple assumptions of the distribution of PCBs. PCB presence or absence was assumed to follow a binomial distribution on the scale of 10 ft by 10 ft areas (with no spatial correlation beyond 10 ft). The probability of presence was assumed to vary according to the sub-units of the site (Table 1).

The TCL samples taken in the pilot confirmed that PCBs were the only significant COC. The QT samples showed that the magnitude of PCB concentration did vary in the predicted manner among the three sub-units of the site. Table 2 shows these concentrations.

The concentration of PCBs was variable both within and between sub-units of the site. For example, stations close to a hot spot (e.g., 10 ppm) were not likely to measure 10 ppm. The spatial pattern of PCBs fits a "hot spot model"; the contamination is located in a binomial fashion, either contaminated or not contaminated. The most important result is that 41 of 45 samples were greater than 1 ppm PCBs; nearly the entire site is a "hot spot" from a risk perspective. Thus the initial assumptions about the frequency of "hot spots" were not correct.

Because the pilot identified PCBs as the only significant contaminant, we can restate the decision as: do any 1/2-acre areas of the site exceed 1 ppm PCBs? What is the approximate location of the contaminated soil? The Region had two options at this point: accept the results of the pilot survey for Phase 1, or conduct a Phase 1 survey where the number of samples is based on the results of the pilot.

Based on the laboratory measurement error for PCBs and the spatial sampling variation, the number of samples taken in the pilot did not meet all of the error constraints set by the Region. The false negative error rate for the Phase 1 decision based on the pilot data was slightly larger than the rate specified by the discomfort curve (7.5% vs. 5%). The advantage of accepting the pilot for the Phase 1 results is that Phase 2 can be started more quickly. False negatives are not important, since all 1/2 acre units were positives (i.e., PCBs >1 ppm), the Region decided to accept the results of the pilot in making the preliminary risk assessment for the site.

Phase 2

The purpose of the Phase 2 RI/FS survey is to define the location of the contamination and the cleanup costs. The cleanup costs are based on two components: a per unit volume cost and the total volume to remediate. The per volume remedial cost is dependent on the particular remedial sequence selected (for example: excavation, incineration, disposal, and back-filling with clean soil). We assume that the per volume remedial cost can be estimated exactly, so the only error is in the estimate of the volume of soil to be remediated. Thus the total volume can be computed from the location estimate.

EPA policy states that the cost should be estimated to within +30% and -50% of the actual RD/RA cost. To simplify the problem, the Region wanted the Phase 2 survey to be designed to estimate the

cleanup cost to within 30% with 90% or greater probability. An obvious difficulty is that sub-surface contamination must be estimated before the surface soil is remediated. A simplifying assumption is that two discrete soil layers will be sampled. Soil above 1 ppm PCBs in the top 10 in. and soil below 10 in. and containing more than 10 ppm PCBs will be remediated.

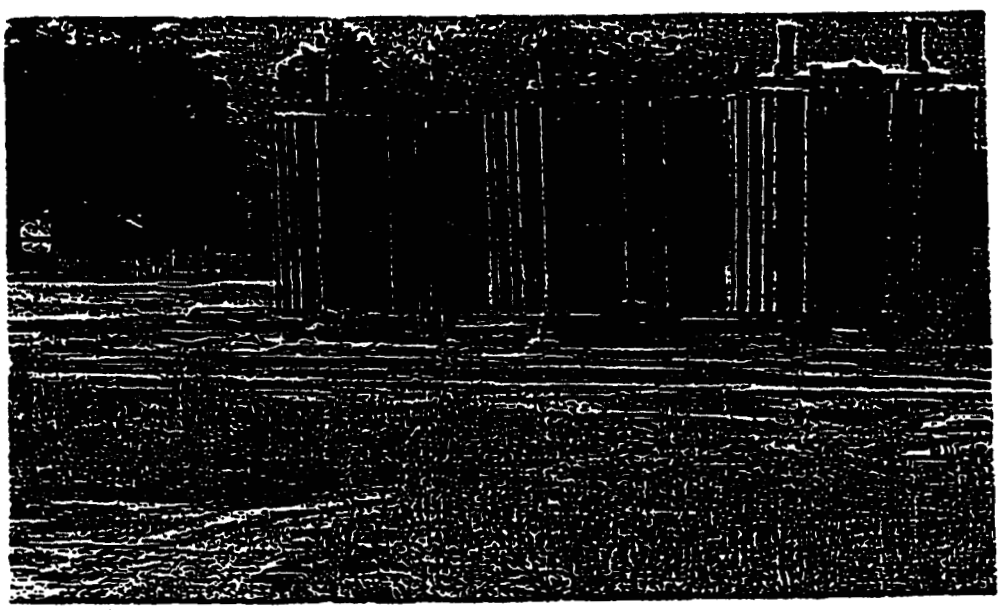
The data resolution needed for the location question is dependent on the spatial distribution of the contaminant within the exposure units (EU) (1/2 acres units in this example). Should an all-or-none approach be used for EU cleanup, or should remediation units (RUs) be defined as sub-units of EUs? In some cases, the additional sampling is cost-effective in that a "surgical" cleanup can remove hot spots of contamination (4). At a dioxin contaminated site in Missouri, the lowest total cost for sampling and cleanup was for RUs that were 1/24th the size of EUs (4). But in the present case, the pilot data indicated that there was little local pattern in the contamination, and that PCBs were nearly uniformly above 1 ppm. Field sampling and laboratory analysis costs were estimated for four sizes of RUs (1/2 acre, 1/8 acre, 1/18 acre, and 1/32 acre). Designs were evaluated by a Monte Carlo simulation approach (see Ref. 6 for additional examples; contact Dean Neptune for details on the simulations). Based on cost considerations, Region 4 selected 50 ft by 50 ft (about 1/18th acre) as the remedial unit size. This design has a cost of about $50,000 for sampling and laboratory analyses.

Each EU (or 1/2 acre) contains a three by three grid of RUs. Partial RUs (containing less than 1250 ft^2) are lumped with an adjacent RU. Sixty-two RUs were sampled in the legal boundaries of the site. Two soil samples were taken: a 0–2 in. sample that represented the 0–8 in. soil layer, and a 8–10 in. sample that represented the 8–16 in. soil layer. For each layer, 14 grab samples were taken in the Administration area, and 4 grabs elsewhere (Storage/Operations). The grabs were homogenized, and a single aliquot was bagged for laboratory analysis. Each aliquot contained enough material for four laboratory analyses. Two laboratory analyses were made of each aliquot in the Administration area and one analysis elsewhere.

The results of the Phase 2 RI/FS survey showed that PCBs are highly variable over the site (Table 3).

TABLE 2
Results of the pilot survey

Sub-unit	Mean concentration (standard deviation, n)	Median
Administration	7.5 (10.7, 5)	1.1
Storage	19.3 (21.4, 15)	11.3
Operations	34.7 (24.5, 25)	32.4



Large electrical transformers at the site—a former transformer rehabilitation and storage facility

PCB concentration varied over four orders of magnitude in both soil layers. There was greater contamination in the 0–2 in. layer on average, as compared with the 8–10 in. layer (compare Figures 2,3). But in 13 of 61 RUs the 8–10 in. layer was more contaminated (in many locations, by an order of magnitude) than the 0–2 in. layer. We would expect that PCBs would ordinarily migrate slowly down through the soil profile, without some kind of mechanical disturbance (or churning) of the soil. To what extent the soil was churned as a result of the operations at the facility or by the actions taken during the Emergency Removal Action is not known.

To estimate the volume of contaminated soil, the following cl[illegible] strategy (Figure 4) was develop[illegible] It was based on the depth that can excavated by a backhoe (about 8 and the two cleanup criteria. The surface soil is considered to be clean if the PCB concentration is less than 1 ppm. An excavated area can be backfilled with clean soil if the PCB concentration is less than 10 ppm at a depth below 10 inches. Three different depths are excavated (8, 10 or 16 in.), or no soil is removed based on the PCB concentration (Table 4). The total amount of soil to be excavated is estimated at 5389 yd^3.

In the Administration area, 6 of 16 RUs (62.5%) were greater than 1 ppm in the 0–2 in. layer, and in the Operations/Storage all 46 RUs measured greater than 1 ppm in the 0–2 in. layer. These numbers are similar to the assumptions used in the volume estimation design computations (50% contaminated assumed for Administration and 90% contaminated assumed for Operations/Storage).

Fifteen quality assessment (QA) samples were analyzed. The QA samples were laboratory sub-s[illegible]es of the core composites. The r[illegible]ive standard deviation of these QA s[illegible]les was 15%, excluding one outlier.

Discussion

The goal of Superfund program is to

remediate sites that pose an unacceptable health hazard. Because resources are limited, the Superfund program must be able to rank sites and to rank the hazards within sites. The information for these rankings becomes more detailed at each step in the process. Three main questions about sites are: Does the site pose a hazard? What remedial plan will remove the hazard? How will I verify the site is "clean?"

The Data Quality Objectives (DQO) process provides a way for managers to define a general question about a site that is later refined to a quantitative decision rule. The other parallel effort in the DQO process is to define error tolerances. The initial error tolerances are qualitative, and these are later quantified. These two components (decision rule and error tolerances), are the building blocks for a statistically-based design.

In the case of the North Carolina transformer site, the managers in Region 4 asked for the lowest cost designs that would meet their error tolerances for selected cleanup unit (RU) sizes. They were able to compare the cost of these designs against a survey that would estimate the volume of soil that was contaminated. In this way they could balance the importance of these main questions in the Phase 2 survey.

The advantage of the DQO process is that the decision constraints (the decision rule and the error tolerances) are based on the initial responses of the decision-maker. The decision-maker can see how different ways of stating the decision rule can have profound implications on the proposed survey design. Where no proposed sampling design is within budget, then the decision-maker has the option to either increase the budget or modify some of the constraints (look at larger RUs).

Conclusions

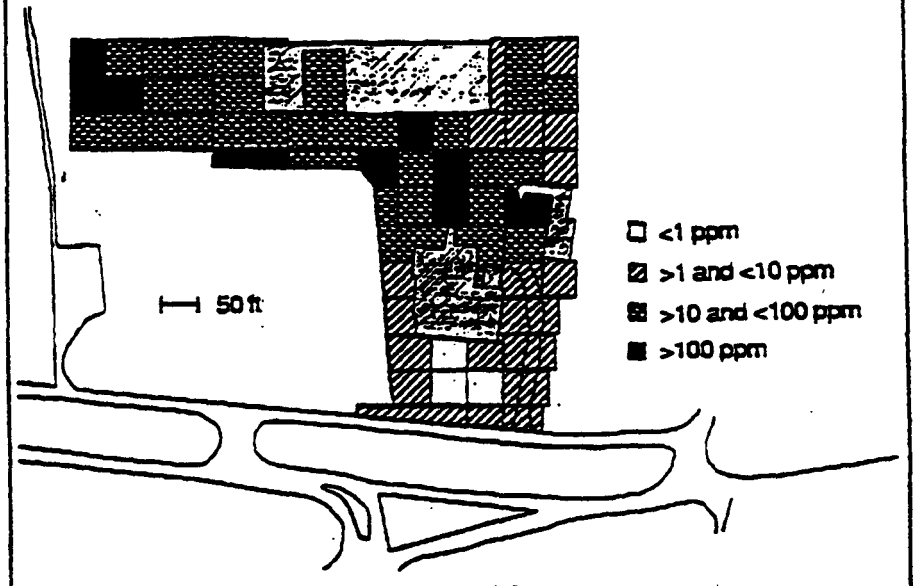
We have shown that the Data Quality Objectives process can help define questions and the data quality in ways that can lead to statistically-based sampling designs. The DQO process allowed Region 4 to collect the right data at the right time. It should be noted that at each step from the pilot survey to the Phase 1 design, and finally for the Phase 2 study design, the question was further clarified and more information was gathered about PCB distribution across the site. One problem with the Superfund program in general has been to decide when enough data has been collected.

TABLE 3
Results of Phase 2 survey

		Range		Number of RUs	
Soil layer	Median	low	high	<1 ppm	<10 ppm
0–2[1]	21	0.4	2500	3	21
8–10[2]	7.25	0.2	1100	18	36

[1] n=62
[2] n=61, one RU was concrete below the top 8"

FIGURE 2
PCB concentrations in 0–2 in. soil layer



Hatched areas represent buildings or concrete pads

FIGURE 3
PCB concentrations in 8–10 in. soil layer

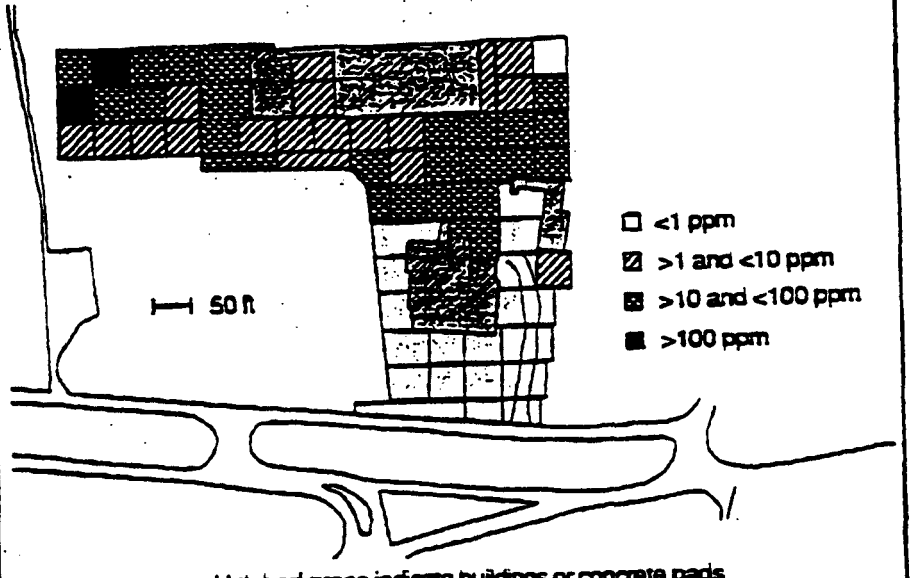


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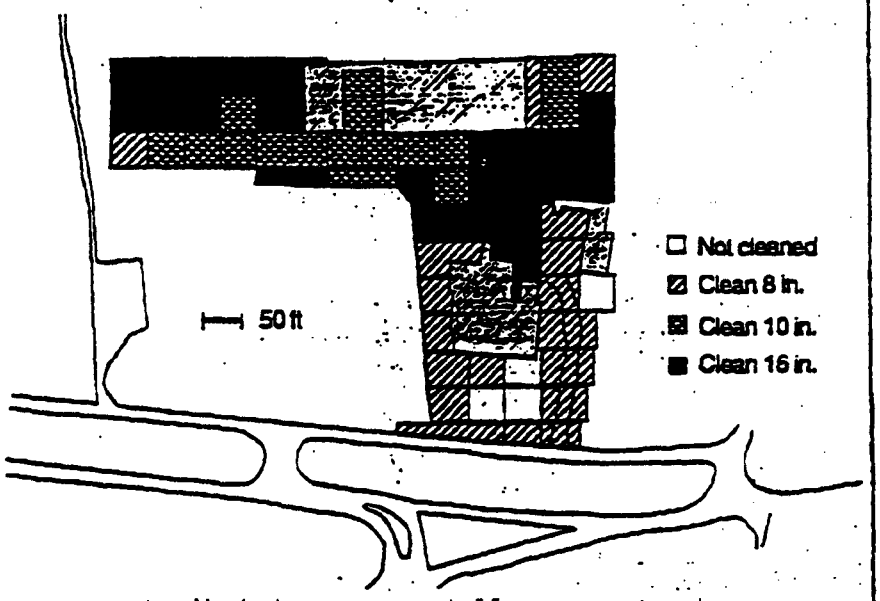
TABLE 4
Summary of cleanup strategy

Soil depth and concentration	Depth to excavate	Number of RUs	Volume cubic yards
0–2" <1 ppm	0"	3	—
8–10" <1 ppm	8"	18	969
8–10" < 10 ppm	10"	18	1297
8–10" >10 ppm[1]	16"	22	3123

[1] These RUs need to be sampled at 16–18" to verify PCBs are <10 ppm

FIGURE 4
Cleanup strategy for the site



Hatched areas represent buildings or concrete pads

It is through the steps of the DQO process that the data user specifies the stopping point (the decision rule with error tolerances).

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Making in Superfund:

A Data Quality Objectives CASE STUDY

What type and quality of data are needed to answer key questions and how do we know when we have enough? Data quality objectives (DQOs) offer decision makers a tool to answer both questions. DQOs provide a qualitative and quantitative framework around which data collection surveys are designed, and can serve as performance criteria for assessing ongoing or completed remedial investigation/feasibility studies (RI/FSs). DQOs allow remedial project managers to make decisions based on RI/FS data with a predetermined and acceptable level of confidence.

Here we present a case study demonstrating the practicality and benefits of using the DQO process as an up-front planning tool for designing RI/FS data collection activities. The RI/FS decision maker and technical support staff (typically including environmental toxicologists and field and laboratory scientists) must work together to develop DQOs and associated RI/FS survey designs. With these individuals in mind, this article illustrates the issues raised during the DQO process, and demonstrates how the process can help resolve them at a Superfund site before an RI survey design is developed.

Development of DQOs involves a step-wise planning process (see box, "Data quality objectives") that may be applied to any problem involving the collection and use of environmental data (*1*). We begin the DQO process by carefully stating the environmental problem to be addressed or the decision to be made; then we identify the information required to select an appropriate course of action and carefully articulate the specific role data will play in making the selection. Specifications regarding the type of data needed, the way data will be used, and the desired degree of certainty in conclusions to be derived from the data are then developed through an iterative process that involves the decision maker and data generators (technical support staff).

When applied to Superfund sites, the DQO process provides a quantitative basis for designing rigorous, defensible, and cost-effective remedial investigations. The DQO planning process recognizes that decision making in Superfund is driven by risks to public health and that the uncertainty in decisions will be affected by the type and quality of data collected. The focus on planning, as presented here, is consistent with ideas developed as part of Superfund's endeavor to streamline its remedial process (*2*).

This case study was developed cooperatively by EPA's Region IV Waste Management Division and Environmental Services Division, and the Quality Assurance Management Staff. Our study involved a retrospective application of the DQO process to an actual Superfund site that had already been studied and the remedial investigation design already implemented. (The RI designs reported here were not actually implemented.) By using a completed site, Region IV expects to compare and contrast the DQO process with the current approach to planning such investigations. All decisions regarding the DQOs were made by Region IV personnel, just as they would for other sites where RIs are planned. We chose an actual site for several reasons: to avoid a purely hypothetical exercise; to ensure that realistic issues were confronted; and to facilitate an objective assessment of the practicality of implementing the DQO process for Superfund problems. Here we report the results of our planning efforts, following the generic structure illustrated in the box "Data quality objectives."

Problem statement

The starting point for any planning process is gathering background information on the specific problem at hand. The site addressed in this case study was used for storing and burning railroad ties and creosote-soaked timbers (*3*) (see photo). Information collected at various times (e.g., during previous site studies and during the Superfund site listing process) suggested that a logical exposure scenario consistent with future use of the site includes site workers and visitors as hazard targets.

Toxicologists determined that the exposure route of greatest concern for these targets is direct ingestion of contaminated surface soils; other routes of exposure are not addressed in the case study. Existing data from preliminary investigations and site visits also suggested that while several contaminants are to be expected in such surface soils, the most toxic are polyaromatic hydrocarbons (PAHs) associated with creosote.

Decisions and decision elements

The key decision posed by the RI/FS is: "What remedial actions, if any, must be taken to reduce the risk posed by the site to an acceptable level?" A logical starting point, and the focus of this study, is to determine whether the site poses an unacceptable risk in its current state—whether it is a problem.

The next step is to work logically toward increasingly specific and hence focused questions that will require environmental data for resolution. We know that PAH contamination of soil is the most likely source of public health risk from the site. Thus, the element of interest can be restated as a question: "Which, if any, surface soil areas have PAHs at concentrations that pose an unacceptable risk to the hazard targets?"

Domain and logic statement

The next step was to determine the concentrations of PAHs that, if present over some defined area, would pose an unacceptable risk. This approach to the problem raised three related questions:

- What level of public health risk from this site is acceptable to the remedial project manager?
- What concentration of PAHs is associated with the acceptable level of risk, given reasonable assumptions about target exposure?
- What is the smallest area on the site over which we can reasonably assume that the targets' exposure to contaminants may occur?

Addressing these issues required assumptions about the population at risk (people), their activities, exposure routes, and the risks associated with specific contaminants. Recognizing that the number of samples ultimately collected at a site depends in part on the smallest area of concern, we focused attention on defining the size of this area first, and then dealt with the issues of acceptable risk and corresponding concentrations.

To divide the site into discrete areas for study in a manner consistent with our interest in controlling risk, assumptions about exposure and activity patterns were used to define an area called an "exposure unit" (EU). An EU is the area over which people are expected to integrate exposure when routinely working at or visiting the site (see white grid on site photo).

A separate decision will be made for each EU: if an area is found to contain PAHs at a concentration that poses an unacceptable risk, that EU (and thus the site) will be considered a problem. Further investigations and remedial alternatives will address only the EUs found to

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Data quality objectives

To build total quality into data operations, EPA quality assurance management staff have developed a planning tool for assuring that key planning steps are taken in a thoughtful, methodical manner. This tool, known as the Data Quality Objectives (DQO) process, begins with a careful statement of the environmental problem and produces a design for collecting the information needed to make an informed decision with a desired degree of confidence. The stepwise structure of the DQO process is to:

- state the problem, then
- identify decisions that address the problem, then
- select elements or factors that affect the decision, then
- specify the domain of the decision.
- Then develop a logic statement.
- establish constraints on uncertainty, and, finally,
- optimize the design for data collection.

The DQO process provides a logical, objective, and quantitative framework for finding an appropriate balance between the time and resources that will be used to generate the product (data) and the quality of that product.

DQOs enable EPA to develop, optimize, and evaluate statistically valid sampling and analysis designs that achieve the constraints on uncertainty. In general several options are developed for a range of costs that will generate the type and quality of data required to make a reliable decision. In the final step of the DQO process, the decision maker selects the design option that best fits his or her needs.

contain PAHs at concentrations posing unacceptable risks. If no such EUs are found, then a "no-action" alternative may be appropriate for the entire site.

Superfund risk assessment guidance stresses the importance of considering future land use and related reasonable exposure scenarios (4). According to the National Utility Contractor's Association, people working at or visiting a site such as this, where light industrial equipment is operated, would typically work within or traverse an area roughly one-half acre in size (about 2,000 m²) on a given day (5). This is the area in which people can be expected to receive their daily dose of contamination. In a very real sense, people "sample" surface soil contaminants over this half-acre; hence the average concentration of contaminants over each half-acre is a meaningful basis for assessing risk. Thus, for this site, a half-acre area of soil is an EU. Since a separate estimate of the average surface soil concentration will be generated for each EU, and a separate decision made about whether each EU poses an unacceptable risk, the EU defines the spatial domain of the decision.

Based on discussions of the potential risks posed by the site, the EPA Region IV remedial staff decided that remedial action should be taken if the site (i.e., any EU at the site) poses an increased cancer risk greater than 10^{-4}. The 10^{-4} risk level is therefore the decision point between acceptable and unacceptable risk. This decision point is consistent with EPA's policy that 10^{-4} and 10^{-7} is the range for acceptable risk limits (6). (Note: The 10^{-4} level was used specifically for this case study and does not necessarily reflect EPA Region IV policy or standard practice for other sites.)

We used exposure assumptions and standard Superfund risk equations (6) to determine the surface soil contaminant concentration that corresponds to a risk level of 10^{-4}. Region IV typically treats total PAHs as though the sole contaminant is benzo[a]pyrene, the most toxic of the PAH family of compounds. This approach is conservative in that it will generally overestimate the risk posed by total PAHs. Risk calculations indicate that an EU is a problem (i.e., presents a 10^{-4} increased risk of cancer) when the average PAH concentration in the EU is at or above 122 ppm.

A "logic statement" is a concise qualitative summary of how data will be used to reach a decision. The logic statement follows directly from the formulation of the problem above.

Data collected during the remedial investigation will be used to determine the average surface soil concentration of PAHs within each half-acre. Average PAH concentrations will be compared to the risk-derived concentration of concern, 122 ppm, to determine which, if any, surface soil EUs have PAHs at concentrations that would pose an unacceptable risk.

If an EU has an unacceptable average PAH concentration ≥122 ppm, then further study should be undertaken to develop a list of remedial alternatives. This "if-then" logic statement will be applied for each of the EUs, and any EU posing an unacceptable risk will need to be remediated.

Constraints on uncertainty

If the estimates of average PAH concentration within EUs are inaccurate, decisions about whether an EU poses unacceptable risk may be incorrect. The remedial investigation should be designed to limit the probability of incorrect decisions to an acceptable level. After the logic statement was specified, the project manager developed constraints on uncertainty, expressed as acceptable false positive and false negative error rates. These are shown in Figure 1. The *y*-axis provides the acceptable error rates (probability of making an incorrect decision) given various possible true risk levels, shown on the upper *x*-axis.

Acceptable error rates were not assigned in the 61–122-ppm range because the manager considered [illegible] decision would acceptable in this [illegible]. The error rates expressed in Figure 1 provided the statistician with quantitative constraints to be used in developing survey designs, which specify the number, location, and type of samples needed in the remedial investigation.

Stated in terms of the risk-based decision point, decisions about EUs may be incorrect in two ways:

The first type of error occurs when it is decided that an EU does not pose an unacceptable risk when, in fact, the risk posed by the EU exceeds 10^{-4}. This is a false negative error. If the investigation leads to this false conclusion, the project manager may stop further investigations at the EU and people eventually may be exposed to unacceptable risks. The seriousness of this type of error, and therefore the project manager's desire to avoid it, becomes greater as the true level of risk gets larger and larger. To help the manager establish limits on false negatives, a toxicologist was consulted to assess the consequences for three ranges of incremental risk, all of which exceed 10^{-4}:

- 1.0×10^{-4} to 5.0×10^{-4};
- 5.0×10^{-4} to 1.0×10^{-3}; and,
- above 1.0×10^{-3}.

After carefully considering the human health consequences, the project manager assigned acceptable probabilities for failing to detect a problem if the risk posed by the EU is actually within each of the above ranges (shown in the right-hand portion of Figure 1). The manager

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expressed: differing levels of acceptable error rates for the three risk ranges. These error rates (probabilities), which reflect the manager's increasing desire to avoid false negative errors at higher and higher contaminant concentrations, are the maximum acceptable rates established for this type of error. Notice that the manager desired lower false negative rates when the true risk is above 1.0×10^{-3} because the consequences to the public and to workers on-site are potentially much more serious than the consequences associated with the other ranges of risk.

The second type of error occurs when it is decided that an EU poses an unacceptable risk when, in fact, the risk posed by the EU is less than 10^{-4}. This is a false positive error. If data collected during the remedial investigation lead to this false conclusion, the manager will decide, unnecessarily, to continue to study the EU. New data may eventually reveal that an EU is not a problem, and hence, correct the false positive error. Otherwise, unnecessary remedial action will be taken. A false positive error results in wasted time, money, and effort on EUs that are actually not a problem. The manager consulted with the toxicologist and site engineers to assess the consequences of such error for three risk ranges, all of which are below 10^{-4}:

- below 5×10^{-6};
- 5.0×10^{-6} to 1.0×10^{-5}; and
- 1.0×10^{-5} to 5.0×10^{-5}.

The project manager stated that the remedial investigation should be designed to have a low probability of false positives when very low risk levels exist at an EU (e.g., when the EU is "clean"). The manager was willing to tolerate higher probabilities of false positives for risk levels near the threshold. The manager assigned acceptable probabilities for determining when an EU is a problem when in reality it is not for each of the above ranges (shown in the left-hand portion of Figure 1). These values are the acceptable rates for this type of error.

Risk equations (6) were used to determine the PAH concentrations that correspond to the risk ranges for which acceptable error rates had been defined. These concentrations are shown on the lower x-axis in Figure 1.

The logic statement, discussed earlier, indicated that we want to conclude that an EU is a problem if the true average PAH concentration in the EU is >122 ppm. Figure 1 indicates that the project manager is willing to accept a 0.15 probability or less for making an incorrect decision at true concentrations of 122 ppm. It also indicates the manager's desire to avoid developing remedial alternatives for EUs that have PAH concentrations below 61 ppm. The figure specifies that for PAH concentrations falling between 122 ppm and 61 ppm, the manager will accept either decision (indicated by the gray region in Figure 1).

Because the project manager is indifferent about the decision in the range of 61–122 ppm, but wants to limit the probability of a false negative at 122 ppm or above, our original question was refined as follows: "Which, if any, surface soil EUs have an average PAH concentration above 61 ppm?" At 122 ppm and above, the manager has specified the false negative error rates that are acceptable. At values below 61 ppm, the manager also specified the false positive error rates that are acceptable. The qualitative and quantitative criteria established for addressing this question are the DQOs for the remedial investigation, and will focus the statistician's search for an optimal design (see box, "DQOs for case study").

Design and optimization

After the DQOs were established, a statistician applied conventional techniques to explore and evaluate various designs for data collection. The statistician was asked to design a survey that, first, would attempt to identify any EUs that have average PAH concentrations >61 ppm; and second, would be subject to error rates no greater than those specified in the DQO statement from the project manager.

One concern the statistician noted was

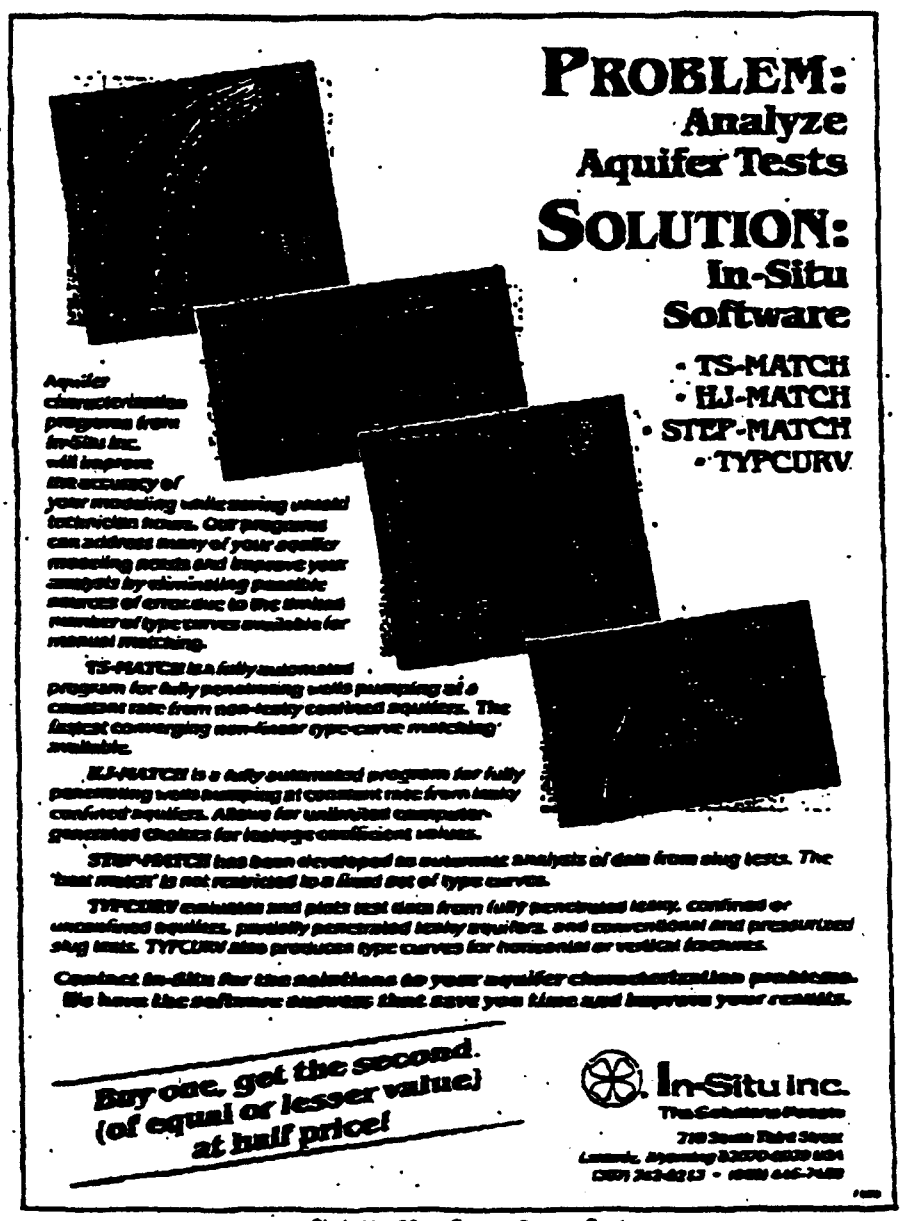

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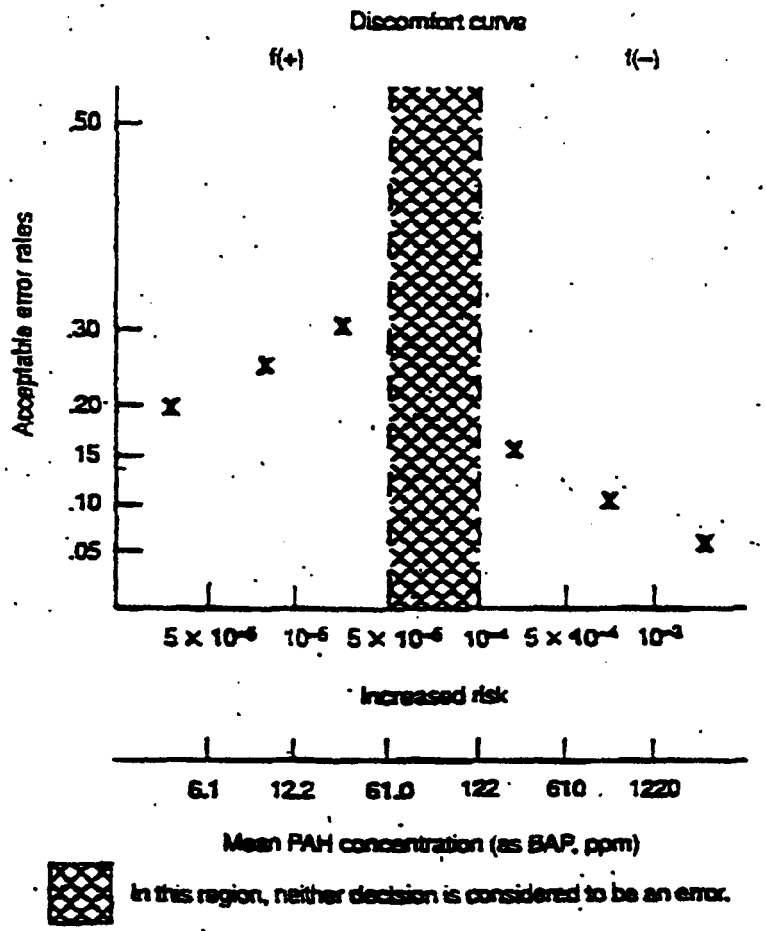
FIGURE 1

Acceptable limits for decision error



DQOs for case study

Decision: Determine whether sections of the site pose unacceptable risks to human health or the environment and require remediation.

Domain: Exposure units are half-acre areas of surface soils. (Temporal aspects of the domain are not at issue because the contaminant of concern at this site is stable, not mobile.)

Logic statement: If the mean PAH concentration in an exposure unit exceeds 122 ppm (10^{-4} risk), then the exposure unit will require remediation.

Uncertainty constraints

PAH risk range	Concentration range (ppm)	Acceptable probability for false positives (%)
Below 5×10^{-6}	Below 6.1	20
5×10^{-6} to 1×10^{-5}	6.1–12.2	25
1×10^{-5} to 5×10^{-5}	12.2–61	30

PAH risk range	Concentration range (ppm)	Acceptable probability for false negatives (%)
1×10^{-4} to 5×10^{-4}	122–610	15
5×10^{-4} to 1×10^{-3}	610–1,220	10
Above 1×10^{-3}	Above 1,220	5

Workers collect soil samples at the Superfund site.

that any attempt to divide the site into spatially distinct, uniform exposure units for testing runs the risk of missing [illegible] acceptably contaminated area whichlies across two or more EUs. This weakness is more than offset by two conservat measures included earlier: the assumption that the only PAH present is benzo[a]pyrene (the most toxic of the PAHs), and the decision to test for concentrations above 61 ppm when concern for false negative errors begins above 122 ppm.

The statistician framed the if-then logic statement as a statistical test that would allow us to determine whether PAHs within an EU are greater than 61 ppm, and began the search for designs that would control the decision uncertainty to the levels specified in the DQOs. To develop a statistically based sampling and analysis plan (the design), the statistician needed rough estimates of the spatial pattern and variability of the distribution of contaminant concentrations within EUs. He also required an estimate of the additional variability that would be introduced through the process of taking samples and analyzing them in the laboratory. Finally, since the statistician was asked to find the least expensive design that meets all the DQOs (the optimal solution), estimates of the costs of taking and analyzing a sample were required.

Since prior data on average [illegible]s across half-acre units were not available, the statistician used prior data from ran-

dom samples of surface soils across the site (Figure 2). The statistician assumed that point-by-point spatial variability of PAHs within half-acre EUs was identical to the point-by-point variability of samples taken across the entire site, without grouping into half-acre units. This is probably a conservative assumption, since it is likely that there is some degree of similarity within EUs as compared to points that are more widely separated.

These data indicated the form of the distribution of contaminant concentrations (in this case a log-normal distribution) and provided the basis for estimating the variability of contaminant concentrations across the site. An estimate of the most probable total variance (on a log scale) is $\sigma_T^2 = 1.64$ (24 degrees of freedom). Quality control data from analyses of PAHs, using the same analytical methods as those used to generate historical data for this site, indicate that analytical imprecision is on the order of 25% relative standard deviation. If the statistician had determined the historical data were not suitable for estimating the distribution and variability of concentrations within EUs, a pilot study would have been required to obtain these estimates.

Using the above information and the approximate per-sample costs of sampling ($80) and analysis ($800), the statistician began to evaluate various statistical sampling designs that would allow us to achieve the desired control over uncertainty. Recall that uncertainty is measured in terms of the probability of reaching an incorrect conclusion about whether an EU is a problem, i.e., the probability of false positives and false negatives. Among the options considered were uniform random sampling across the site, systematic sampling, stratified sampling, and sample compositing within each EU. After considering these options, the statistician recommended an approach that uses a compositing technique in which 10 or more scoops of soil, taken randomly within each EU, are combined, homogenized, and subsampled for analysis. When the potential difficulties and errors introduced through mixing and subsampling were recognized, five soil scoops were considered to be an efficient, practical number that could be combined routinely.

A statistical evaluation of several different designs, presented in Table 1, led to the following conclusions:

First, the expected performance data indicate that two survey designs have favorable cost and acceptable performance (i.e., were expected to meet or come close to meeting the 0.15 acceptable false negative and 0.3 false positive error rates specified over the range of important concentrations). The most favorable designs involved compositing five scoops per analytical sample. One design required the analysis of two composited samples per EU, while the other required three. Our notation for these designs are (5,2) and (5,3), respectively.

Second, compositing five scoops transformed the underlying log-normal distribution into one that is more like a normal distribution in shape. A computer simulation was needed to assess more accurately the anticipated performance of the two designs, i.e., the "power" or capability of each design to detect EUs with PAH concentrations above the criterion. (Details on the statistical evaluation may be obtained by writing author Dean Neptune.)

The (5,2) and (5,3) designs were evaluated by simulation to determine how

FIGURE 2
Frequency distribution of soil PAH concentrations

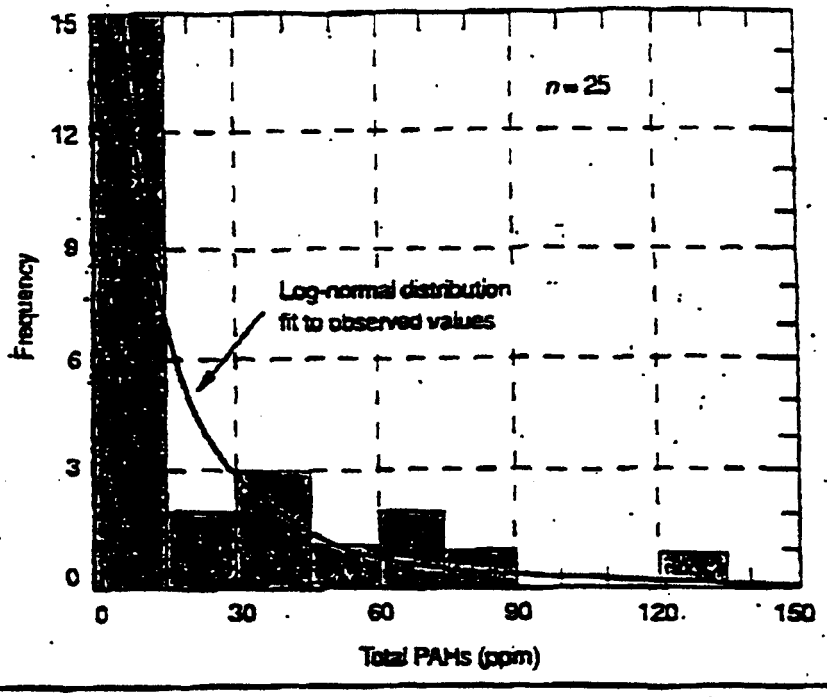


TABLE 1
Results of initial power calculations

No. scoops /analysis	No. analyses/EU	Cost /EU ($)	Probability of error[a]
1	4	3,520	.53
3	5	5,200	.15
4	2	2,240	.27
4	3	3,360	.18
4	4	4,480	.12
5	2	2,400	.20
5	3	3,600	.11

[a] When μ = 122 ppm and σ = .30.
Note: α = probability of concluding EU is a problem when μ is 61 ppm.

well they can be expected to perform at the critical values of 122 and 61 ppm, and at other concentrations higher and lower than these values. The rough estimates of performance in Table 1 were based on the assumption that the distribution of total PAHs was log-normal with a total variability of 1.64. The true variability of concentrations within EUs may prove to be greater or less than this estimate. To determine the effect that more or less variability might have on reaching a correct conclusion with either of these designs, the performance of each design was evaluated at three different levels of total variability: 1.64 (most probable—our estimate of variability based on historical data), 1.00 (assumes less variability—a lower 95% confidence limit on the historical estimate), and 3.17 (assumes more variability—an upper 95% confidence limit on the historical estimate).

Figures 3 and 4 show the results of the simulations presented as expected performance curves. The shaded regions of the two figures are areas in which the constraints on uncertainty—control on false negative and false positive error rates—are achieved. In the region between 61 and 122 ppm, the shaded area shows that any amount of error can be tolerated. The shaded regions above 122 and below 61 ppm are those for which the error rates are of concern. A design performance curve that lies entirely in the shaded regions would satisfy all the DQOs (see box, "DQOs for the case study").

The figures show that the two designs can be expected to perform similarly and to achieve most of the constraints on uncertainty (most of the curve appears in the shaded region). If variability is 1.64, the figures reveal that both designs fail slightly when the true average PAH concentrations are between 50 and 60 ppm. Neither of the designs is likely to meet uncertainty constraints if the total variability is high (3.17). Points labeled "A" and "B" are slightly outside the regions of desired performance. Points labeled "A" are of concern if the variability is lower than we anticipate (1.00). Points labeled "B" are of concern if the variability is greater than we anticipate (3.17). Thus, if we use either the (5,2) or (5,3) design, and the variability of PAH concentrations within an EU is substantially lower or higher than assumed (1.64), we can expect slightly higher error rates than specified by the DQOs.

Considering the conservative measures built into the designs, the project manager determined that failing to meet uncertainty constraints at these specific points is not serious. Finally, because the design (5,2) represents a 33% cost savings over the (5,3) design, and its ability to achieve the uncertainty constraints is approximately equal to that of the (5,3) design, the (5,2) design was recommended for the remedial investigation.

Summary

The data quality objectives produced in the manner described do much more than simply guide the survey design. The DQOs provide a focused decision statement, boundaries on the domain of interest (the EU), an "if-then" logic statement that specifies how data will be used in the decision, and constraints on the amount of uncertainty (limits on both false positives and false negatives) acceptable. They provide the information needed to ensure that the number of samples per EU is adequate and the sampling and analysis methods used will provide the

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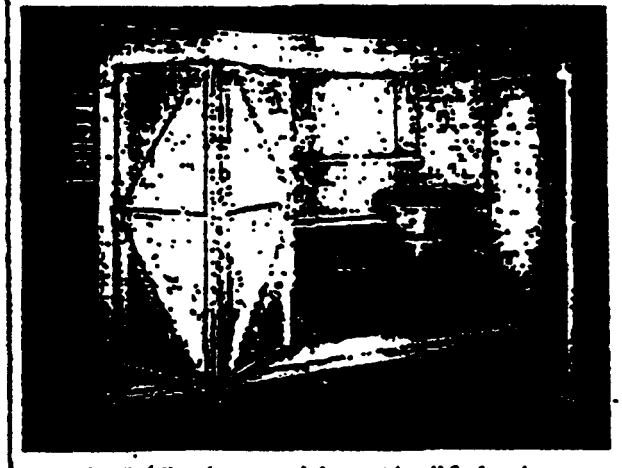

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FIGURE 3
Results of simulation for the (5,2) design

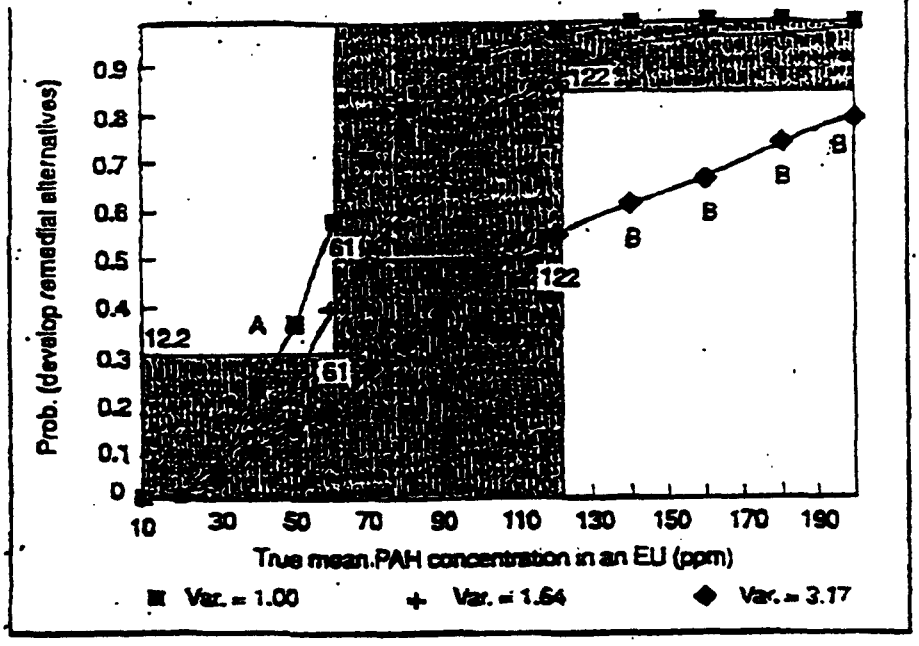
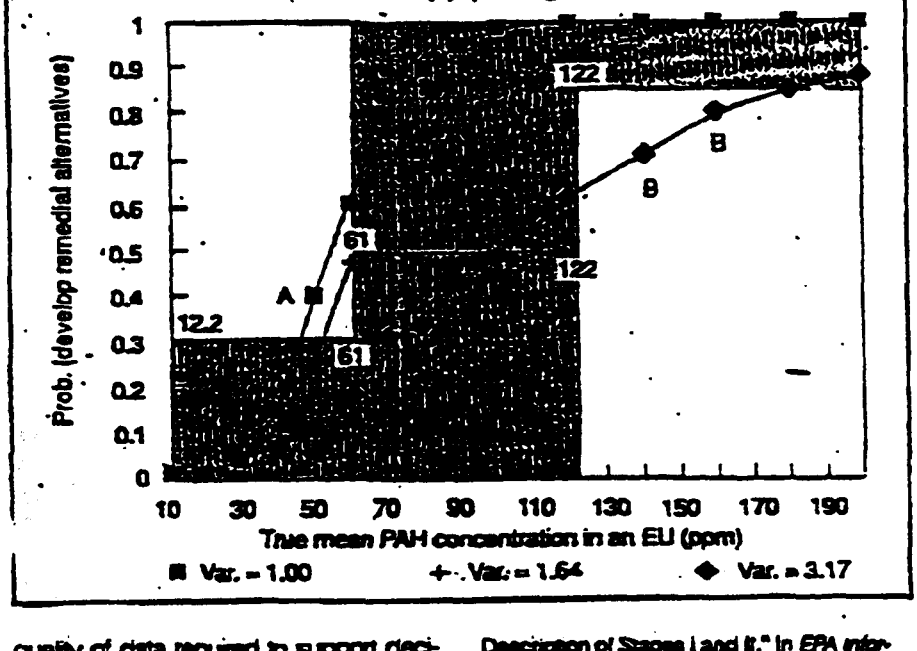


FIGURE 4
Results of simulation for the (5,3) design



quality of data required to support decisions with the desired certainty. The most important benefits of this approach are that the decisions regarding Superfund site remediation can be made at the desired level of certainty, and that the project manager has specific quantitative criteria for deciding how much data is enough.

References

(1) Quality Assurance Management Staff. "Development of Data Quality Objectives: Description of Stages I and II." In *EPA Information Guide*: EPA: Washington, D.C., July 1986.
(2) Environmental Protection Agency Office of Emergency and Remedial Response. "RI/FS Improvements Phase II, Streamlining Recommendations": EPA: Washington, D.C., January 1989: OSWER Directive No. 9355.3-06.
(3) Environmental Protection Agency. "Region IV Remedial Investigation Report for this Uncontrolled Hazardous Waste Site": EPA: Washington, D.C., 1988.
(4) Environmental Protection Agency. *Risk Assessment Guidance for Superfund: Human Health Evaluation Manual*: EPA: Washington, D.C., June 30, 1989; draft. *Note:* The calculations used to estimate reasonable maximum exposure in this case study are found in Reference 6.
(5) Connor, B., National Utility Contractors Association, Arlington, Va., personal communication. Reasonableness of this estimate was confirmed by EPA ORD and Region IV risk assessment experts.
(6) Office of Emergency and Remedial Response. *Superfund Public Health Evaluation Manual*: OSWER/EPA: Washington, D.C., October 1986; EPA 540/1-86/060

Acknowledgments

The individuals listed below played a substantive role in the development of the DQOs for this hazardous waste site. Region IV used the planning issues raised through the DQO process to set survey design constraints (the DQOs) for the case study. The DQOs then were used as the basis for optimizing the possible survey designs for this site. The DQO process and its adaptation to Superfund planning issues for the remedial investigation/feasibility study was led by the quality assurance management staff, with DQO application support from Research Triangle Institute, Montana State University, and NUS Corp. The authors of this paper have summarized the outputs of a series of activities in which all of these individuals participated directly: James Pickett, Ph.D., and Randall Ryti, Ph.D., Montana State University; Robert Hubbard, NUS Corp.; Eugene P. Brantly, C. Andrew Clayton, Daniel I. Michael, Michael Messner, Research Triangle Institute; Elmer Akin, Meredith Anderson, William Bolster, Beverly Houston, David Kleuner, M.D. Lair, William Patton, EPA Region IV; Dean Neptune, Ph.D., EPA Headquarters quality assurance management staff.

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Michael J. Messner is a research environmental scientist in the Chemistry and Process QA Department of RTI's Center for Environmental Quality Assurance (RTI, Research Triangle Park, N.C. 27709; 919-541-6126).

Daniel I. Michael is a research environmental scientist for the Research Triangle Institute's Environmental Research Planning Department in Washington, D.C. (202-332-5102).

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Comment Response Summary

for the

Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
(DOE/OR/07-1506&D1/V1/R0)

Prepared for
United States Department of Energy
Office of Environmental Management

COMMENT RESPONSE SUMMARY *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1506&D1/V1/R0)			
Comment Number	**Sect. Page/Para.**	**Reviewer and Comment**	**Draft Response**
NR and EPC (Division of Waste Management)			
1.	Appendices & Tables	Ethylbenzene is treated as a compound that has an oral slope factor and, therefore, carcinogenicity. To our knowledge, USEPA has not determined that ethylbenzene produces cancer. The tables should be altered to reflect this change.	Clarification. The inhalation slope factor used in the calculation of the screening value was from DOE's Risk Assessment Program's Risk Assessment Information System. According to the RAIS, the RAP contacted Superfund Health Risk Technical Support Center [(513)569-7300] and was given a provisional unit risk value for use in DOE-ORO projects. This unit risk value was converted to a slope factor by RAP using the method described in Supplemental Guidance from *RAGS: Region 4 Bulletins, Human Health Risk Assessment* (Interim Guidance) (November 1995). The RAWG agrees to use this value as long as two provisions are met. First, any risk assessment performed using this value must identify the value as provisional. Second, if ethylbenzene is identified as a COC, then the COC discussion must emphasize that the cancer risk attributed to ethylbenzene was estimated using a provisional value. (Note that the RAWG also agreed that these provisions must be met for all contaminants assessed using provisional or withdrawn values.) A discussion of these provisions will be added to the revised document.
2.	Screening level tables	In several of the screening level tables, there are reported quantities of 1.00E + 06 mg/Kg for risk, hazard, and/or action levels. We recommend that there should be some upper limit, such as 10,000 mg/Kg or at the most 100,000 mg/Kg, for compounds that pose low risk or hazard.	Agree. The upper limit value will be reduced to 100,000 mg/kg. A footnote will be added to all screening values reduced to this upper limit value. This footnote will be defined as follows: "The screening value derived for this contaminant exceeds the upper limit value deemed reasonable by the PGDP Risk Assessment Working Group. Therefore, this screening value was reduced to the upper limit value (100,000 mg/kg). If the chemical's environmental concentration exceeds the upper limit value, then additional risk evaluations for this chemical should be performed before accepting the results of a simple comparison."

COMMENT RESPONSE SUMMARY *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1506&D1/V1/R0)			
Comment Number	**Sect. Page/Para.**	**Reviewer and Comment**	**Draft Response**
3.	General	The oral reference dose for manganese of 0.14 mg/Kg-day is the value listed in IRIS for total exposure to manganese. Because the dietary intake is expected to be half that value, then to estimate the environmental exposure, the RfD should be halved. In addition, IRIS states that for non-dietary sources, the RfD should use a modifying factor of 3. Therefore, the RfD should be 0.024 rather than 0.14 mg/Kg-day.	Agree. The RfD for manganese used at the PGDP will be derived by dividing the IRIS value by 6 to make the screening values derivation consistent with derivation of Region 9 PRGs. Additionally, the following footnote will be added to manganese in the toxicity value table contained in the document. "The RfD contained in EPA's IRIS database includes manganese from all sources, including diet. The explanatory text in IRIS recommends using a modifying factor of 3 when calculating risks associated with non-food sources. IRIS also recommends subtracting dietary exposure (default assumption in IRIS is 5 mg). Thus, the RfD reported here has been lowered by a factor of 2 x 3, or 6. The RfD reflects manganese for "non-food" sources only."
4.	General	We consider the unit risk and CSF_i for hexavalent chromium to be incorrect. As noted in IRIS and evidenced in the U.S. EPA Region IX PRGs Table, the slope factor based on the Mancuso (1975; 1997) studies is actually based on total chromium, not hexavalent. Mancuso (1997) concluded that the relationship of lung cancer is not confined solely to one form of chromium compound. The hexavalent portion was assumed to make up $1/7^{th}$ of the total chromium, therefore the slope factor should be 7 times higher: 2.9×10^2. The slope factor in IRIS can still be used to evaluate carcinogenicity of total chromium.	Agree. The following footnotes will be added to screening value tables. These footnotes clarify how the values derived for chromium are to be used: "The screening value for Chromium VI presented here should only be used if the comparison is to a Chromium VI result. For a 'Total Chromium' result, the screening value listed for 'Total Chromium' should be used." "The cancer-based screening value for Total Chromium was derived using the cancer slope factor for Chromium VI reported in EPA's IRIS data base. Please see the toxicity value tables for additional information regarding this value." Additionally, footnotes will be added to toxicity value tables. These footnotes will be as follows: "The inhalation cancer slope factor reported for Chromium VI is seven times the value reported in EPA's IRIS data base. The inhalation cancer slope factor was multiplied by seven to remain consistent with the Commonwealth of Kentucky's interpretation of the study upon which the inhalation cancer slope factor is based." "The inhalation cancer slope factor reported for Total Chromium is the inhalation slope factor for Chromium VI reported in EPA's IRIS data base. This inhalation slope factor is used here because a cancer slope factor for total chromium does not exist and because its use is consistent with the Commonwealth of Kentucky's interpretation of the study upon which the inhalation slope factor is based."

COMMENT RESPONSE SUMMARY *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1506&D1/V1/R0)			
Comment Number	**Sect. Page/Para.**	**Reviewer and Comment**	**Draft Response**
5.	Page 3-8; paragraph 4	....activity will not be appear in the sediment...change to "activity will not appear in the sediment".	Agree.
6.	Page 3-23; Equation 5	....χ = mean of the all values, change to χ = mean of all values	Agree.
7.	Page 3-34; Inset paragraph; 6th line	.....with sediment 8.20...change to with sediment (HI=8.20).	Agree.
8.	Page 4-4; Paragraph 5; last line on page	.....being of concerns is appropriates, change to "being of concern is appropriate"...	Agree.
		DOE Paducah Site Office	
9.	General	This document contains far too much information. Almost every sentence contains so many unnecessary facts, references, etc. that the reader loses track of what is important. The Ecological document is much more concise and could serve as a guide for reducing the clutter in the HHR document.	Disagree. The document is complex because the integration of DOE, EPA, and KY guidance into a single method is a complex undertaking. The ecological methods document is much simpler because there is more convergence among methods. Additionally, the human health risk methods document contains more information because there have been more baseline human health risk assessments performed for the PGDP than baseline ecological assessments. The comments from the regulatory agencies upon these human health risk assessments forms the basis of much of the guidance contained in the methods document. HOWEVER, the document will be edited and modified as appropriate to ensure that important information is highlighted.
10.	General	Where is Volume II and any other volumes? Is the Ecological Risk Volume II? If so please put this information somewhere.	Agree. The two documents will be retitled to clarify their relationship. The suggested titles are as follows: 1) *Methods for Conducting Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky. Volume 1.Human Health.* 2) *Methods for Conducting Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky. Volume 2.Ecological*
11.	General	List of acronyms is incomplete (SWMM, RESRAD, etc.) please correct.	Agree. The list of acronyms will be checked.
12.	Page xi	Add a list of organizations – not members – that prepared the document somewhere in 2nd paragraph. See Eco. Risk document for example of how to treat this subject. Delete from last para. to the bottom of the page.	Agree. The table will be removed and the citation of organizations contributing to the preparation of the document will be added.

COMMENT RESPONSE SUMMARY *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1506&D1/V1/R0)			
Comment Number	**Sect. Page/Para.**	**Reviewer and Comment**	**Draft Response**
13.	Page. 1-1, last para.	Risk analyses and work plans was not mentioned in para. 1 above.	Disagree. The first sentence of paragraph 1 mentions risk analyses, and the third sentence of paragraph 1 mentions the production of the integrated RI/FS work plan.
14.	Fig 1.1.	Define "de minimis" as soon as possible within the text of the document.	Agree. A general definition of *de minimis* (i.e., below any level of concern) will be added to the note in Fig. 1.1.
15.	Page 2-1, next to last para., 3rd sent.	During risk assessment will you use the maximum upgradient value for metals etc. in the sediment as background?	Agree. The discussion of the method to be used in the comparison of upgradient and site results will expanded. This discussion will note that the full range of results collected at the upgradient location will be used in the comparison. This discussion will also note that data adequacy at both the upgradient location and the potentially contaminated site must be considered when interpreting the results of the comparison.
16.	Figure 2.2	Suggest putting the box titled "Determine if data meet regulatory sampling and analytical requirements" as the first box below "From General Approach..." box	Agree.
17.	Table 2.1	Is this table called out in the text? On what basis have these potential contaminants been classified as "significant"?	Agree. A call-out to this table will be added to the text in the second full paragraph on page 2-1. Agree. A footnote describing the source of this list will be added to Table 2.1. This footnote will note that this list of chemicals, compounds, and radionuclides was compiled from results of the earlier baseline risk assessments performed at the PGDP.
18.	Page 2-8, 1st para. 2nd ln.	Where is this "approved format"?	Agree. The format used for the binning packages will be added to Appendix C. A reference to this appendix will be added here.
19.	Section 2.1, beginning at the note in the 6th ln.	Drop the note---it is confusing at best.	Disagree. This sentence was crafted in response to a comment on a previous revision of the methods document. That comment asked that this material be added so that the reader would recognize that the results of risk-based screening would be only one of several factors considered when deciding if action is needed at a site.
20.	Page. 2-9, next to last para, last sent.	Delete "...If this is deemed appropriate" from end of sentence.	Disagree. The "binning" package format currently being used does not call for a summation of risks over all analytes. However, for at least two projects completed since the new binning process was implemented, managers have asked for a sum when making decisions. Therefore, a sum was calculated because the managers deemed it appropriate for the project.
21.	Page. 2-9	Delete the last paragraph on this page and bulleted material to end of section 2.1 on following page	Disagree. This paragraph and the following bullets are needed because they highlight the uncertainties of using screening analyses in decision-making.
22.	Page 2-11, last paragraph	Include a list of the comparison tables that will be contained in the RI.	Agree. A list compiled from information in Sect. 3 of the document will be added to the referenced section.

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Comment Number	**Sect. Page/Para.**	**Reviewer and Comment**	**Draft Response**
23.	Section 3.1.1.	Add a section introducing the "steps" discussed in the following paragraphs. Tell were the steps were derived from.	Agree. A short introduction to the DQO process will be added to the beginning of this section. This process will be referenced.
24.	Section 3.1.1, 2nd para	Delete last sentence and Figure 3.2. It is not necessary. Besides, this is the worst process drawing imaginable.	Agree.
25.	Page 3-4, Sec. 3.1.2, 2nd para	If we know there are mistakes it is not acceptable to report the data without comment!	Agree. The text states that results will be presented unchanged. If there are "errors" or other uncertainties in the results from earlier studies, then including comments would be appropriate. This clarification will be added to the referenced text.
26.	Page 3-4, last para. and next page.	The information in the [ ] is confusing at best. For example neither "POCs" nor "Pathway Totals" is contained in the referenced Exhibit 1.	Agree. This is an editorial mistake that will be corrected.
27.	Page 3-5, Section 3.1.3, second para., 1st sent.	Delete "...description of the .."	Disagree. The work plan contains a description of the methods to be used in the BHHRA. Therefore, the usage is correct.
28.	Page 3-5, Section 3.1.3, 2nd para, 8th ln	Delete all of sentence after the word "assessment". It appears premature to be speculating about results of the Eco Risk at this point.	Agree. The sentence referring to ecological risk assessment will be deleted.
29.	Page 3-7, Section 3.2, 1st para.	Many times the contingency samples are collected "real time" and no report, either formal or informal is prepared. The collection of these contingency samples is based on predetermined "ticklers". Sounds like your are talking about the interval between a "Phase I and Phase II" type investigation.	Agree. The introduction to this section needs to be modified so that it is clear that the analysis described here will only be performed if a phased investigation occurs.

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30.	Page 3-7, Section 3.2	Either here or somewhere in this document define who the "risk managers" typically are for any given project. This is a "buzz word" that needs definition.	Agree. A definition of Risk Managers will be added to Sect. 1 of the document. This definition will be as follows: "Risk Manager - An individual, team, or organization with responsibility for or authority to take action in response to an identified risk. Risk managers integrate the risk characterization information provided by the risk assessor with other considerations specified in applicable statutes to make and justify regulatory decisions. Generally, this group includes lead and regulatory agency managers and decision-makers. Risk managers also play a role in determining the scope of risk assessments." For completeness, a definition of risk assessor will also be added. This definition is as follows: "Risk assessor – An individual, team, or organization that generates site or media specific risk assessments for use in site-specific decision-making. The assessor relies on existing databases (e.g., IRIS, ORD Health Assessment Documents, CRAVE and RfD/RfC Workgroup documents, and program-specific toxicity information) and media- or site-specific exposure information in characterizing risk. This group also relies in part on regulatory agency risk assessment guidelines and program-specific guidance to address science policy issues and scientific uncertainties." These definitions were adapted from material in *Guidance for Risk Characterization*. EPA. Science Policy Council. February 1995.
31.	Page 3-7, last full para., last sentence.	Delete the entire last sentence, it is unnecessary	Agree.
32.	Exhibit 3.	According to the footnotes, the Tables have already been determined for inclusion in the RI/FS Workplans. Please provide, in the Appendix of this document, the table numbers, and the general titles for tables to be included in the RI/FS WPs	Agree in part. The exhibits provided in the methods document are example formats that should be used when possible. Unfortunately, for some projects, information may be inadequate for production of tables matching these exhibits. Therefore, the exhibits will continue to be provided as examples and not as requirements. Also, the footnotes will be corrected. The call-outs in the footnotes are to the tables that contain screening values. These tables were in Sect. 2 in the previous draft of the document but are in App. A in the current draft.

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33.	Page 3-11.	This looks more like a laundry list of risk related documents. Put this in the reference section as a bibliography of related material. If you want to include a few key documents here fine, but the rest is just clutter.	Disagree. The RAWG determined that this list provides valuable source information, Therefore, it will not be deleted.
34.	Page 3-16. Section 3.3.3.2, Step 1, last sent.	This sentence states that "...only data from samples collected from wells located in contaminant plumes will be used." How do you define "contaminant plume" boundaries? Is this an arbitrary call?	Agree. That is a problem with this approach. However, the sentence and approach are consistent with EPA Region 4 guidance.
35.	Page 3-16, Step 2.	Sentence states "Only results from unfiltered samples will be used...." We must rewrite the sentence to read " Only results from unfiltered samples ***collected in properly developed wells*** will be used ...". Grab samples from the UCRS or the RGA must not be used for risk purposes!	Agree in part. All data representative of site conditions will be used in risk assessments and risk evaluations. Data not meeting appropriate criteria will be removed from the data base under Step 1 of the data evaluation process. However, the effect of excluding data upon risk characterization will be discussed in the uncertainty section of the risk assessment.
36.	Page 3-17 , 1st ln.	MDA is not in the list of acronyms. Also, are you saying, for example, that if the highest MDA for U-238 is above a threshold value that would indicate risk related problems, then all the U-238 data will be deemed suspect?	Agree. MDA will be added to the list of acronyms. Agree. The material in the referenced text will be revised as will a similar discussion for chemicals on the previous page. The intent of the referenced passage is to note that the presence of samples with a SQL or MDA greater than screening levels in a data set results in a data set that is of suspect quality. Subsequent use of suspect data in a BHHRA results in an uncertainty that must be discussed in the BHHRA.
37.	Page 3-17, Step 5.	This step would appear needless to the average man on the street. If it isn't there, it isn't there.	Noted. However, the removal of analytes from the list of contaminants and the basis for removal are very important to the data evaluation process. Also, note that in some risk assessments, contaminants are assumed present even when they are never detected!
38.	Page 3-17, Step 6.	Who will determine when you have an extremely long list of analytes and what will be the deciding factor?	Agree. This is a qualitative determination made by the risk assessor. Generally, because the screening process is now performed using a computer, the size of the list of contaminants and the performance of the screen is no longer an issue. Therefore, the dependent clause in the first sentence will be deleted.
39.	Page 3-18, Last para., 3rd sent.	If the SQL was set low enough why would you apply TEFs to ½ the SQL of undetected Dioxin/Furans?	Noted. This approach was agreed to by the RAWG and is due to: 1) the supposed source of dioxin at the PGDP (i.e., by- products from PCB combustion) and 2) the potential toxicity posed by dioxins at very low concentrations.
40.	Page 4.3, 1st para., last sent.	Why not just pick the best default value? It eliminates work and confusion.	Agree. Unfortunately, there is disagreement between EPA and Commonwealth of Kentucky guidance about which default value is "best." Therefore, the analysis needs to be performed.

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41.	Page 4-3, 2nd para., 1st sent.	Why run a risk scenario that isn't even remotely likely to occur. Current industrial workers are not going to be drinking groundwater drawn from beneath the plant.	Agree. However, the restriction on water usage in response to the identification of unacceptable risk is a "remedy." As noted in the document, the basis for this "remedy" needs to be provided in the FS.
42.	Page 4-7, Section 4.1.4.2.	Do we need PGDP specific methods? If we do, why don't we have them—we have been conducting risk evaluations at the PGDP for over 10 years. Why not continue to follow guidance and requirements of existing rules and regulations.	Agree. To date, no quantitative risk analyses have appeared in the detailed analysis of alternatives because they were not needed to select among the alternatives. This may change in the future if risk-benefit analyses becomes more important to cleanup level selection. The place-holder in the referenced section simply recognizes that this may occur and that the RAWG will discuss the issue as needed.
		EPA	
43.	Section: 3.1.1	This section was overly repetitive and to a certain extent, was a reproduction of the Data Qualities Objectives guidance. The Data Quality Objectives is not just concerned with human health risk assessment, but also with engineering objectives, geological objectives and ecological risk assessment. The Data Quality Objectives should be an integrated discussion. It is suggested that this section be limited to stating what are the human health risk assessment screening requirements.	Noted. The intent of the section was to show specifically how risk analyses at the PGDP are integrated into the DQO process. The requirements for screening appear in both Sect. 2 and later in Sect. 3.
44.	Section: 3.3.3.2, Page: 3-17, Para: 0, Sentence: 7 (Note)	In this sentence, it is stated that negative radionuclide values will be used in the derivation of exposure point concentrations. It would seem that if a negative count is recorded, the MDA for that radionuclide sample should be used in calculating the exposure point concentration rather than a negative value. If negative values are used than the exposure point concentrations will be biased low. It is suggested that negative concentrations not be used to calculate exposure point concentrations.	Disagree. The use of negative values was agreed to by the RAWG.

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45.	Section: 3.3.4.3, Page: 3-23, Para: 4	This paragraph discusses the use of normal and log-normal formulas to calculate the exposure point concentration. However, two caveats should be applied. One, it is suggested that a sample size of ten samples is needed to make an accurate determination of distribution. Two, it is suggested that at least five samples are needed to calculate a log-normal EPC. Otherwise due to the nature of the "H factor," very large EPC's will be derived. It is suggested that for any sample size of less than five, the maximum concentration should be used. It should also be stated in this paragraph that when the EPC is greater than the maximum, then the maximum should be used as the exposure point concentration.	Agree. The material will be revised to include the following: 1) If results from less than five samples are available, then a distribution check will not be performed, and the EPC will be the maximum detected concentration. 2) If results from more than five but less than ten samples are available, then a distribution check will not be performed, the data will be assumed to be log normally distributed, and the EPC will be the lesser of the maximum detected concentration and the 95% UCL on the mean of the log normal distribution. 3) If results from more than 10 samples are available, then a distribution check will be performed, and the EPC will be the lesser of the maximum detected concentration and the 95% UCL on the mean of the appropriate distribution. The fact that the lessor of the maximum and the calculated value should be used as the EPC is noted at the end of paragraph two of Sect. 3.3.4.3.
46.	Section: 3.3.5.2, Page: 3-31, Para: 3, Sentence: 2	The use of the Region 9 and Region 3 tables as a source of toxicity information is not appropriate. The toxicity values should always be taken from IRIS, HEAST or specific NCEA guidance. This sentence should be corrected.	The list presented here was developed by the RAWG. Therefore, it will not be modified. Note that Region 9 and Region 3 tables represent single source toxicity information from IRIS, HEAST and NCEA and as such reflect the data provided in the multi-source databases.
47.	Section: 4.1.2, Page: 4-2, Para: 5	This paragraph discusses the impact of using the default surface area for a industrial worker at PGDP. It is true that the current workers undergo specific training as to the health hazards at PGDP. However, it is always preferable to remove the contamination rather than to always have engineering controls in place. Maybe the % surface area could be reduced to evaluate current workers, but the future workers should be evaluated without having to use engineering controls or PPE. This aspect should also be considered.	Agree. At the PGDP, the assessment for future workers does not consider restrictions. This is discussed in Sect. 3.
48.	Section: 4.1.2, Page: 4-3, Para: 4, Sentence: 4	This paragraph and sentence discusses how the RME scenario might be modified for workers mowing the grass at an OU or SWMU. However, what also should be considered is that the worker may mow the grass at multiple OUs or SWMUs and the workers exposure is an aggregate not just to a single SWMU. This fact must be considered when the worker's exposure is being considered for a change. Or, at a minimum, this should be discussed in the Uncertainty Section.	Agree. However, please note that the information being commented upon is that which may appear in the description of site risk that will appear in an FS. The discussion in the FS will integrate the uncertainties with the risk results to support the development of RAOs. In some cases, it may be appropriate to consider exposure at multiple locations if the exposure frequency and duration at the site in question are also varied.

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49.	Table: A.15, Page: 1, Row: Cadmium, Column: Adult Resident & Child Resident.	There appears to be some errors in the calculation of PRGs. The cadmium PRG for Adult resident was listed as 0.0463 mg/L and child resident was 0.0198. Using the standard formula for non-carcinogens oral ingestion: $$PRG = \frac{THI * BW * AT * RfD}{EF * ED * IR}$$ Where: PRG - mg/L THI = Target hazard Index = 1 BW = Body Weight = 70 kg for adult, 14.5 for child EF = Exposure frequency = 350 days/yr ED = Exposure Duration = 34 yr for adult, 6 yr for child IR = Ingestion Rate = 2 L/day for adult, 1 L/day for child AT = Averaging Time = 365 days/yr * 34 yr for adult, 365 days/yr * 6 yr for child RfD = 0.0005 mg/(kg*day) for cadmium This results in for adult cadmium: $$PRG = \frac{1 * 70 * 365 * 34 * 0.0005}{350 * 34 * 2} = 0.018 \text{ mg/L}$$ This results in for child cadmium: $$PRG = \frac{1 * 14.5 * 365 * 6 * 0.0005}{350 * 6 * 1} = 0.0076 \text{ mg/L}$$ It is acknowledged that the PRG includes inhalation exposure and dermal exposure, but the resulting PRG will be at least equal to the oral or less than the oral, not greater. A similar calculation was performed for chromium VI and the adult PRG was calculated to be 0.11 mg/L versus the 0.30 mg/L value listed in the table. It is strongly suggested that all the PRG calculations be checked by an independent authority.	Disagree. The values that are commented upon are Action screening values for groundwater and not No Action screening values. The No Action screening values for groundwater (see Tables A-5 and A-18) are 0.00154 and 0.000661 mg/L for the adult and child resident, respectively. These were calculated using a THI of 0.1. Converting to a THI of 1 results in values of 0.0154 and 0.00661 mg/L. These values match well with the values provided in the comment (i.e., 0.018 mg/L and 0.0076 mg/L). The difference between the values in Tables A-5 and A-8 with the values in the comment are due to the inclusion of additional routes of exposure as surmised in the comment. Similarly, the adult No Action value for Cr VI (converted to a THI of 1) listed in the aforementioned tables is 0.100 mg/L. This value also matches well with the value provided in the comment (0.11 mg/L) with the difference due to the inclusion of additional routes of exposure. Agree. All values have been independently checked as part of RAWG review.

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50.	General	The document does not describe how the risk methods will be deployed for: - D&D - Removal Actions	Agree in part. The use in D&D is not mentioned because D&D is outside the scope of the RAWG. If D&D becomes part of the RAWG's scope, then material concerning the role of risk assessments and risk evaluations in D&D will be added. The use in removal actions is discussed. Please see Sect. 2.
51.	Figure 2.2	Include sample density decision point based on data quantity sufficiency.	Agree in part. "Density" will be added to the first box. The intent was to cover all sample location issues in that box.
52.	Figure 2.4	The figure has been revised and is attached to these comments. The pink shapes are added and are new to the figure. The blue shapes include revised text. The red text in the title is revised. The basis for including the decision and process shapes is due to the need to correctly apply EPA's Soil Screening Level Guidance. In the some of the blue decision and process shapes the text was revised to reflect the deletion of the term "maximum" with respect to detected soil concentrations. When assessing soil with respect to its effects on ground water we look at all concentration data, not just maximum's. Distribution of the contamination is more important in this evaluation than simply and maximum soil concentration.	Agree in part. The RAWG believes that it would be inappropriate to add language specific to the SSL guidance to the figure because screening values developed under this guidance may be superceded at some date. However, it is agreed that some modification of the figure may be appropriate. (Please see Attachment 1 to this CRS for the figure provided by the reviewer.)
53.	Table 2.1	The table is not described or referenced in the text of this section.	Agree. The table and the source of the contaminant list will be added to the revised document.
54.	PTSM Inset Box, Page 2-9	Add a sentence to the introductory paragraph that states, "Per the NCP (Section 300.430(a)(1)(iii)(A)), PTSM is expected to be treated, wherever practicable." Also, replace "rules" with "considerations" in the second paragraph. In the three bullets of the second paragraph, replace "declare" with "consider."	Agree in part. The preference for treatment is recognized, but its incorporation into this guidance is questioned because the actions necessary to address PTSM are not a "risk method" and are probably outside the scope of this document. "Rules" will be replaced with "screening levels and benchmarks."
55.	Section 3.2, Page 3-7	Include a spatial plan view presentation of the data to describe/interpret areal distribution of contamination.	Agree. The need to demonstrate data adequacy, especially spatially, will be included in the revised text.
56.	Section: 3.2, Page: 3-9, Para: 2, Sentence: 3.	In this sentence, it is proposed that groundwater concentrations are to be compared with MCLs as one of the screening criteria. However, in the next sentence, it is stated that COPCs will be those analytes whose maximum concentration exceeds the risk-based concentration and the background concentration or activity. It is not clear what role MCLs play in this screening as they are not risk-based and are not to be used in the COPC selection process.	Noted. Please recognize that the analysis being described here is a screening analysis that may actually preclude the completion of a baseline risk assessment and may form the basis for development of subsequent decision documents. Therefore, the MCL is included in the screening table to ensure that 1) this information is available to the author of the decision document and 2) this information is reviewed prior to the development of the decision document.

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57.	Section: 3.3.3.2, Page: 3-16, Steps 1 and 2	It appears the title for Step 1 would should be "Evaluation of Sample Design and Locations" and the title for Step 2 should be "Evaluation of Sampling and Analytical Methods." These titles are more consistent with the description of the steps.	Agree. These changes will be made.
58.	Section 3.3.3.2, Page 3-17, Step 3	Examples should be provided to better illustrate the approach.	Agree. An example taken from a recently completed risk assessment will be inserted.
59.	Section: 3.3.3.2, Page: 3-17, Para: 1.	This paragraph discusses the use of the "B" qualifier in relation to blank contamination. However, it does not state how the data will be treated if a concentration is qualified with a "B" and is less than the "5 and 10 X's rule". Will it be treated as a non-detect and the concentration is entered as one half of the MDL in calculating the exposure point concentration? Or, will it be treated as a non-detect and the actual concentration entered for calculating the EPC. The latter option is preferred. It is understood that if the "5 and 10 X's rule" is applied and all samples are then classified as non-detect for that analyte, then the analyte is considered as a non-detect.	Agree. The clarification included in this comment will be added to the revised document.
60.	Section: 3.3.3.2, Page: 3-17, Para: 2.	This paragraph discusses the elimination of analytes not detected and rationale is given for the inclusion of certain analytes. Additional rationale for the inclusion of analytes should be added for classes of analytes such as PAHs, PCBs, and polychlorinated dioxins. These compounds are often present as mixtures and the non-detection of one component does not mean that the compound is not present. It is suggested that if any one of these classes exceeds a screening value, then all should be retained as COPCs.	Agree. This is discussed in part on page 3-18. However, the discussion there does not include the fact that the summation to derive total PAH, PCB, and Dioxin is to be performed using data not previously screened by analyte. This clarification will be added to the revised document.
61.	Exhibit 8	Adding a column for frequency of detects greater than Action Levels would be helpful.	Disagree. This table appears in the BHHRA. The action levels play no part of COPC selection in the BHHRA and their inclusion here would be confusing. HOWEVER, note that the screening analyses described in Sect. 2 does include the use of the action levels and the reporting of the frequency of detection above action levels.
62.	Section: 3.3.4.3, Page: 3-24, Para 1.	This paragraph states that water drawn from the UCRS will not be considered in the risk assessment. Is there a regulatory agreement on this point?	Yes, however, potential risks posed by the hypothetical use of water from this source are to be discussed as an uncertainty.

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63.	Table 3.2,pp.3-25 - 3-27:	Under the Model column it lists "SSLs and RESRAD". With radionuclides now having their own SSLs like chemicals, RESRAD can still be used but doesn't necessarily need to be. Change "and" to "and/or" in each section under this column.	Noted. At present, Commonwealth preference is to use RESRAD derived values. Agree. The "and/or" will be included in the revised document.
64.		Section: 3.3.6.2, Page: 3-34, Paragraph: Insert. This paragraph provides an example of how the summary of a receptor risk might be presented. The inclusion of a multitude of numbers which can found in a table does not make for easy reading and obscures the real point. It is suggested that only the risk estimates greater that the target values be included. The following text is shown as an example: For SWMU 8a, the teen recreational user exposure to the contaminated media resulted in an estimated HI for all pathways of 72. The breakdown of the HI and pathways of exposure is found in Table 5.7c. The primary pathways contributing to the elevated HI are consumption of fish (HI -60.5), dermal contact with surface water (HI=2.0), and dermal contact with sediment (HI=8.2). The COCs from the consumption of fish pathway are antimony, iron, manganese and zinc. The COCs from the dermal contact of surface water is vanadium. The COCs from the dermal contact with sediment are iron, manganese, and vanadium. The primary POCs are consumption of fish, dermal contact with sediment, and dermal contact with surface water. The COCs for the teen recreational user are antimony, iron, manganese, vanadium and zinc. It should also be noted that the HQs or HIs should be presented with only two significant figures.	Agree in part. The text presented in the document is an excerpt from DOE 1996b. (This was the only risk assessment approved at the PGDP at the time the original risk methods document was prepared.) Therefore, the material in the document is correct. However, since the preparation of the original methods document, the way in which the risk results are summarized has changed markedly, and these alternative presentations also appear in approved risk assessments. In order to recognize this change, the revised methods document will draw an excerpt from a more recent assessment as an example. Please see Attachment 2 to this CRS for an example of the material that will be used. (Taken from the approved WAG 6 BHHRA.) Note that the footnote to the exhibits in the example explains why three significant digits are used in the summary.

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65.	Section: 3.3.7, Page: 3-37, Para: 1, Sentence: 3.	This sentence presents the four broad categories of uncertainty in the risk assessment. Data and data evaluation and exposure assessment are two of the categories. However, an issue of uncertainty that must be addressed is the representativeness of the sample set as to the overall exposure. If just a few samples (say 5) is taken of 2 acres of land, then the sample set is not likely representative of constituent distribution. This may be discussed as part of the data or as part of the exposure assessment, but the representativeness of the sample set and method used to provide the data summary should be presented as part of the uncertainty discussion. This should be added to this paragraph.	Agree. The consideration of "representativeness" will be added to the list of uncertainties to consider in Sect. 3.3.7.1.
66.	Table: A-7a, Row: All, Column: Source of groundwater value.	It is observed that multiple chemicals have MCLs or MCLGs as the source of groundwater values. However, usually a risk-based level is used as the target groundwater concentration for the soil screening value. Once MCLs are used, the groundwater protection value is no longer risk based. This table and other groundwater protection tables should be re-calculated using the risk-based groundwater value. It is also noted that the equations and parameters for the calculations for the protection of groundwater are missing.	Agree. The equations and parameters were not included because the values were taken from the website without modification. These will now be added because site-specific values will need to be calculated.
67.	Appendix A	Tables A-10 thru A-13 could have been missing in some of the copies issued. Confirm they are present in the final document.	Agree.
68.	Tables A.12 - A.13	The background values are considered provisional. State the basis for these values being provisional and describe the strategy for establishing background values that are not provisional.	Agree in part. The basis for calling these provisional will be added to the revised document. The strategy forward cannot be described because that is outside the control of the RAWG.
69.	Table A.20, Page 3 of 3:	The MCLs for some radionuclides are incorrect[Ra226, Sr90]. 1st, all proposed >91 levels are no longer being used. 2nd, the uranium MCL is 30 ug/L. {Note: Per the date of this table, 12/11/00, these MCLs I had already corrected at least twice.}	Agree.
70.	Section: App D, Page: D-9.	The section titles are incomplete for Tables D-41, and Tables D-44-D50.	Agree. This will be corrected in the revised document.

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		Kentucky RCB	
71.	General Comment, Section 2.	Document has been written based on risk analysis. The Radiation Health and Toxic Agents Branch has indicated in meeting and in writing to the DOE Core Team that this is not acceptable for radiation. Section 2, which deals with scoping activities, must be re-written to reflect radiation dose assessments for screening. These scoping evaluations must include the following dose levels: (1) 1 mrem (walk away); (2) 15 mrem; and (3) 25 mrem should be addressed for all media and exposure scenarios. Additionally, 4 mrem should be considered for ground water (GW).	Agree. The revised document will include a more extensive treatment of the use of dose in site-screening. Note that the dose-based values to be used for screening are included in the copy reviewed.
72.	Page 2-1, 4th Para.	Background concentrations calculated utilizing 1/2 of the SQL or MDL do not reflect actual background measurements and are therefore questionable. The Radiation Health and Toxic Agents Branch does not accept this approach for radionuclides. It is either a detect or not. If radiation analytical results do not meet the following guidelines that have been agreed upon by the Radiation Health and Toxic Agents Branch and Bechtel/Jacobs staff who evaluate radiological data, it is unacceptable for use at the PGDP. Data assessment qualifiers and their description: KYRHTAB-LT: Kentucky Radiation Health and Toxic Agents Branch (KYRHTAB) has performed an independent data assessment and the results are less than (LT) the maximum detectable activity (MDA) or detection limit and should not be plotted. KYRHTAB-50: Kentucky Radiation Health and Toxic Agents Branch (KYRHTAB) has performed an independent data assessment and the radiation counting uncertainty is greater than 50% of the analytical results. KYRHTAB-ER: Kentucky Radiation Health and Toxic Agents Branch (KYRHTAB) has performed an independent data assessment and the data presents error problems (i.e., no counting uncertainty or zero counting uncertainty).	Noted. The incorporation of the suggested qualifiers is an ongoing process at the PGDP.

COMMENT RESPONSE SUMMARY *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1506&D1/V1/R0)			
Comment Number	**Sect. Page/Para.**	**Reviewer and Comment**	**Draft Response**
72. (continued)	Page 2-1, 4th Para. (continued)	KYRHTAB-OK: Kentucky Radiation Health and Toxic Agents Branch (KYRHTAB) has performed an independent data assessment and the data is acceptable for use.	
73.	Page 2-9, PTSM Box.	Principal Threat Source Material Screen. PTSM's dose equivalent is 25 mrem/yr and not 15 mrem/yr as indicated in the PTSM Box.	Agree. The value will be changed to 25 mrem/yr.
74.	Page 3-5, Exhibit 1. Example two-way table for presentation of historical risk assessment results.	Need to discuss the appropriateness of summing cancer risk across pathways and across target organs etc. (We've discussed this broadly and I'm hoping you have reference and guidance on issue).	Agree. A discussion will be added.
75.	Page 3-16, Section 3.3.3.	Data Evaluation Methods – See comment Page 2-1, 4th Paragraph.	See response to Comment 72. Also, a statement will be added to the revised document directing the reader to the following step where the issues regarding the use of qualified data and data qualifiers are discussed.
76.	Page 3-16, Section 3.3.3.2.	The RHTAB does not accept qualified radionuclide data for screening or for use in risk/dose assessments.	Please see the response to comment 75.
77.	Pages 3-16 & 3-17, Section 3.3.3.2.	For screening radionuclide data from filtered GW samples must be compared to unfiltered fraction of those GW samples to determine if the radionuclide are in the soluble GW fraction and available via transport to a receptor. For example, the data collected at SWMUs 7 and 30 is suspect because the GW samples were not filtered prior to acidification or filtration. In screening assessments when unfiltered fraction of a sample indicates the presence of relatively immobile species, failure to identify whether the species is available via the GW pathway may result in incorrect assessment of risk/dose.	Agree. The methods call for the examination of the results of filtered samples in addition to unfiltered samples. Both will continue to be included in assessments.
78.	Page 3-21, Section 3.3.4.2.	It is essential that all parties agree to the information in the first paragraph of this section. In a number of instances, for example Sections 1 and 2 of the north south diversion ditch, it has been evident that a pathway has been cut and agencies have failed to acknowledge this situation. All agencies must understand the importance of this paragraph and the long-term impact to DOE on leaving material in place.	Noted. Also, please consider material in Sect. 4.1.2.

COMMENT RESPONSE SUMMARY

Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

(DOE/OR/07-1506&D1/V1/R0)

Comment Number	Sect. Page/Para.	Reviewer and Comment	Draft Response
79.	Page 3-35, Section 3.3.6.4.	Dose assessments must be incorporated into the process of determining the scenarios of concern.	Agree. The following benchmarks will be used when determining scenarios, contaminants, pathways, and media of concern. This information will be added to the revised document. For dose assessment, a scenario of concern will be one that has a total dose exceeding the PGDP *de minimis* dose limit of 1 mrem/year. A contaminant of concern will be one that has a contaminant-specific dose exceeding 1 mrem/year. A pathway of concern will be an exposure route that has a route-specific dose exceeding 1 mrem/year. A media of concern will be those media appearing in any pathway of concern.
80.	Page 3-39, Section 3.3.8.1.	Dose assessments must be included in evaluation of Remedial Goal Options.	Agree. The methods to be used will be similar to those used for derivation of risk-based values and be described in the revised document. The dose targets that will be used are 1, 15, and 25 mrem/year for all media except groundwater. For groundwater, the dose targets will be 1, 4, 15, and 25 mrem/year.
81.	General Comment, Section 4 and Appendix D.	Section 4 did not incorporate dose assessment into the text of the document. DOE must include dose assessments in evaluating remedial actions at PGDP. In addition, realistic input parameters that reflect actual site conditions must be utilized for dose/risk analyses in the preparation of remedy selection documents.	Agree. The use and interpretation of dose assessment results will be discussed by the RAWG, and information will be included in the revised document. The fact that the document contains information about dose assessment will be stressed in the Exec. Summary and Sect. 1 of the document. "Dose assessment" will not appear in the title of the report. Discussions about using the exposure equations to support dose assessments will be added to the revised document. In addition, the equation appendix will be modified as appropriate.