

**Enclosure 2**  
**Waste Management Plan**



## WASTE MANAGEMENT PLAN

Approved by: *Tammy Courtney* Date: 8/14/19  
Tammy Courtney  
Project Manager

Effective Date: \_\_\_\_\_

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## REVISION SUMMARY

<b>Rev. No.</b>	<b>Description of Change</b>	<b>Pages</b>	<b>Date</b>
Revisions 0 through 4 from previous contracts.			
<b>5</b>	Incorporated changes to reflect Contract DE-EM0003733.	All	12/01/15
<b>6</b>	Annual update.	All	07/30/16
<b>7</b>	Annual update and to meet requirements of Corrective Action #ITS-2017-113-1 to include PCB solids in Table 1.	1, 4, 5, 8, 10	05/29/17
<b>8</b>	Annual update.	All	06/28/18
<b>9</b>	Updated to incorporate DOE comments.	All	08/14/19

## ACRONYM LIST

DOE	U.S. Department of Energy
D&R	Deactivation and Remediation
ECS	Environmental Compliance Specialist
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPP	Environmentally Preferable Products
ES&H	Environment, Safety and Health
ISMS	Integrated Safety Management System
ISSC	Infrastructure Support Services Contract
LLW	Low Level Waste
O	Order
PCB	Polychlorinated Biphenyl
PGDP	Paducah Gaseous Diffusion Plant
PK	Process Knowledge
PPP	Pollution Prevention Plan
QA	Quality Assurance
RADCON	Radiological Control
RCRA	Resource Conservation and Recovery Act
RPP	Radiation Protection Program
RWMB	Radioactive Waste Management Basis
SST	Swift & Staley Team
SWMU	Solid Waste Management Unit
WAC	Waste Acceptance Criteria
WMP	Waste Management Plan
WSHP	Worker Safety and Health Plan

## 1.0 PURPOSE

The Swift & Staley Team (SST) Waste Management Plan (WMP) provides guidance for compliant management of radioactive and non-radioactive waste. This document covers those activities that constitute completion of the life cycle of waste management; including generation, storage, handling, recycling/reuse, and disposal of waste resulting from the infrastructure support services contract (ISSC) activities at the Paducah Gaseous Diffusion Plant (PGDP) in Paducah, Kentucky. Compliant management of low-level radioactive waste is further described in ISSC-RAD-PL-005, *Radioactive Waste Management Basis (RWMB)*.

## 2.0 INTRODUCTION

Proper management of waste is supported and implemented (including oversight and evaluation) by key SST Environment, Safety, and Health (ES&H) staff. The plan requirements, procedures, and supporting aspects are developed and maintained current by the ES&H Manager and the SST Environmental Compliance Specialist (ECS), with input from radiological control (RADCON) personnel. When applicable, SST ES&H staff interfaces with the Deactivation and Remediation (D&R) Contractor waste management counterpart to ensure compatible and compliant waste handling.

Employees involved with waste management activities receive appropriate levels of training as specified in Section 4.6 of this plan. Additionally, applicable sections of the following SST documents are implemented as necessary to ensure proper handling of waste:

- ISSC-ESH-PL-004, *Worker Safety and Health Plan (WSHP)*
- ISSC-ESH-PL-005, *Pollution Prevention Plan (PPP)*
- ISSC-ESH-PL-008, *Radiation Protection Program (RPP)—Environmental Radiation Protection Program*
- ISSC-RAD-PL-005, *Radioactive Waste Management Basis (RWMB)*
- ISSC-ESH-PR-005, *Storage and Disposition of Spent Materials*
- ISSC-PE-PR-001, *Reutilization and Excessing of Property, Staging of Excess Property, and Off-Site Removal of Property*

As specified within the WSHP, SST personnel utilize an Integrated Safety Management System (ISMS) approach to prevent accidents and improve performance during waste management activities. The responsibilities for persons involved in developing, maintaining, and implementing this plan are defined in greater detail in Section 4.9.

Waste minimization/pollution prevention initiatives are implemented by SST to conserve natural resources, use nonhazardous substitutions and environmentally preferable products (EPP), reduce or eliminate the generation of wastes and meet the intent of U.S. Department of Energy (DOE) Order (O) 436.1, *Departmental Sustainability*,

Executive Order (EO) 13834, *Efficient Federal Operations*, and associated implementing instructions.

Efforts are made to eliminate or minimize the generation of wastes through source reduction, material substitution, process changes, or enhanced process efficiency as described in the PPP, and in accordance with ISO 14001:2015, *Environmental Management Systems* as implemented by ISSC-ESH-PL-006, *Environmental Management System Description*.

Waste handling activities associated with the ISSC are performed in compliance with DOE federal and state requirements. The WMP is reviewed and revised when appropriate (e.g., changes in regulatory requirements, changes in work scope, technology changes).

Guidance on managing waste generated by ISSC subcontractors is provided through an ISSC-ESH-FO-051, *Project Waste Generation Forecast*. Subcontractors provide projected waste types and volumes, and SST ES&H personnel provide waste management instructions in accordance with SST procedure ISSC-ESH-PR-005, including approved disposal or recycling facilities. Waste that is not released from the Paducah Site is managed through the D&R Contractor.

Subcontractors provide documentation in the form of weigh tickets, bills of lading, etc. as proof of compliant waste management.

### **3.0 APPLICATION AND WASTE TYPES**

This WMP applies to all aspects of the management of waste generated by SST infrastructure activities. Waste is managed in compliance with the directives in this plan and ISSC-ESH-PR-005.

SST reduces the volume of waste to the lowest possible volume through frequent review of activities that generate waste and the specific wastes being generated, procurement of chemicals, and quarterly inventory of chemical storage areas. Feedback and corrective actions are implemented to ensure waste is stored, packaged, transported, and disposed in accordance with applicable regulations and requirements. ISMS self-assessments and feedback improvements occur during the waste lifecycle to aid compliant handling (disposal or recycling) and cost-effective operation. SST implements steps outlined in the PPP to reduce waste volume and types, and utilize the most appropriate and cost-effective method of handling and recycling. As stated in the following section, disposal is the last option in the waste management process.

The SST WSHP, in conjunction with the ISMS Plan, is the foundation for the overall safe operation and implementation of all aspects of infrastructure services. This WMP, the RPP, and the PPP all interact and cooperatively support a unified approach to performing infrastructure services activities. Job-specific work packages and radiological work plans are developed, as needed, to help guide and control SST

activities in a safe and compliant manner. These guidance documents provide a comprehensive approach to identify, characterize, minimize, package, label, transport, and disposition waste.

Processes associated with the generation, on-site management, characterization, packaging, storage, transfer, certification, treatment, and off-site disposal of low-level radioactive waste (surface-contamination and volume-contamination) are further described in the RWMB and RPP, and Section 5.9 of this plan. SST adheres to the provisions of DOE O 435.1 Chg. 1, Radioactive Waste Management, as the regulatory driver for compliant management of low-level radioactive waste (LLW). As stated in the RPP, the ISSC scope of work is limited in terms of operations in radiological areas and operations involving the release of personal property. LLW generated during the performance of ISSC activities is transferred to the D&R Contractor.

#### **4.0 SOIL AND SPOIL MANAGEMENT**

Routine ISSC activities and special projects often require excavating, clearing, grubbing, etc. To minimize the volume of excess soil and spoils remaining after completion of these activities, soil and spoils are used as backfill at the point-of-generation to the greatest extent practicable. Excess material is handled as follows:

- Excess Solid Waste Management Unit (SWMU) soil and spoils are transferred to the D&R Contractor for disposal at the C-746-U landfill.
- Excess non-SWMU soil is reused at other approved locations on the Paducah DOE Reservation or is placed on an approved soil borrow pile.
- Excess non-SWMU spoils are reused at other approved locations on the Paducah DOE Reservation, or managed in accordance with SST radiological control program requirements and as approved by DOE Site office.

All material transferred to the D&R Contractor is performed in accordance with the D&R Contractor waste management program requirements and meets Site waste acceptance criteria.

#### **5.0 WASTE PROCESS HIERARCHY**

SST manages waste using the following hierarchy to ensure proper disposition and cost reduction for waste:

##### **Prevention**

SST reviews work activities and instills into each new task the concept of generating less waste (source reduction) through the use of proven pollution prevention methodologies. Whenever possible, methods are utilized to eliminate the generation of wastes. This may include re-engineering, material substitution, preventative maintenance, procurement of EPP, or task analysis to minimize materials

used. Information on the waste prevention process can be found in ISSC-ESH-PL-005.

- Reuse** Waste segregation and waste-process controls are used to divert waste for reuse of the material elsewhere. This may include reuse of equipment at other locations or DOE sites, or performing minor repairs to items for continued use versus disposal. ISSC-PE-PR-001, *Reutilization and Excessing of Property, Staging of Excess Property, and Off-Site Removal of Property*, details the SST process for reutilization of government property.
- Recycling** The third process control is recycling. This process may include methods to recover materials used during maintenance activities for the purpose of reuse on-site, or for brokering to recycle facilities for feed stock to produce another material. Items recycled include, but are not limited to, paper, cardboard, plastic, metal, spent items from vehicular maintenance (e.g., used oil, used oil filters, spent fuel filters), toner cartridges, electronic scrap, and universal wastes (e.g., light bulbs).
- Decontamination** Material and/or equipment that cannot be reused or recycled are decontaminated when possible, placed back into service or sold via defined reutilization programs.
- Characterization** After the above-listed methods of waste processing have been evaluated and it is determined that the material is indeed a waste, the waste is fully characterized. This includes the identification of waste composition and properties, by review of acceptable knowledge (including process knowledge), or sampling and analysis, to comply with applicable storage, treatment, handling, transportation, and disposal requirements.
- Disposal** Upon verification of the waste composition, proper disposal is implemented through approved waste vendors or the D&R Contractor. Disposal methods may include incineration, chemical treatment, stabilization, burial, or other authorized treatment standard.

SST's objective is that the ultimate disposition of a material be approved only after the material is evaluated against this hierarchy with the goal to ultimately reduce the volume of waste produced from ISSC activities.

## **6.0 WASTE MANAGEMENT PROCESS**

### **6.1 Waste Identification and Characterization**

Materials procured for ISSC activities are fully utilized during their useful life and discarded only after all options under the waste hierarchy process are exhausted. Additionally, material requests are reviewed to ensure EPP are procured, and quarterly inventories are performed to minimize quantities of chemicals stored on site. SST operates an active recycling program. When eligible, SST recycles items such as paper, cardboard, plastic, scrap metal, tires, electronic scrap, pallets, toner and printer cartridges, batteries and light bulbs, used oil and coolant, oil and fuel filters, oily pads and absorbent media.

Material generated during construction projects (e.g. soil and gravel) are reused at the point-of-generation to the greatest extent practicable. Subcontractors provide documentation in the form of weigh tickets, bill of lading, etc. as proof of compliant waste management.

Table 1 below includes information on waste streams routinely generated during infrastructure activities, including waste stream categories and anticipated disposition pathways. This information is based on previous years information or extrapolated from current year data, and is subject to change as work scope changes.

Waste Stream	Category <sup>1</sup>	Disposition <sup>1</sup>
Municipal/Sanitary Landfill Waste	Non-Hazardous/Non-Radioactive	Disposal
Excess Products	Non-Hazardous/Non-Radioactive	Disposal
Excess Products	Non-Hazardous/Non-Radioactive	Recycle
Used Oil	Non-Hazardous/Non-Radioactive	Recycle
Oily Solids	Non-Hazardous/Non-Radioactive	Recycle
Excess Fuel	Non-Hazardous/Non-Radioactive	Recycle
Used Coolant	Non-Hazardous/Non-Radioactive	Recycle
Universal Waste Lamps	Non-Hazardous/Non-Radioactive	Recycle
Universal Waste Batteries	Non-Hazardous/Non-Radioactive	Recycle
Toner/Printer Cartridges	Non-Hazardous/Non-Radioactive	Recycle
Eligible Scrap Metal <sup>2</sup>	Non-Hazardous/Non-Radioactive	Recycle
Metal Cans	Non-Hazardous/Non-Radioactive	Recycle
Paper	Non-Hazardous/Non-Radioactive	Recycle
Cardboard	Non-Hazardous/Non-Radioactive	Recycle
Plastic	Non-Hazardous/Non-Radioactive	Recycle
Used Tires	Non-Hazardous/Non-Radioactive	Recycle
Electronic Scrap	Non-Hazardous/Non-Radioactive	Recycle
Construction/Project Debris <sup>5</sup>	Non-Hazardous/Non-Radioactive	Recycle/Disposal
Construction/Project Debris	Non-Hazardous/Radioactive	Disposal
Soil <sup>3</sup>	Non-Hazardous/Non-Radioactive	Reuse/Borrow Pile
Soil	Radioactive	Disposal via D&R Contractor
SWMU Soil	Non-Hazardous/Non-Radioactive/Radioactive	Disposal via D&R Contractor
Spoils <sup>4</sup>	Non-Radioactive	Reuse/Disposal via D&R Contractor
Spoils	Radioactive	Disposal via D&R Contractor
SWMU Spoils	Non-Hazardous/Non-Radioactive/Radioactive	Disposal via D&R Contractor
Asbestos Waste	Non-Hazardous/Non-Radioactive	Disposal
RCRA Hazardous Waste	Hazardous/Non-Radioactive	Disposal via D&R Contractor
PCB Waste	Non-Hazardous/Radioactive	Disposal via D&R Contractor
Low-Level Radioactive Waste	Non-Hazardous/Radioactive	Disposal via D&R Contractor

<sup>1</sup> Subject to change based on presence of radioactive contamination or hazardous constituents.

<sup>2</sup> In accordance with Section C.2.2.10 of Contract DE-EM0003733, SST is prohibited from recycling scrap metal from DOE radiological areas or releasing volumetrically-contaminated metal into commerce.

<sup>3</sup> Soil is defined as the unconsolidated mineral or organic material on the immediate surface of the earth that serves as a natural medium for plant growth.

<sup>4</sup> Spoils are the naturally-occurring earthen materials brought up during an excavation, including but not limited to rock, gravel, clay, vegetation and similar materials.

<sup>5</sup> Construction/Project Debris is waste material generated during construction, renovation, demolition and dismantling of structures, buildings, and associated infrastructure. C&D debris is often bulky, heavy material and may include but is not limited to: concrete, wood, asphalt, gypsum, metal, brick, glass, plastic, packaging, cardboard, salvaged building components and vegetation, as well as routine trash/waste generated at construction and demolition sites. This term does not include asbestos waste, PCB waste, LLW, RCRA waste or any mixture of these.

Waste streams listed above that are amenable to recycling are handled directly by SST in accordance with the PPP, providing input to the D&R Contractor as needed to fulfill reporting obligations (Annual Hazardous Waste Report, Environmental Management System, etc.). Materials that cannot be recycled (reuse, reclaimed, etc.) based on hazardous or radioactive constituents are managed in accordance with SST procedures, plans, policies, and contractual obligations.

SST ES&H staff review work orders, evaluate projects, and walk-down activities to identify radiological and chemical contaminants, property ownership issues, and other potential waste handling issues. Based on their findings, disposal pathways are identified and characterization initiated prior to generation of waste.

The basic process is as follows:

1. Identify the waste material as hazardous, non-hazardous, radioactive or non-radioactive using process knowledge and existing waste stream data or analyses. As it applies to waste characterization and certification, process knowledge (PK) is documented knowledge of the processes and sources associated with generation of a waste or waste stream that allows a reliable estimation of the constituents and quantities for handling, storage, treatment, and disposal. PK is information, ultimately based on either analytical data or knowledge of the waste generating activity, that relates to the material to be characterized, but does not directly represent the material itself.
2. If PK is not available or applicable, characterize the material.

Sampling and analyses are in conformance with an established Quality Assurance (QA) program. Sampling of waste occurs any time the characteristics are unknown or whenever known or suspected changes have occurred in the waste matrix of constituents. SST may conduct periodic characterization to confirm these characteristics.

3. Review contractual scope of work and other obligations.
4. From the information gained through analyses, PK, radiological surveys, etc., determine the waste stream category.
5. Complete the required SST waste documents to prepare the material for storage and eventual disposal. Waste materials are stored in accordance with applicable DOE, state and federal regulations, and Site procedures.

## **6.2 Pretreatment of Wastes**

SST does not perform pretreatment of waste. SST adds sufficient amounts of absorbent media to waste to minimize presence of free-liquids.

## **6.3 Waste Segregation and Storage**

Waste materials can present a hazard during storage. Therefore, appropriate separation and segregation is an integral part of the waste management program. After determining the characteristics and the category of the waste, non-conforming, incompatible or other regulated wastes are properly segregated.

The ECS ensures that temporary waste storage areas (e.g., generator staging areas [GSAs]) are established, operated, and inspected in accordance with ISSC-ESH-PR-005.

## **6.4 Recycling Activities**

The SST ECS reviews planned work for potential waste concerns and to determine if source reduction and recycling opportunities exists. Release of materials for recycle is performed in accordance with SST RADCON program requirements. SST takes the following steps in managing recyclable materials:

- Stage the material by waste type (e.g., used oil, spent fuel filters, used oil filters, Universal wastes, scrap metal, paper) and place in the established recycle container, as appropriate.
- When recycle containers or pallets are full, close container and coordinate with the SST ECS to move the material to a staging area or arrange for off-site recycling/reuse by contracted vendors.
- Work with the RADCON Supervisor and ES&H Manager to obtain approval from DOE for free release of materials, when applicable.
- Document shipments of recyclable materials (e.g., weigh tickets, bill of lading) for tracking and reporting purposes, and to ensure material is managed in accordance with ISSC-ESH-PR-005 and project requirements.
- Report recycled material numbers to DOE on a monthly basis.

## **6.5 Packaging, Labeling and Transportation**

SST performs the following actions to ensure conformance with applicable regulations and procedures:

- Package and label the waste material in conformance with the D&R Contractor, U.S. Environmental Protection Agency (EPA), and U.S. Department of Transportation requirements.
- Prior to transporting waste containers, verify that no prohibited or unacceptable material is present.

- Ensure all waste containers are kept closed and sealed tightly while in storage, except when it is necessary to inspect, add, or remove waste.
- Ship waste in accordance with DOE O 460.1D, *Hazardous Materials Packaging and Transportation Safety* and DOE O 460.2A, *Departmental Materials Transportation and Packaging Management*.

## 6.6 Training

Training is provided for individuals handling and/or working directly with the waste material identified by SST in Table 1 per the requirements of ISSC-ESH-PL-001, *Training Program*. Initial training is provided upon employment and annually thereafter. Training is obtained by attending a classroom setting, completing Web-based training module(s), on-the-job performance training, and/or completing required reading. Specific training needed for each waste handler or worker is established by the employee's manager and Training Coordinator Lead through the development of a Position Assignment Form.

## 6.7 Disposal Facility Selection

When materials are destined for off-site disposal, an evaluation of the facility accepting the wastes or material for recycle/recovery must be performed prior to the shipment. SST reviews the approved list of disposal options and ensures that waste/free-released material goes only to an evaluated site. Due diligence is performed in the selection and use of resources associated with waste handling (i.e., containers, laboratories, and disposal sites).

The following guidance can be used when considering a waste disposal facility:

- Determine if the facility has been evaluated by SST.
- Request copies of permits and licenses.
- Request financial assurance or suitable insurance.
- Request copies of compliance audits, agency notice of violations, and EPA/state compliance status.
- Investigate for issued fines, lawsuits, or pending litigation.
- Evaluate for out-of-state agreements.
- Visit the site and evaluate operations, housekeeping, records management, etc.

## 6.8 Waste Management Performance Oversight

Measures are implemented to ensure adequate performance in handling of waste. As mentioned in Section 4.3, steps are taken during the generation and packaging of waste to ensure the waste is segregated, packaged, and stored properly. The waste undergoes visual verifications by qualified individuals to ensure prohibited material is not present. Additionally, SST subject matter experts and the ES&H and QA Managers perform periodic assessments of this program as well as the implementing procedures. Any noted deficiencies are tracked to ensure adequate correction and feedback in accordance with the QA program.

## 6.9 Interface With Site Waste Acceptance

SST works closely with the D&R Contractor concerning the Site's Waste Acceptance Criteria (WAC) for on-site waste disposal. SST ensures that waste to be disposed on-site meets the WAC and prohibited waste is not offered for disposal, and works closely with the waste disposal SMEs.

SST communicates with identified representatives in the D&R Contractor organization regarding waste management. SST's primary waste handling personnel and organizational responsibilities include:

- ES&H Manager: The SST ES&H Manager periodically consults with the D&R Contractor counterpart regarding WMPs and approaches. The ES&H Manager is responsible for the overall successful implementation of the plan.
- ECS: As needed, the ECS (or designated back-up) interfaces with various D&R Contractor persons responsible for storage locations and requirements; acceptability and categorization of waste; certification of waste; and disposal/disposition; and provides any associated SST reports or input needed to the D&R Contractor for site-wide reporting. The ECS also participates in, or independently conducts, worker training, document revisions, oversight and assessments, as needed.
- Maintenance Supervisors: The Maintenance Supervisors supports the safe and effective implementation of the WMP. These supervisors help identify potential waste prior to generation, develop work packages that address waste, help ensure the workers comply with the plan, and ensure all waste is handled correctly.
- Workers: All SST workers who generate waste do so in accordance with this plan and ISSC-ESH-PL-005. Waste minimization, waste segregation, proper packaging, labeling, and handling are expected at all organizational levels.

## 7.0 RECORDS

Documentation created in performing waste management activities is generated and stored in accordance with PGDP-RM-PR-001, *Records Management*, and as otherwise specified by regulatory agencies to ensure compliance and provide data retrieval ability.

## 8.0 REFERENCE DOCUMENTS

Reference documents consist of DOE Orders, Manuals, and Guides, as well as company procedures or guidance plans that provide the framework for the waste management activities. These include:

- EO 13834, *Efficient Federal Operations*
- DOE O 435.1 Chg. 1, *Radioactive Waste Management*
- DOE O 436, *Departmental Sustainability*
- DOE O 460.1D, *Hazardous Materials Packaging and Transportation Safety*
- DOE O 460.2A, *Departmental Materials Transportation and Packaging Management*
- ISO 14001:2015, *Environmental management systems – Requirements with guidance for use*

- ISSC-BM-PR-003, *Procurement of Items and Services*
- ISSC-ESH-PL-005, *Pollution Prevention Plan for Swift & Staley Team Facilities at the Paducah Gaseous Diffusion Plant*
- ISSC-ESH-PL-006, *Environmental Management System*
- ISSC-ESH-PL-008, *Radiation Protection Program—Environmental Radiation Protection Program*
- ISSC-ESH-PR-005, *Storage and Disposition of Spent Materials*
- ISSC-PE-PR-001, *Reutilization and Excessing of Property, Staging of Excess Property, and Off-Site Removal of Property*
- ISSC-RAD-PL-005, *Radiological Waste Management Basis*
- CP2-WM-0011, *Waste Acceptance Criteria for the Treatment, Storage and Disposal Facilities at the Paducah U.S. Department of Energy Site*

**Attachment A**

**ISSC-ESH-PR-005, Storage & Disposition of Spent Materials**



## STORAGE & DISPOSITION OF SPENT MATERIALS

Approved by: John Hobbs, <i>ES&amp;H Manager</i>	<b>Signature:</b> 
Issue Date: 11/29/2018	Effective Date: 11/29/2018
Subject Matter Expert/Point of Contact: Mike Golightly/John Hobbs	
<p style="text-align: center;"><b><u>Safety and Security Precautions:</u></b></p> <p>All work is to be performed in accordance with Integrated Safety Management System and Safeguards &amp; Security guidelines. IF a problem is discovered during the course of work, THEN always place the activity in a safe condition prior to stopping work, if it is safe to do so, and report to supervision. Refer to ISSC-ESH-PR-009, <i>Suspension of Work (Safety-Related)</i>, for further information.</p>	
<p style="text-align: center;"><b><u>Records Disposition</u></b></p> <p>All records generated in the use of this procedure are to be managed in accordance with PGDP-RM-PR-001, <i>Records Management</i>.</p>	
<p style="text-align: center;"><b><u>Training Requirements</u></b></p> <p>Required training modules are established in the Learning Management System (LMS).</p>	

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<b>Revision Log</b>			
<b>Rev. No.</b>	<b>Description of Change</b>	<b>Pages Affected</b>	<b>Effective Date</b>
Revisions 0 through 6 from previous contract.			
<b>7</b>	Revisions made to reflect changes in Paducah Infrastructure Support Services contract DE-EM0003733. Attachment A, "Forms" removed for template update – remaining Attachments re-numbered.	All	12/01/15
<b>8</b>	Removed unneeded material and improved process. Revised SST Forms 101 and 170. Inactivated SST Forms 47, 105, 139, and 239.	All	02/24/16
<b>9</b>	Removed unneeded material and improved process.	All	03/31/17
<b>10</b>	<ol style="list-style-type: none"> <li>1. Revised procedure to address issues described in the following ITS items: <ul style="list-style-type: none"> <li>• IM-2017-112-03 and IM-2017-358-01 Added wording to define the process for transferring waste to deactivation contractor (section 4.8 and 4.13).</li> <li>• IM-2017-180-08 and IM-2017-350-01 Added wording to define the process for handling, storage, transportation and disposal of asbestos containing material (new section 4.11).</li> </ul> </li> <li>2. Added new section 4.10 to address RCRA Hazardous Waste</li> <li>3. Added new section 4.12 to address PCB waste</li> <li>4. Added new section 4.13 to address transportation of waste</li> <li>5. To close out IM-2017-347-02, added DOT training requirements identified by IM-2017-347-01 (new section 4.1.14 and 4.13).</li> </ol>	1-22, 24	01/25/18
<b>11</b>	Revised to incorporate TIDC changes. Formatted into new template, previous no. 03.06.01.	All	05/23/18
<b>12</b>	Revised for IM-2018-461-3 to define our process for the use of process knowledge as used for waste characterization, including DOE O 458.1 requirements.	10-13, and 23	11/29/18

**Purpose** This procedure describes safe and compliant storage and disposition practices for spent materials (i.e., recyclable materials, municipal/sanitary landfill waste, low level [radiological] waste [LLW], Resource Conservation and Recovery Act [RCRA] hazardous waste, asbestos waste and polychlorinated biphenyl [PCB] waste).

**Scope** This procedure applies to all Swift & Staley Team (SST) employees and subcontractors (if included in their subcontract) who generate, handle, treat, or store spent materials described in this procedure as part of the SST contract with the U.S. Department of Energy (DOE).

All positions referred to in this procedure are those of SST personnel (i.e., employees and applicable subcontractors) unless otherwise specified.

Compliance with CP2-WM-0011, *Waste Acceptance Criteria for the Treatment, Storage, and Disposal Facilities at the Paducah U.S. Department of Energy Site*, referred to in this procedure as the Paducah Waste Acceptance Criteria (WAC), is applicable only to wastes that are generated and returned to the Deactivation and Remediation Contractor (DRC) for disposition.

**What To Do**

**A. SAFETY AND SECURITY PRECAUTIONS**

NOTE: For current copies of DRC procedures referenced in this document, contact the SST Procedure Coordinator. Copies of U.S. Environmental Protection Agency (EPA) documents and CFR referenced in this document may be obtained by contacting the Environmental Compliance Specialist (ECS).

1. In order to preserve personnel health and safety and/or prevent environmental spills, the activities described in this procedure shall be conducted in a manner consistent with SSI.ESH-0002, *Integrated Safety Management System Description* and SSI.ESH-0008, *Environmental Management System*.
2. In order to avoid adverse chemical reactions, incompatible materials must NOT be stored in the same container or in close proximity to each other. Dikes and berms alone do not provide adequate means to separate incompatible wastes. Examples of incompatible wastes are those containing acids, bases, oxidizers, pyrophoric materials, etc. (Refer EPA document EPA-600/2-80-076, A method

for determining the compatibility of hazardous wastes [sic], for guidance).

3. Waste materials may react with their containers. The Waste Generator (WG) must use containers that are compatible with the wastes, as determined by testing literature, lessons learned and Department of Transportation (DOT) requirements. The ECS will assist with determining proper packaging.
4. Personal protective equipment, as specified in Activity Hazard Assessments prepared in accordance with ISSC-ESH-PR-001, *Hazard Assessments*, the health and safety plans, work permits, or other work control documents, must be worn while handling or inspecting wastes or waste containers.
5. Waste containers may be heavy and/or awkward to move. Workers must use approved waste handling processes and equipment.
6. Opening and sampling waste containers are tasks that shall be performed only by persons qualified and authorized to perform these tasks.
7. Waste containers may become pressurized due to heat or off-gas generation. IF these containers are opened, THEN they may cause personal injury or release contaminants to the environment. If a pressurized container is found, stop work immediately and contact the Environment, Safety, and Health (ES&H) manager for guidance. Also refer to DRC procedure CP3-WM-1017, *Safe Handling and Opening of Sealed Containers*, for additional information on these potential hazards.
8. Immediately report all spills to your Supervisor and the ECS. Depending upon the size and type of spill, notification to the Plant Shift Superintendent (PSS) may be required. The PSS can be reached at 333 or 6333 on a plant phone, 270-441-6211 on a cell phone, or by calling Alpha 1 on Channel 16 on plant radio.
9. Do NOT flush a spill into a storm drain without explicit permission from the ECS.
10. Any person may stop work on an activity in accordance with SST Procedure 03.01.03, *Suspension of Work*.
11. The supervisor or any other person may stop or limit work at any time if weather or other conditions exist that may

endanger personnel health and safety or that may adversely affect the environment.

12. Any step in this procedure that cannot be performed as specified requires the procedure user to stop and contact the supervisor for direction.

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13. SST employees who perform pre-transportation and transportation functions for off-site shipments of DOT hazardous materials, or perform on-site transfers of hazardous materials including radioactive materials (e.g., DOT Class 7 Radioactive Material), shall have the following minimum training (see section M):

- DOT General Awareness Training;
- DOT Hazardous Materials Regulations (Introduction);
- DOT Hazardous Materials Table;
- DOT Hazardous Materials Packaging; and
- DOT Materials of Trade.

NOTE: Filling and storage of a container or package prior to a carrier taking possession is not subject to the requirements of the DOT. All packages will be inspected and their contents verified by a trained hazardous materials employee prior to being offered for transportation.

WASTE GENERATOR OR DESIGNEE

ENVIRONMENTAL COMPLIANCE SPECIALIST OR DESIGNEE

**B. ESTABLISHING A GENERATOR STAGING AREA**

1. Determine the type and quantity of spent material or waste to be generated and stored in the GSA.
2. Consult the ECS to determine proper storage and disposition of the spent material.
3. Provide guidance on the establishment of GSAs, including proper packaging and notification to the DRC compliance representative.
4. Contact the DRC compliance representative to obtain an identification number for the GSA, which will be numbered using the building number preceded by a "G" and followed by 01, 02, etc. (e.g., G-743-T17-01).

NOTE: The DRC maintains an inventory of the temporary on-site waste storage areas (i.e., GSAs, Satellite Accumulation Areas, 90-Day Areas, PCB areas, and Comprehensive Environmental Response, Compensation, and Liability Act Areas) at the Paducah site.

5. IF the DRC compliance representative determines the GSA is a new solid waste management unit, THEN provide:
  - A detailed physical description of the area;
  - The location (e.g., dimensions of the area, Global Positioning System coordinates, appropriate inside locators such as column numbers in a process building); and
  - Digital photograph(s) with the date of the established area.
6. Assist the WG in establishing the GSA boundary with materials such as rope, chain, tape, or other suitable storage unit/structure.
7. Provide the WG with a sign similar to the one in Attachment A, "Example Generator Staging Area Sign," designating the area and identifying the responsible supervisor.
8. Provide the facility operator or designee with copies of ISSC-ESH-FO-017, *Waste Item Container Log*.
9. Provide guidance on the establishment of other GSAs, such as areas for recyclables.

### C. OPERATING A GENERATOR STAGING AREA

NOTE: Wastes that are transferred to the DRC for disposition shall be handled in accordance with applicable sections of the Paducah WAC (i.e., selection of containers, labeling, marking, required void space, and completion of the Request for Disposal [RFD] and associated paperwork).

#### WASTE GENERATOR OR DESIGNEE

1. Waste containers will be approved by the ECS, and must be free of visible cracks, holes, bulges, significant dents or corrosion, missing rings or bolts or other damage that could compromise container integrity or create a non-compliance with applicable DOT and EPA regulations. See Attachment B, "Container Requirements for Generator Staging Areas."
2. Containers to be dispositioned via the DRC must be marked and labeled in accordance with the WAC and/or DRC guidance. See Attachment C, "Example Waste Container Label."
3. Waste containers shall be labelled with the words accurately depicting contents and date the first item is

placed in it, or the date the items became a waste, whichever is earliest. Failure to document waste and mark the waste container as described above could result in a violation of EPA and DOT requirements.

4. Maintain adequate aisle space for inspection and emergency response purposes.
5. Segregate waste streams to the greatest extent possible. Contact the ECS for guidance.
6. Post an ISSC-ESH-FO-017 on or near each container.
7. WHEN an item/article is placed in the waste container, THEN:
  - Record the item/article on the applicable container log;
  - Denote the quantity placed in the container; and
  - Initial and date the entry in the sections provided on the sheet.
8. Ensure “Waste Generator” section of the ISSC-ESH-FO-017 has been completed.
9. Maintain each container in a “securely closed” condition except when inspecting, adding, or removing waste.
10. Fill containers to the maximum extent possible, allowing for adequate void space. The following void space is recommended:
  - 1 – 2” in 5 gallon drums
  - 3 – 4” in 20 and 30 gallon drums
  - 4 – 6” in 55 gallon drums
11. IF waste is removed from a GSA because it requires repackaging or over-packing, THEN contact the ECS.
12. Before a container is removed from the GSA for disposition, ensure it is properly closed, labeled and marked, and provide the ISSC-ESH-FO-017 to the ECS.
13. Personnel offering materials for transportation shall be trained in applicable DOT requirements, per 49 CFR 172.4, *Training* and section M of this procedure.
14. For wastes that are transferred to the DRC for disposition, contact DRC waste operations to determine WAC. WAC is waste stream specific. The following may be required depending on the type of waste being transferred:

- Waste item container log(s);
- Completed process knowledge form;
- Analytical data (if available);
- Radiological surveys;
- Safety Data Sheets (SDSs); and/or
- Characterization data.

15. When waste is transferred to the DRC or shipped off-site to an approved waste vendor, complete “Environmental Compliance” section of the ISSC-ESH-FO-017.
16. Commercial bills of lading and other commercial shipping documents shall be signed as described in section M.

**D. INSPECTING A GENERATOR STAGING AREA**

NOTE: An inspector may be any designated person (SST or other subcontractor) assigned or contracted to perform these inspections.

ENVIRONMENTAL  
COMPLIANCE  
SPECIALIST OR  
DESIGNEE

1. Conduct inspections of GSA once every 30 days at a minimum and document on the designated ISSC-ESH-FO-018, Generator Staging Area Inspection Checklist.
2. Sign and date the ISSC-ESH-FO-018.
3. Maintain the active copy of the inspection checklist as a field operating record.
4. Maintain original completed inspection checklists and container logs as records.

**E. DISCONTINUING A GENERATOR STAGING AREA**

NOTE: The WG is considered the “owner” of the waste until the waste is accepted into a DRC storage facility or until the waste is shipped to an approved off-site disposal vendor.

WASTE GENERATOR  
OR DESIGNEE

1. Consider closing the GSA when it is no longer in use, or processes have changed and the waste is no longer being generated.
2. Notify the ECS when planning to discontinue use of a GSA.
3. Assist the ECS to ensure the waste is properly dispositioned and/or transferred to the DRC. All waste is to be removed from the GSA prior to closure of the area.

ENVIRONMENTAL  
COMPLIANCE  
SPECIALIST OR  
DESIGNEE

4. Ensure postings or markings identifying the area as a GSA have been removed.
5. Notify the DRC compliance representative that the GSA is being removed from service.
6. Prior to closure, ensure no waste is present in this area.
7. Ensure sufficient documentation exists to demonstrate that the operation and closure of the GSA was conducted in a manner that controlled, minimized, or eliminated waste to the extent necessary to protect human health and the environment.

**F. DISPOSITION OF SPENT MATERIALS**

All waste streams are reviewed to determine proper disposition. Source reduction is the preferred method of preventing waste and pollution, as described in SSI.ESH-6002, *Pollution Prevention Plan for SST Facilities at the Paducah Gaseous Diffusion Plant*. In those cases where waste generation cannot be avoided, recycling is preferred over disposal. The following sections describe management guidelines for waste streams encountered during the performance of infrastructure activities. Before generating any waste, contact the ECS or designee to ensure compliance will be maintained during the lifecycle of the waste.

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Excess spoils are not considered spent materials and must be;

- Backfilled at the point of generation;
- Used at another approved location on the Paducah DOE reservation; or
- Stockpiled for future use on the Paducah DOE reservation.

The disposition of spent materials is determined based on process knowledge (PK) and sampling as needed to effectively characterize the materials. PK may be used to demonstrate that the generating process was well documented and controlled and did not involve the use or generation of any materials that could result in the waste being regulated. Conversely, PK may provide all the necessary information to properly identify wastes as RCRA hazardous, Low Level Waste (LLW), Polychlorinated Biphenyls (PCB), Asbestos Containing Materials (ACM), or combinations thereof. PK determinations shall be traceable and may be based on;

- A review of historical characterization results (e.g. SWMU maps, radiological postings, etc.);
- Visual observations of materials for potential non-conforming characteristics;
- General knowledge of materials known or suspected to contain PCBs, ACM, lead, etc.; and
- Discussions with individuals familiar with historical operations, incidents, characterizations, etc. related to the materials.

When PK is not sufficient to characterize waste, sampling and analyses will be employed.

ISSC-ESH-FO-051, *Project Waste Generation Forecast* is used to estimate project related waste and advanced planning of waste characterization and disposition.

#### **G. MUNICIPAL/SANITARY LANDFILL WASTE**

1. Material that will not be recycled or managed as Low-level waste (LLW) can potentially be disposed as municipal/sanitary landfill waste (MSLW). Radiological surveys and off-site release documentation may be required prior to being shipped off-site. Consult radiological control personnel for guidance. The following items must be reviewed on a case-by-case basis by the ECS to determine whether they may be managed as MSLW:
  - Respirator cartridges;
  - Vacuum cleaner bags;
  - Ventilation filters;
  - Paint chips;
  - Paint cans;
  - Concrete; and
  - Non-janitorial waste generated within the Limited Area fence.
2. The waste listed below shall not be managed as MSLW:
  - RCRA hazardous waste;
  - PCB waste;
  - Asbestos waste;
  - LLW;
  - Light bulbs;
  - Non-alkaline, rechargeable batteries;

- Aerosol cans; and
- Liquids.

Contact the ECS for guidance concerning disposal of items not listed.

**H. LOW-LEVEL RADIOACTIVE WASTE/RADIOLOGICALLY SUSPECT WASTE**

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1. The Paducah DRC accepts and processes LLW from Paducah Site contractors. Due to the nature and history of operations at the Paducah Site, waste generated within radiologically controlled areas (e.g., Limited Areas, Fixed Contamination Areas, Underground Radioactive Material Areas, etc.) is considered potentially radiologically contaminated until certified otherwise. Unless approved for free-release by the Site office, these materials will be transferred to the DRC for disposition in accordance with applicable sections of the Paducah WAC (i.e., selection of containers, labeling, marking, void space, and completion of the RFD, etc.) and as directed by the DRC waste operations group. Radiological surveys and off-site release documentation may be required prior to placing LLW in DRC waste management facilities. Consult radiological control personnel for guidance. This waste category can include, but is not limited to:

- Personal protective equipment such as totes, booties and shoe covers, Tyvek coveralls, etc.
- Radioactive labeled bags of any color, orange rubber gloves, yellow maslin cloth, step-off pads, and tags, labels, boundary tape, etc., with words or symbols denoting radioactive materials.
- Items from areas controlled for loose/transferrable contamination, or items containing fixed contamination, or radioactive materials.

2. Additionally, real property outside of the radiologically controlled areas referenced above (i.e. the entire DOE reservation) has a potential to be radiologically contaminated. Although such property does not require DOE approval for free-release or transfer to the DRC, such property does require some level of radiological screening for to ensure compliance with WAC.

3. Contact the ECS or Radiological Protection Supervisor PRIOR to generating waste to determine if it is eligible for free-release, or if it will be managed as LLW.

4. ISSC-RAD-IN-012, *Off-Site Survey Instruction* will be used to assess the potential for radiological contamination of waste in accordance with DOE O 458.1.
5. Contact the DRC waste operations group for guidance on required WAC; including but not limited to packaging, sizing, segregation, documentation, etc.
6. Ensure all WAC are implemented into waste generation process.
7. Complete work as required under oversight of DRC waste operations.

#### I. RECYCLABLE MATERIALS

All waste streams are reviewed to determine if a legitimate recycling (including reuse, reclamation, energy recovery, etc.) option exists. The following materials can be recycled provided no radiological contamination is present AND there is no associated DOE moratorium in place. Free release of items must be granted before being shipped off-site to be recycled.

##### 1. Universal Waste Lamps

Once a lamp is spent or no longer of use, it shall be managed as a Universal Waste and recycled. Examples of eligible lamps are: fluorescent, high intensity discharge, mercury vapor, metal halide, high pressure sodium, neon, incandescent lamps, etc.

Contact the ECS for guidance on other lamps eligible for management under the EPA Universal Waste rules.

- Precautions – DO NOT intentionally break or crush lamps. Steps for handling a broken lamp are listed below, and can be found on applicable SDS.
  - Wear appropriate hand protection to avoid injury.
  - Double-bag broken glass and tape bag closed.
  - Do not vacuum loose debris – use tape to collect small pieces and place in bag.
  - Keep the area well ventilated.
  - Contact the ECS for additional guidance.
- Storage – Containerize spent lamps in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – Ensure all containers used for collecting spent lamps are marked with the words “Universal Waste Lamps”.

- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.
- Storage limitations – Universal wastes may be stored for up to one year from the start date.
- Universal Waste Lamps are shipped off-site to an approved vendor.

## 2. Universal Waste Batteries

Once a battery is spent or no longer of use, it shall be managed as a Universal Waste and recycled. Examples of eligible batteries are: nickel/cadmium, lead, silver, mercury and lithium. Take necessary precautions to prevent leakage or contents or damage to batteries. Containerize any battery that shows evidence of leakage, spillage, or damage. The container must be compatible with the contents of the battery.

Contact the ECS for guidance on handling batteries or information on batteries eligible for management under the EPA Universal Waste rules. Alkaline batteries can be disposed as MSLW.

- Precautions – Ensure battery terminals are covered to prevent sparks or heat generation.
- Storage – Containerize spent batteries in an established GSA. Ensure all containers are securely closed at all times not in use or that batteries are stored in a manner that will prevent tipping and spilling of contents (e.g., pallet).
- Labeling – Ensure all containers used for collecting universal waste batteries are marked with the words “Universal Waste Batteries”.
- Place start date on container.
- Records – fill out ISSC-ESH-FO-017.
- Storage Limitations – Universal wastes may be stored for up to one year from start date.

Universal Waste Batteries will be managed at an approved vendor. It is acceptable for consumer-type lead-acid batteries to be returned to the wholesaler or retailer from whom the battery was purchased.

## 3. Used Oil

Used oil includes, but is not limited to, synthetic oil, engine oil, transmission fluid, refrigeration oil, compressor oil, metalworking fluids and oil, laminating oils, oils used as a buoyant, and industrial hydraulic fluid. Contact the ECS for

guidance on determining which fluids are eligible for management under the EPA Used Oil standards.

- Storage – Place used oil in an approved, dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use. Do not reuse vendor containers for collecting used oil without approval from the ECS. Under some conditions, it is acceptable to mix antifreeze with used oil. Consult the ECS for guidance on this topic.
- Secondary Containment – ensure collection containers provide secondary containment by design, or are staged on secondary containment to collect drips that occur during transfer of material.
- Labeling – Ensure all containers (i.e., tanks, buckets, drip pans, etc.) used to collect used oil are marked with the words “Used Oil.”
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 4. Used Antifreeze

- Storage – place used antifreeze in an approved dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use. Do not reuse vendor containers for collecting used antifreeze without approval from the ECS. Under some conditions, it is acceptable to mix antifreeze with used oil. Consult the ECS for guidance on this topic.
- Secondary containment – ensure collection containers provide secondary containment by design, or are staged on secondary containment to collect drips that occur during transfer of material.
- Labeling – ensure all containers used for collecting used antifreeze are marked with the words “Used Antifreeze” or “Spent Antifreeze.”
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 5. Used Oil Filters

Used oil filters made of non-terne plated steel are considered scrap metal and can be recycled. The following manufacturers have confirmed that their filters do not contain terne plated steel: WIX, Fleetguard, and Caterpillar. Contact the ECS for guidance on other acceptable filter brands.

Draining oil filters prior to placing in collection containers is acceptable but is not required. Filters can be placed in designated containers immediately after removal.

- Storage – Place used oil filters in an approved, dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – ensure all containers used for collecting oil filters are marked with the words “Oily Solids” or equivalent.
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 6. Spent Fuel Filters

Spent metal fuel filters that have been properly drained and no longer contain a significant liquid component can be placed in the container used for accumulating oily solids. Draining fuel filters can result in fuel vapors. No flames, sparks, or heat-generating activities are allowed within the GSA, and the use of non-sparking tools is required. Always ensure the liquid collection container is properly grounded. Recovered fuel shall be reused to the greatest extent possible.

Recycling Process – Drain the fuel from the spent filter into a collection container that is labeled with the words “Spent Fuel”, or equivalent. This collection container will be managed as described in section I.8. Draining the spent filter for 24 hours to remove the fuel from the filter is recommended.

- Use non-sparking tools.
- Reuse the drained fuel from the filters in acceptable items such as weed eaters.
- Storage – Place spent fuel filters in an approved container in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – ensure all containers used for collecting drained fuel filters are marked with the words “Oily Solids” or equivalent.
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 7. Oily Solids

Oily solids can be processed for oil content as well as recycled for energy recovery.

- Storage – Oily solids are to be placed in an approved, dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – Ensure all containers used for collecting oily solids are marked with the words “Oily Solids”, or equivalent.
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 8. Spent Fuel

Fuel drained from fuel filters or otherwise deemed as unusable (spent) shall be collected for recycling for energy recovery. No flames, sparks, or heat-generating activities are allowed within the GSA, and the use of non-sparking tools is required. Ensure collection drum is grounded properly. Collected fuel shall be reused to the greatest extent possible. Diesel fuel and gasoline can be placed in the same collection container.

- Storage – place spent fuel in an approved, dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – ensure all containers used for collecting spent fuel are marked with the words “Spent Fuel”.
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 9. Scrap Metal

Eligible scrap metal can be recycled if the following conditions are met:

- Meets the moratorium criteria for scrap metal, and known to not have been staged in a radiologically contaminated area;
- Must be free of liquids (oil, fuel, etc.);
- Surveyed by Radiological Control personnel; and
- Approved by DOE Portsmouth/Paducah Project Office (PPPO) for off-site release.

Scrap metal meeting these requirements shall be placed in a container approved by the ECS.

#### 10. Electronic Scrap

Items meeting the definition of electronic scrap can be recycled if the following conditions are met:

- Must be free of liquids (oil, fuel, etc.);
- Surveyed by Radiological Control personnel;
- Approved by DOE PPPO for off-site release; and
- Refer to SST Procedure 06.02.03, *Reutilization and Excessing of Property, Staging of Excess Property, and Off-Site Removal of Property*, for additional information and guidance.

#### 11. Materials from Administrative Areas and Break Areas

The following items are collected from offices and break-areas for recycling:

- Metal cans - aluminum, steel, tin, etc.
- Paper and Cardboard – all sizes and colors of folders, magazines, books, etc.
- Plastic items (except Styrofoam)
- Toner and Printer Cartridges

Contact the ECS for information on items eligible for recycling.

### J. HAZARDOUS WASTE

Management of hazardous waste is governed by Kentucky and federal regulations. Items that can meet the definition of hazardous waste, based on characteristics of ignitability, corrosivity, reactivity and toxicity include, but are not limited to:

- Aerosol cans;
  - Unused solvent-based paint;
  - Used degreasers; and
  - Excess, unused cleaning products.
1. Consult the ECS to determine if a waste is potentially hazardous PRIOR to generation, and that all EPA and DOT requirements will be met.
  2. SST personnel must manage hazardous waste in the following manner:
    - Ensure hazardous waste is accumulated in an approved DRC waste area
    - Ensure each container holding hazardous waste is marked with word clearly describing the waste (e.g., aerosol cans, excess fuel, etc.);
    - Ensure each container is marked with the date the first item is placed in it, or the date the item became a waste, whichever is earliest;

- Ensure each container is securely closed at all times not in use; and
- Ensure each addition of waste is documented on the applicable DRC logsheet.

#### K. ASBESTOS WASTE

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IM-2017-350

Many materials at the Paducah Gaseous Diffusion Plant (PGDP) have the potential to contain asbestos at regulated levels (>1%); including siding, caulking, wall material, insulation, etc. Management of these materials is governed by Kentucky and federal regulations. Asbestos-containing waste generated inside a Limited Area is transferred to the DRC due to potential radiological contamination. Prior to generating LLW waste, contact DRC waste management group and arrange proper handling per section H. The DRC will provide handling guidance for low-level radioactive/asbestos waste.

Before generating asbestos containing waste, contact the ECS to ensure correct containers are available and a viable disposition pathway exists. Asbestos must be packaged and managed per EPA and DOT requirements, which vary depending on the physical characteristics (friable versus non-friable) and the source of the asbestos (impacted area versus non-impacted area). At a minimum, manage asbestos as follows:

1. Contact the ES&H manager or designee PRIOR to generating asbestos waste.
2. Adequately wet asbestos to minimize spread of material and limit personnel exposure.
3. Place asbestos containing materials in two layers of 6-mil plastic, with the required regulatory warnings present.
4. Tape the top of each bag in a manner that will not allow asbestos fibers to escape, do not push air out of bags in an effort to reduce volume.
5. Immediately place in a container approved by the ECS in an established GSA.
6. Document this action on an ISSC-ESH-FO-017.

#### L. POLYCHLORINATED BIPHENYL WASTE

Articles, items or materials destined for disposal that contain PCBs at concentrations  $\geq 50$  parts per million (ppm), or originate from a known source of PCBs  $\geq 50$  ppm, require special handling to meet the requirements of sections of the

Toxic Substance Control Act (TSCA) found at 40 CFR 761 “Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions”.

1. Contact the ECS PRIOR to generating PCB waste to ensure containers and GSA are available to properly manage the material. The following must be performed at a minimum to ensure compliance with TSCA:
  - Mark all PCB waste with a PCB ML or MS label, available through the ECS;
  - Place PCB waste in designated containers in an established PCB GSA; and
  - Ensure PCB containers are marked with the date the first item is placed in the container, or the date the waste item was removed from service (date-to-service, or DTS), whichever is the earliest date.
2. Document this action on an ISSC-ESH-FO-017.

#### **M. TRANSPORTATION OF WASTE**

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IM-2017-358

On-site and off-site transportation DOT hazardous materials (including waste) will be performed in accordance with DOE Order 460.1D *Hazardous Materials Packaging and Transportation Safety*, DOE 460.2A, *Departmental Materials Transportation and Packaging Management*, and applicable sections of DOT Hazardous Materials Regulations found at 49 CFR 171-180, including those found at 49 CFR 173.6, *Materials of Trade Exceptions*.

1. Personnel performing transportation functions will be trained as required by 49 CFR 172.704, *Training Requirements* including:
  - General awareness/familiarization and security training;
  - Hazardous Materials Regulations Introduction training;
  - Hazardous Materials Table training;
  - Hazardous Materials Packaging training; and
  - Materials of Trade training.
2. Commercial bills of lading will be signed in accordance with DOE Order 460.2A *Departmental Material Transportation and Packaging Management*, as follows:

FROM: “(Name of DOE contractor) on behalf of the US Department of Energy”

3. Contact DRC waste operations group for guidance on

transferring waste described under section I. Intra-plant transfers to DRC must be performed in accordance with DRC waste management procedures and transportation safety documents.

**Roles and Responsibilities**

**A. WASTE GENERATOR OR DESIGNEE**

- Communicating to the Environmental Compliance Specialist (ECS) the specific process by which spent materials and/or waste have been generated, thereby assisting with determining the type, quantity, final disposal options, and the appropriate type of temporary storage for that material.
- Ensuring that spent material and/or waste is properly segregated, packaged, handled, inventoried, and stored in accordance with applicable requirements and guidance provided by this procedure.
- Providing input to the ECS on the location and content of the Generator Staging Areas (GSAs).
- Operating, maintaining, and aiding in closure of GSAs.

**B. ENVIRONMENTAL COMPLIANCE SPECIALIST OR DESIGNEE**

- Assisting the WG with proper handling, storage, disposal or recycling of spent materials or waste.
- Establishing and closing GSAs.
- Providing guidance to the WG on operating the GSA.
- Ensuring inspections of the GSAs are completed once every 30 days at a minimum to ensure compliance with this procedure.

**Records**

- ISSC-ESH-FO-017, *Waste Item Container Log*
- ISSC-ESH-FO-018, *Generator Staging Area Inspection Checklist*
- Field notes from waste inspections
- Completed RFD forms
- Completed Process Knowledge Forms
- Analytical Data
- SDSs

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## **Definitions**

Asbestos Waste – Any waste that contains more than 1% asbestos

Disposal – The intentional or unintentional discharge, discard, or abandonment of a waste material with no intent of future use or removal.

Electronic Scrap – Unusable or un-needed electronics (e.g., any item that can be plugged into a wall outlet). Refer to SST Procedure 06.02.03, *Reutilization and Excessing of Property, Staging of Excess Property, and Off Site Removal of Property* for additional information and guidance.

Eligible Scrap Metal – Items meeting the intent of 40 CFR 261.4, *Exclusions*, and 40 CFR 261.6, *Requirements for Recyclable Materials*, and the conditions of letters issued by Bill Richardson titled “Release of Materials for Reuse and Recycle” dated February 14, 2000, and “Release of Surplus and Scrap Materials” dated July 13, 2000.

Generator staging area (GSA) – An area within a building or facility used for the staging of waste containers produced in the building or facility. The GSA is the responsibility of the Facility Manager or the WG.

Hazmat Employee – Any person who directly affects hazardous materials transportation safety, or meets other transportation functions as described at 49 CFR 171.8.

Hazardous Waste – Solid, liquid or contained gaseous material (compressed gas cylinder) that is characteristically hazardous or is a listed hazardous waste as defined by 40 CFR 261, and/or any environmental media that contains a listed hazardous waste.

Incompatible wastes – Wastes that, when mixed together, have the potential to generate heat, react violently, or generate a toxic vapor.

Low-level waste (LLW) – Low-level radioactive waste is radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in section 11e.(2) of the *Atomic Energy Act of 1954*, as amended), or naturally occurring radioactive material. Items from areas controlled for loose/transferrable contamination, items containing fixed contamination, and radioactive materials are managed as LLW.

Polychlorinated Biphenyl Waste – Those PCBs and PCB items that are subject to the disposal requirements of 40 CFR 761, Subpart D.

Pre-Transportation Functions – Includes but is not limited to; determining hazard class, selecting packaging, securing packaging on carrier vehicles, applying DOT markings and labels, preparing shipping papers, and reviewing and signing shipping papers.

Oily Solids – Includes, but not limited to; absorbent media contaminated with oils, grease or other petroleum product, oil filters, drained fuel filters, and empty plastic buckets with oil residue present.

Process knowledge – Documented knowledge of the processes and sources associated with the generation of a waste or waste stream that allows a reliable estimation of the constituents and their concentrations in the waste so that handling, storage, treatment,

and disposal requirements can be established. Process knowledge is information, ultimately based on data, that relates to the material to be characterized, but does not directly represent the material itself. Determinations made by process knowledge must be documented and recertified on a periodic basis.

Real Property – Land and anything permanently affixed to the land such as buildings, fences and those things attached to the buildings, such as light fixtures, plumbing and heating fixtures, or other such items, that would be personal property if not attached.

Solid waste – Any discarded material (i.e., liquid, gaseous, semisolid, or solid) that is abandoned including disposed of, burned or incinerated, or accumulated, stored, or treated before or in lieu of being abandoned or incinerated, recycled, or inherently waste-like.

Spoils – Naturally occurring earthen materials brought-up during an excavation. This term includes soil, rock, gravel, clay, vegetation, etc. or any mixture of these materials.

Start Date – The date in which the waste was first generated or placed in a waste container. Refer to Attachment B, “Container Requirements for Generator Staging Areas” for waste specific instructions.

Storage – The intentional or unintentional placement of wastes in an area from which retrieval is possible or intended.

Transportation Functions – Includes movement of hazardous material by vehicle, loading incidental to movement, unloading incidental to movement and storage incidental to movement.

Universal waste – According to 40 CFR 273, *Standards for Universal Waste Management*, universal waste means any of the following hazardous wastes that are managed under the universal waste requirements of 40 CFR 273: (1) batteries, (2) pesticides, (3) mercury-containing equipment, and (4) lamps.

Waste container – Any portable device (e.g., package, can, bottle, bag, barrel, drum, tank, or other device) that contains waste. A waste container also may be a waste.

Waste generator (WG) – The individual (e.g., facility manager, supervisor of a waste-generating activity, or appointee) or organization whose act or process produces wastes to be managed for DOE.

## References

- 40 CFR 261, *Identification and Listing of Hazardous Waste*
- 40 CFR 273, *Standards for Universal Waste Management*
- 40 CFR 279, *Standards for the Management of Used Oil*
- 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions*
- 40 CFR 763, *Asbestos*
- 49 CFR 173.6 *Materials of Trade Exemptions*

- 49 CFR 172.704, *Training Requirements*
- 401 Kentucky Administrative Regulations (KAR) 30, *Waste Management, General Administrative Procedures*
- 401 KAR 39, *Hazardous Waste*
- 81 Federal Register 85732, *Hazardous Waste Generator Improvement Rule, dated 11-28-16*
- 50 Federal Register 614, *Hazardous Waste Management, Definition of Solid Waste*
- EPA-600/2-80-076, *A method for determining the compatibility of hazardous wastes [sic]*
- EPA530-F-92-010, *Properly Managing Used Oil Filters (July 1994)*
- RCRA Online Number 14503, *Regulatory Status of Petroleum Product Contained in Absorbent Pads*
- RCRA Online Number 14184, *Regulatory Status of Spent Metal Fuel Filters Under RCRA (June 3, 1998)*
- Section 112, Clean Air Act, *National Emission Standards for Hazardous Air Pollutants (NESHAP)*
- DOE Order 435.1 Chg. 1, *Radioactive Waste Management*
- DOE Order 458.1 Chg. 3, *Radiation Protection of the Public and the Environment*
- DOE Order 460.1D *Hazardous Materials Packaging and Transportation Safety*
- DOE Order 460.2A, *Departmental Materials Transportation and Packaging Management*
- ISSC-ESH-PL-010, *Integrated Safety Management System Description*
- ISSC-ESH-PL-006, *Environmental Management System*
- ISSC-ESH-PL-005, *Pollution Prevention Plan for SST Facilities at the Paducah Gaseous Diffusion Plant*
- ISSC-ESH-PL-002, *Waste Management Plan*
- ISSC-ESH-PR-001, *Hazard Assessments*
- ISSC-PE-PR-001, *Reutilization and Excessing of Property, Staging of Excess Property, and Off-Site Removal of Property*
- CP2-WM-0001, *Four Rivers Nuclear Partnership, LLC. Paducah Deactivation and Remediation Project Waste Management Plan*
- CP2-WM-0011, *Waste Acceptance Criteria for the Treatment, Storage, and Disposal Facilities at the Paducah U.S. Department of Energy Site*

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- CP2-WM-0661, *Four Rivers Nuclear Partnership, LLC. Paducah Deactivation and Remediation Project Transportation Safety Document for On-Site Transportation*
- CP3-WM-1017, *Safe Handling and Opening of Sealed Containers*

### **Attachments**

ATTACHMENT A, *Example Generator Staging Area Sign*

ATTACHMENT B, *Container Requirements for Generator Staging Areas*

ATTACHMENT C, *Example Waste Container Label*

Attachment A. Example Generator Staging Area Sign

**GENERATOR STAGING AREA**

G-752-C-13

**CONTACT: ENVIRONMENTAL COMPLIANCE**

BELL 6294

CELL 270-210-7354

**EMERGENCY CONTACT: PSS**

BELL 6333

CELL 270-441-6211

PLANT RADIO ALPHA -1 CHANNEL 16

## Attachment B. Container Requirements for Generator Staging

Requirements	GSA
1. Must be in good condition.	Yes
2. Must be compatible with the waste in the container.	Yes
3. Must be closed at all times not in use.	Yes
4. Inspection Requirements	Once every 30 days, at a minimum
5. Marking Requirements	LLW, Universal Waste, Asbestos, PCB
6. Date Requirements	LLW – date the container is filled Asbestos Waste – date the container is filled Universal Waste – date the first item is placed in the container PCB Waste – date the first item is placed in the container
7. Maximum Length of Storage	LLW – 9 months (to allow DRC time to manage waste) Asbestos Waste – no limit Universal Waste – one year from start date PCB Waste – one year from start date.
8. Maximum Volume of Waste Allowed in Storage	LLW – no limit Asbestos Waste – no limit Universal Waste – no limit PCB Waste – < 99 lbs.

GSA = Generator Staging Area

LLW = low level (radiological) waste

PCB = Polychlorinated biphenyl

The following will be implemented as best management practices:

- Adequate aisle space will be maintained for inspection purposes;
- Area will be kept clear of debris and unnecessary clutter;
- There will be an ISSC-ESH-FO-017, *Waste Item Container Log*, available for each container;
- Containers for liquid waste will have secondary containment present to capture drips and leaks that occur during addition or removal of contents; and
- Spills will not be flushed to storm drain without explicit permission from the ECS.

**Attachment C. Example Waste Container Label**

<b>WASTE CONTAINER LABEL</b>	
<b>RFD/DRUM NUMBER</b>	_____
<b>CONTENTS</b>	_____ _____ _____
<b>SOURCE OF WASTE</b>	_____
<b>BUILDING</b>	_____
<b>COMMENTS</b>	_____ _____ _____ _____
<input type="checkbox"/> LIQUID	<input type="checkbox"/> SOLID
<input type="checkbox"/> SEMI-SOLID	<input type="checkbox"/> COMPRESSED GAS
<b>GENERATION DATE</b>	_____

**Attachment B**

**ISSC-RAD-PL-005, Radioactive Waste Management Basis**



## RADIOACTIVE WASTE MANAGEMENT BASIS

Approved by:  Date: 2-12-19  
John Hobbs  
Environment, Safety, and Health Manager

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## REVISION SUMMARY

<b>Rev. No.</b>	<b>Description of Change</b>	<b>Pages</b>	<b>Date</b>
<b>0</b>	Revisions made to reflect changes in Paducah Infrastructure Support Services contract DE-EM0003733.	All	12/01/15
<b>1</b>	Revised to remove references of inactivated SST Emergency Management procedures.	4	03/10/17
<b>2</b>	Periodic review performed; updated to reflect current practices. Formatted into new template, previous no. SSI.ESH-3007.	All	03/07/19

## **EXECUTIVE SUMMARY**

The Swift & Staley Team (SST) provides services for infrastructure surveillance and maintenance at the Paducah Gaseous Diffusion Plant. This plan provides a general overview of the SST Radioactive Waste Management program.

## ACRONYM LIST

CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
ECS	Environmental Compliance Specialist
ES&H	Environment, Safety, and Health
GSA	Generator Staging Area
ISMS	Integrated Safety Management System
ISSC	Infrastructure Support Services Contractor
LLW	low-level waste
M	Manual
mrem/h	milliroentgen equivalent man per hour
nCi/g	nanoCurie per gram
O	Order
PGDP	Paducah Gaseous Diffusion Plant
PPE	personal protective equipment
RCRA	Resource Conservation & Recovery Act
RWMB	Radioactive Waste Management Basis
RWP	Radiation Work Permits
SST	Swift & Staley Team
WAC	Waste Acceptance Criteria
WMP	Waste Management Plan

## **1.0 INTRODUCTION**

The Paducah Gaseous Diffusion Plant (PGDP) is a U.S. Department of Energy (DOE) facility located near Paducah, Kentucky, in McCracken County.

Swift & Staley Inc. (hereinafter referred to as Swift & Staley Team [SST]) is a Prime Contractor to DOE and performs infrastructure services at PGDP. Some of the tasks that SST may perform could be in facilities that have varying amounts of radioactive materials. This Radioactive Waste Management Basis document (RWMB) is provided to describe SST's involvement with radioactive waste, how it will be handled, and the facilities for which SST is responsible that might include radioactive materials/waste. This RWMB implements the requirements of DOE Manual (M) 435.1-1, Chg. 2, *Radioactive Waste Management Manual*, Chapter IV, "Low- Level Waste Requirements."

### **1.1 Scope**

The scope of this RWMB is limited only to those facilities that SST maintains and the radioactive waste that SST generates on a routine basis in those facilities. All other radioactive waste will remain the ultimate responsibility of the facility owner; therefore, by reference to and the appropriate adherence to the DOE deactivation contractor's RWMB, those wastes shall remain the responsibility of that contractor.

### **1.2 Purpose**

SST has established a waste management plan (WMP) (ISSC-ESH-PL-002, *Waste Management Plan*), which provides guidance for compliant waste management and includes the aspects of waste generation, storage, handling, recycling, and disposal resulting from the infrastructure services operations at PGDP. It is important to note that SST does not maintain responsibility for any facility that could have appreciable quantities and forms of radioactive material. The C-755-T22A counting laboratory maintains exempt sealed sources for instrument calibration and primarily generates smears as a result of work area and item verification surveys to determine cleanliness. Potentially radiologically contaminated waste generated as a result of SST's infrastructure activities elsewhere on the site are, by contract definition, the responsibility of the deactivation contractor and will remain with them as described above.

## **2.0 RADIOACTIVE WASTE CATEGORIES AND WASTE MANAGEMENT FACILITIES**

SST will handle and accumulate only low-level waste (LLW). LLW is defined as follows:

Radioactive waste that is not high-level waste, spent nuclear fuel, transuranic waste, byproduct material [as defined by 11e.(2) of the Atomic Energy Act, as amended], or naturally occurring radioactive material.

The parameters of waste handled by SST are as follows:

- High-level waste is not handled.
- Spent nuclear fuel is not handled.
- Transuranic contaminated material at concentration > 100 nCi/g is not handled.
- Byproduct material is not handled.
- Naturally occurring radioactive material, if accumulated, is collected in very small quantities.

According to Chapter IV of DOE M 435.1-1, B. (4), "Small quantities of 11e.(2) byproduct material and naturally occurring radioactive material may be managed as low-level waste provided they can be managed to meet the requirements for waste disposal in Section IV.P of this manual." SST follows these requirements.

SST waste will be exclusively categorized as LLW. The currently defined activities of SST infrastructure services will not involve or result in high-level waste or transuranic waste. Site activities supported by SST that might result in high-level or transuranic waste will be controlled and dealt with by the deactivation contractor or other site organizations under the deactivation contractor's controls, requirements, and WMPs. Therefore, no additional discussion of high-level or transuranic waste will be incorporated in this SST RWMB.

SST endeavors to reduce the volume of waste to the lowest possible amount through frequent review of infrastructure activities and the resultant waste to ensure waste minimization and packaging are optimized. SST evaluates infrastructure activities for waste minimization opportunities through ISSC-ESH-PL-005, *Pollution Prevention Plan* for ISSC at PGDP for nonradioactive items and through its DOE-monitored free release surveys for declaration of clean items. SST's radioactive waste is limited to very small quantities of smear products and gloves/personal protective equipment (PPE) generated in the C-755-T22A counting lab or from the field locations during clean release surveys to move equipment from location to location.

Table 1 lists the recognized locations where SST radioactive waste will be stored temporarily for accumulation purposes prior to disposal.

**Table 1 - Disposable Waste Storage Locations**

Location	Radioactive Waste Type	Typical Storage Container Type	Typical Quantity Stored/Accumulated at Any One Time	Max Time
C755-T22A Counting Lab	LLW	Closable plastic bag in a container awaiting accumulation of amount sufficient for placement in deactivation contractor storage/disposal container	1ft <sup>3</sup>	90 days

ft<sup>3</sup> cubic feet  
 LLW low-level waste

### 3.0 SAFETY BASIS DOCUMENTATION, EVALUATION, AND CONTROLS

SST has procedures and plans established in accordance with DOE Orders (O) and Directives to guide the implementation of waste-related activities. The documents in Table 2 support the safe handling of waste by SST.

**Table 2 - Primary Documents**

Document Number	Title
ISSC-ESH-PL-003	<i>Emergency Management Integration Plan</i>
ISSC-ESH-PL-004	<i>Worker Safety and Health Plan</i>
ISSC-PM-PL-001	<i>Integrated Safety Management System Plan</i>
ISSC-ESH-PL-005	<i>Pollution Prevention Plan for the ISSC at PGDP</i>
ISSC-ESH-PL-006	<i>Environmental Management System</i>
ISSC-ESH-PL-008	<i>Radiation Protection Program (RPP)</i>
ISSC-ESH-PL-002	<i>Waste Management Plan</i>
PGDP-RM-PR-001	<i>Records Management</i>
ISSC-ESH-PR-026	<i>General Safety Requirements</i>
ISSC-ESH-PR-013	<i>ES&amp;H Subcontractor Oversight Program</i>
ISSC-ESH-PR-009	<i>Suspension of Work (Safety-Related)</i>
ISSC-ESH-PR-020	<i>Personal Protective Equipment</i>
ISSC-ESH-PR-005	<i>Storage and Disposition of Spent Materials</i>
ISSC-ESH-PR-031	<i>Emergency Operation Center Activities</i>
ISSC-RAD-PR-008	<i>ALARA Program</i>
ISSC-RAD-PR-007	<i>ALARA Reviews</i>
ISSC-RAD-PR-015	<i>Radiation Surveys</i>
ISSC-RAD-PR-019	<i>Radioactive Contamination Control</i>
ISSC-RAD-PR-014	<i>Workplace Monitoring</i>
ISSC-RAD-PR-010	<i>Radiation Protection Program Records</i>
ISSC-PM-PR-003	<i>Work Planning and Control</i>

ALARA	as low as reasonably achievable	PGDP	Paducah Gaseous Diffusion Plant
ES&H	Environment, Safety, and Health	RPP	Radiation Protection Program
ISSC	Infrastructure Support Services Contractor		

### 4.0 WORK PLANNING AND AUTHORIZATION

Tasks that might generate waste are defined in a work control document. The work control packages are reviewed by the Environment, Safety, and Health (ES&H) staff and the ES&H Manager to ensure that proper handling considerations have been established for any determined existing hazards and potential waste. The type, amount, categorization, storage capacity, and suitability of the waste are reviewed to ensure that:

- Suitable containers are available;
- The waste will be suitably stable;
- The waste will be packaged per the site's plans; and
- Appropriate disposal options are available.

Proper handling of waste is further defined by ISSC-ESH-PL-002, *Waste Management Plan* and ISSC-ESH-PR-005.

During the work package reviews, the ES&H staff reviews the types of materials to be used and the types of waste to be produced to identify ways to reduce the waste generated by product substitution. The staff may also place limitations on quantities of materials used. Recycle, reuse, decontamination, and other waste-minimization techniques will be used where feasible.

## **5.0 RADIOACTIVE WASTE MANAGEMENT**

### **5.1 Radioactive Waste Management - General Program**

The management of waste generated by SST is supported and implemented (including oversight and evaluation) by key SST ES&H staff using established procedures and the work control process. Employees involved in waste generation are trained to properly handle waste from point of generation to final disposal. SST personnel utilize an integrated safety management system (ISMS) approach, as defined by ISSC-ESH-PL-010, *ISMS Description*, to help prevent accidents and improve performance during waste management activities. Additionally, waste handling for the PGDP site is provided by cooperative site wide programs and interaction/working knowledge of the overall site waste handling plans between the various PGDP DOE contractors.

Efforts will be made to eliminate or minimize the generation of waste through material substitution, process changes, or enhanced process efficiency. Waste handling activities associated with the SST contract will be performed in compliance with DOE requirements, federal and state requirements, as well as the provisions of DOE O 435.1, Chg. 1, *Radioactive Waste Management*, and SST also utilized DOE Guide 435.1, *Low-Level Waste Requirements*, and DOE M 435.1-1, Chg. 2, *Radioactive Waste Management Manual*, Chapter IV, "Low-Level Waste Requirements."

### **5.2 Contingency Actions**

Based upon the types of tasks and the facilities for which SST is responsible, SST does not anticipate generation of high activity, transuranic, or high-hazard waste. SST's workforce is trained in waste handling and in response to incidents involving waste spills or releases. As further described in Section 7, *Contingency and Emergency Preparedness*, SST is trained and required to respond to its incidents, as well as to support site-wide emergency situations.

Alternate locations can be identified for temporary storage of waste should the need arise. The site's operations center is manned at all times and is capable of notifying SST and other DOE contractors to aid in emergency issues such as spills or releases of waste. The site also maintains fully trained hazardous materials (HazMat) response personnel and has available a wide variety of response resources.

### **5.3 Corrective Actions**

SST performs periodic inspections of its waste generation and storage areas to ensure continued compliance and waste container integrity. The SST senior managers and other supervisors and managers perform scheduled surveillances, programmatic evaluations and work area walk downs. Deficient conditions or weaknesses are documented and entered into the SST Issues Tracking System. Corrective actions are assigned to specific individuals and are tracked through closure in a timely manner.

### **5.4 Waste Acceptance**

Waste sampling will occur any time the waste characteristics are unknown or whenever any known or suspected changes have occurred in the waste form or content. SST also may conduct additional waste characterization on a periodic basis to confirm waste characteristics. SST will not perform pretreatment of waste. SST LLW is delivered to a deactivation contractor facility, placed in the proper storage container, and contents described on the associated inventory log. The deactivation contractor, or designee, will ensure that the waste contains no prohibited items and satisfies the waste profile for disposal. Waste suitable for recycle will be handled as such once the materials are determined to be free of radiological contamination and approval for off-site release is granted from DOE. SST will maintain an inventory of waste that is placed into the containers.

For radioactive waste, this log will describe individual waste bag quantities and will be traceable to generator, date, location, and material. SST's working relationship with the site deactivation contractor ensures that the waste generated by SST is properly characterized, packaged, and presented to allow compliant disposal. SST maintains an awareness of the site's waste acceptance criteria (WAC) to ensure compliance with such requirements such as the absence of free-standing liquids, prohibited waste items and materials, and unusually hazardous waste products.

#### **5.4.1 SPECIFIC WASTE ACCEPTANCE REQUIREMENTS AND LIMITATIONS ACCEPTANCE**

SST generates and temporarily accumulates low-level radioactive waste in C-755-T22A. The inventory of LLW is in the form of solid waste (smears, personal protective equipment, maslin, etc.), stored in laboratory-scale quantities that are easily and safely manipulated by one person. This waste is accumulated as described in Table 1, and then transferred directly to the DOE deactivation contractor for disposal. This wastestream is characterized using process/generation knowledge, direct and indirect measurements, and visual inspections as it is generated and packaged. SST does not routinely store LLW in generator staging areas (GSA); however this can be performed if needed. Radiological wastes will be managed so that quantities and activities of material will be less than a Hazard Category 3 Radiological Facility. These limits are provided in Table 3, Waste Limits, (Ref, DOE Standard 1027-92, Attachment A) for isotopes found at PGDP. Limits for other isotopes are found in DOE-STD-1027.

**Table 3 - Waste Limits**

Radionuclide	CAT 3 Limits		Administrative Limit (80%)	
	Cat 3 (Ci)	Cat (g)	Admin (Ci)	Admin (g)
Tc-99	1.6E+04	1.6E+00	1.28E+04	1.28E+00
U-234	4.2E+00	6.7E+02	3.36E+00	5.36E+02
U-235	4.2E+00	1.9E+06	3.36E+00	1.52E+06
U-238	4.2E+00	1.3E+07	3.36E+00	1.04E+07
Summed TRU	5.2E-01	3.0E+00	4.16E-01	2.40E+00
Limits will be applied using a sum-of-the-ratios method for individual radionuclides.				

CAT	Category	Tc	Technetium
Ci	Curie	TRU	transuranic
g	gram	U	Uranium

In addition to these limits the following restrictions will be applied:

- No single container will contain greater than 49 CFR 173.435 Table A2 quantities of material.
- A dose limit of 0.5 mrem/h will be labeled on the outside of the package.
- Uranium will not be accepted in bulk form.
- Residual contaminated items (PPE, swipes, plastics, wood, steel, and other small articles) will be bagged and/or containerized in a manner that results in a package that is essentially moisture free. Recognizing that moisture may occur due to condensation, absorbent material may be added to containers. This will be confirmed by inspection of packaging logs and/or direct inspections. In no case will liquid make up more than one percent volume of a waste container or 0.5 percent volume of processed/stable form waste.
- Waste will be reasonably compacted into containers so that void space is minimized.
- Waste will not contain material that could result in adverse chemical reactions leading to explosions, fires, toxic/noxious gases, vapors, or fumes, or in any way could be harmful to workers, the public, or the long-term structural integrity of the anticipated disposal site. This will be verified by inspections of waste generation/packing logs and/or by direct inspection.
- LLW in a gaseous form will not be generated.

#### 5.4.2 VERIFICATION PROCESS FOR WASTE CHARACTERIZATION AND ACCEPTANCE

The following waste container characteristics will be documented:

- Physical and chemical;
- Volume, including the waste and any stabilization or absorbent media;
- Weight of the container and contents;
- Identities, activities, and concentrations of major radionuclides;
- Characterization date;

- Generating sources;
- Generation date; and
- Any other information that may be needed to prepare and maintain the disposal facility performance assessment or demonstrate compliance with applicable performance objectives.

## **5.5 Evaluation and Acceptance**

Disposal options will be identified and initiated by the SST Environmental Compliance Specialist (ECS) prior to generation of the waste. Feedback and corrective actions will be implemented to ensure the waste is properly packaged, stored, transported, and disposed in accordance with applicable requirements. SST will coordinate with DOE to reduce waste volume, waste types, and utilize the most appropriate and cost-effective method for handling and disposing waste.

Final disposition of radioactive waste generated by SST is handled by the deactivation contractor. SST will coordinate with the site's deactivation contractor waste management personnel for proper handling of waste. SST will work closely with the other entities at the site, especially those responsible for the site's WAC, for disposal of radioactive or mixed waste. SST is cognizant of the WAC and will ensure that any waste to be included for site consolidated disposal meets the WAC.

Representatives will be identified in the deactivation contractor organization as communicants with SST regarding waste management. The ECS, or designee, will interface as needed with various deactivation contractor personnel responsible for storage locations and requirements, acceptability and categorization of waste, certification of waste, disposal/disposition, and any associated SST reports or input to the deactivation contractor for site wide reporting. The ECS, or designee, will participate in and/or conduct worker training, document revisions, oversight, and assessments as needed.

## **5.6 Life Cycle Planning**

The volume of waste generated each year by SST has been reasonably consistent and has been reduced to < three 55-gal drum equivalents.

## **5.7 Waste Characterization**

Waste generated by SST will come from areas and facilities for which there is process knowledge, associated historical surveys, and sample analyses. This historical information will be utilized by SST to aid in the characterization of the waste. SST also may periodically verify the historical data or, if a change of conditions or suspected change in the waste occurs, then SST will sample the waste for further analysis.

Waste generated by SST will have sufficient documentation associated with it as well as labeling information to allow the deactivation contractor to properly store, transport, and dispose of the waste. That information will include such information as: physical and chemical characteristics, volume, weight, activity, pertinent dates, and other information

as needed. Waste to be transferred to the deactivation contractor will be certified to meet their WAC. The waste container's information/data will be provided to the deactivation contractor as required.

The waste generated by SST will almost exclusively be dry products such as paper, plastic, and rubber. SST will ensure that free-standing liquids are not present in the waste containers. Additionally, other hazardous materials, prohibited products, gases, and unsuitable waste will not be present, which would require special handling pre-treatment, venting, or special waste disposal containers or measures.

## **5.8 Waste Certification**

Waste being transferred to the DOE deactivation contractor will be certified by SST to meet the waste acceptance requirements for their LLW storage, treatment, and disposal. Analytical data or additional surveys/sampling of the waste will be utilized as necessary to help ensure the waste is properly characterized. The waste will be properly inventoried to include the physical quantity, the radioactive constituents and amounts, and will be assured to contain no prohibited items or free-standing liquids. The package will be properly labeled and certified by the ES&H Manager or designee as meeting all WAC the requirements.

Documentation associated with the package will be conveyed to the deactivation contractor and will be maintained on file with SST. SST's quality assurance programs and oversight/assessment programs will be utilized as necessary to help ensure compliance with the requirements and consistency of application.

## **5.9 Waste Storage**

As stated in section 5.4.1, because the volume of LLW generated is very small, SST does not routinely store LLW in GSA. If larger volumes are generated, then SST LLW will be stored in an acceptable container within an established GSA, which will be covered, locked, and periodically inspected to ensure the waste containers have not degraded and will be satisfactory for transport and disposal. The condition of the containers will be reviewed to ensure the storage environment and the contents have not caused pressurization, deformation of the container, or deterioration. SST does not intend to maintain liquid LLW for disposal. If such waste would need to be stored, then SST will develop additional procedures, inspection methodology, and storage provision to prevent the containers from being compromised by the stored liquid. The storage area also would require additional spill containment and control measures. SST's LLW would not remain in storage for longer than one year unless authorized by DOE.

If waste is accumulated in GSA prior to final transfer for disposal, the containers will have an affixed inventory, will be labeled with the necessary information and warning labels, and will be maintained closed unless material is being introduced into the container. The inspections noted elsewhere in this document will be applicable to the waste accumulation process.

## **6.0 RADIOLOGICAL MONITORING AND CONTROL**

The SST Radiological Protection group, Environmental Specialist, and ES&H Manager, perform reviews of the proposed work control packages to identify activities that might result in radioactive waste. These reviews determine methods to reduce or eliminate the generation of waste to as low a volume as possible and also define the temporary storage locations, the final storage location, and any additional waste handling requirements to perform the task safely. These reviews also define the Radiation Work Permits (RWP) requirements.

As part of these established work packages and RWP documented controls, the ES&H staff implements the necessary monitoring, surveys, waste container controls, waste segregation techniques, and labeling to ensure the waste is adequately identified, packaged, and prepared for further disposal.

## **7.0 CONTINGENCY AND EMERGENCY PREPAREDNESS**

SST maintains ES&H coverage on non-routine tasks that could involve environmental, radiological, safety, and waste requirements. This oversight attention provides real-time input to ensure the waste products are handled appropriately. In the event of a mishap of any type, the ES&H staff, as well as every employee, are trained and expected to take mitigation actions, stop the job, and notify the appropriate management to initiate emergency actions as necessary. Spill control contingencies are defined and would be activated in the unlikely event of waste spills.

SST has numerous procedures that reference emergency actions. SST also is actively involved as a trained participant to site emergency response actions. This involvement includes close working relationships and agreements for cooperative response efforts between the other site contractors and entities.

## **8.0 MAINTAINING RECORDS AND RWMB DOCUMENTS**

Documentation created in performing waste management activities will be evaluated and stored in accordance with PGDP-RM-PR-001, *Records Management*, and as otherwise specified by regulatory agencies. These records will help ensure compliance and provide record and data retrieval ability.

## **9.0 RESULTS AND CONCLUSION**

### **9.1 Summary**

This RWMB describes SST's involvement with radioactive waste, how it will be handled, and the facilities for which SST is responsible that might include radioactive materials/waste. This RWMB implements the requirements of DOE M 435.1-1, Chg. 2, *Radioactive Waste Management Manual*, Chapter IV, "Low- Level Waste Requirements."

## **9.2 Conclusion**

Programs and policies are established to effectively manage SST's waste in accordance with the requirements of DOE M 435.1-1, Chg 2, *Radioactive Waste Management Manual*, Chapter IV, "Low- Level Waste Requirements."

## **10.0 ATTACHMENTS**

Attachment A, *Definitions*

## ATTACHMENT A – DEFINITIONS

**Byproduct Material.** (1) Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material, and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. [Source: *Atomic Energy Act of 1954*, as amended, Section 11(e)]

**High-Level Waste.** High-level waste is the highly radioactive waste, material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation. [Adapted from *Nuclear Waste Policy Act of 1982*, as amended]

**Low-Level Waste.** Low-level radioactive waste is radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in section 11(e)(2) of the *Atomic Energy Act of 1954*, as amended), or naturally occurring radioactive material. [Adapted from *Nuclear Waste Policy Act of 1982*, as amended]

**Mixed Waste.** Waste that contains both source, special nuclear, or byproduct material subject to the *Atomic Energy Act of 1954*, as amended, and a hazardous component subject to the *Resource Conservation and Recovery Act (RCRA)*. [Adapted from *Federal Facility Compliance Act of 1992*]

**Naturally Occurring Radioactive Material (NORM).** Naturally occurring materials not regulated under the *Atomic Energy Act of 1954*, as amended, whose composition, radionuclide concentrations, availability, or proximity to man have been increased by or as a result of human practices. NORM does not include the natural radioactivity of rocks or soils, or background radiation. [Adapted from January 1997 Draft Part N, "Regulation and Licensing of Naturally Occurring Radioactive Material," Conference of Radiation Control Program Directors, Inc.]

**Radioactive Waste.** Any garbage, refuse, sludges, and other discarded material, including solid, liquid, semisolid, or contained gaseous material that must be managed for its radioactive content. [Adapted from 40 Code of Federal Regulations (CFR) Part 240]

**Source Material.** (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of (i) uranium, (ii) thorium or (iii) any combination thereof. Source material does not include special nuclear material. [Source: 10 CFR Part 40]

**Special Nuclear Material.** (1) Plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which is determined, pursuant to the provisions of section 51 [of the *Atomic Energy Act of 1954*, as amended], to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material. [Source: *Atomic Energy Act of 1954*, as amended]

**Spent Nuclear Fuel.** Fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. Test specimens of fissionable material irradiated for research and development only, and not production of power

## ATTACHMENT A – DEFINITIONS (continued)

or plutonium, may be classified as waste, and managed in accordance with the requirements of this Order when it is technically infeasible, cost prohibitive, or would increase worker exposure to separate the remaining test specimens from other contaminated material. [Adapted from DOE 5820.2A]

**Transuranic Waste.** Transuranic waste is radioactive waste containing more than 100 nanocuries (3,700 becquerels) of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for: (1) high-level radioactive waste; (2) waste that the U.S. Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or (3) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61. [Source: *WIPP Land Withdrawal Act of 1992*, as amended]

**Waste Characterization.** The identification of waste composition and properties, by review of acceptable knowledge (which includes process knowledge), or by nondestructive examination, nondestructive assay, or sampling and analysis, to comply with applicable storage, treatment, handling, transportation, and disposal requirements. [Adapted from DOE Glossary ("Characterization" definition) and *Federal Register*, Vol. 62, No. 224]



## STORAGE & DISPOSITION OF SPENT MATERIALS

Approved by: John Hobbs, <i>ES&amp;H Manager</i>	<b>Signature:</b> 
Issue Date: 11/29/2018	Effective Date: 11/29/2018
Subject Matter Expert/Point of Contact: Mike Golightly/John Hobbs	
<p style="text-align: center;"><b><u>Safety and Security Precautions:</u></b></p> <p>All work is to be performed in accordance with Integrated Safety Management System and Safeguards &amp; Security guidelines. IF a problem is discovered during the course of work, THEN always place the activity in a safe condition prior to stopping work, if it is safe to do so, and report to supervision. Refer to ISSC-ESH-PR-009, <i>Suspension of Work (Safety-Related)</i>, for further information.</p>	
<p style="text-align: center;"><b><u>Records Disposition</u></b></p> <p>All records generated in the use of this procedure are to be managed in accordance with PGDP-RM-PR-001, <i>Records Management</i>.</p>	
<p style="text-align: center;"><b><u>Training Requirements</u></b></p> <p>Required training modules are established in the Learning Management System (LMS).</p>	

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<b>Revision Log</b>			
<b>Rev. No.</b>	<b>Description of Change</b>	<b>Pages Affected</b>	<b>Effective Date</b>
Revisions 0 through 6 from previous contract.			
<b>7</b>	Revisions made to reflect changes in Paducah Infrastructure Support Services contract DE-EM0003733. Attachment A, "Forms" removed for template update – remaining Attachments re-numbered.	All	12/01/15
<b>8</b>	Removed unneeded material and improved process. Revised SST Forms 101 and 170. Inactivated SST Forms 47, 105, 139, and 239.	All	02/24/16
<b>9</b>	Removed unneeded material and improved process.	All	03/31/17
<b>10</b>	<ol style="list-style-type: none"> <li>1. Revised procedure to address issues described in the following ITS items: <ul style="list-style-type: none"> <li>• IM-2017-112-03 and IM-2017-358-01 Added wording to define the process for transferring waste to deactivation contractor (section 4.8 and 4.13).</li> <li>• IM-2017-180-08 and IM-2017-350-01 Added wording to define the process for handling, storage, transportation and disposal of asbestos containing material (new section 4.11).</li> </ul> </li> <li>2. Added new section 4.10 to address RCRA Hazardous Waste</li> <li>3. Added new section 4.12 to address PCB waste</li> <li>4. Added new section 4.13 to address transportation of waste</li> <li>5. To close out IM-2017-347-02, added DOT training requirements identified by IM-2017-347-01 (new section 4.1.14 and 4.13).</li> </ol>	1-22, 24	01/25/18
<b>11</b>	Revised to incorporate TIDC changes. Formatted into new template, previous no. 03.06.01.	All	05/23/18
<b>12</b>	Revised for IM-2018-461-3 to define our process for the use of process knowledge as used for waste characterization, including DOE O 458.1 requirements.	10-13, and 23	11/29/18

**Purpose** This procedure describes safe and compliant storage and disposition practices for spent materials (i.e., recyclable materials, municipal/sanitary landfill waste, low level [radiological] waste [LLW], Resource Conservation and Recovery Act [RCRA] hazardous waste, asbestos waste and polychlorinated biphenyl [PCB] waste).

**Scope** This procedure applies to all Swift & Staley Team (SST) employees and subcontractors (if included in their subcontract) who generate, handle, treat, or store spent materials described in this procedure as part of the SST contract with the U.S. Department of Energy (DOE).

All positions referred to in this procedure are those of SST personnel (i.e., employees and applicable subcontractors) unless otherwise specified.

Compliance with CP2-WM-0011, *Waste Acceptance Criteria for the Treatment, Storage, and Disposal Facilities at the Paducah U.S. Department of Energy Site*, referred to in this procedure as the Paducah Waste Acceptance Criteria (WAC), is applicable only to wastes that are generated and returned to the Deactivation and Remediation Contractor (DRC) for disposition.

**What To Do**

**A. SAFETY AND SECURITY PRECAUTIONS**

NOTE: For current copies of DRC procedures referenced in this document, contact the SST Procedure Coordinator. Copies of U.S. Environmental Protection Agency (EPA) documents and CFR referenced in this document may be obtained by contacting the Environmental Compliance Specialist (ECS).

1. In order to preserve personnel health and safety and/or prevent environmental spills, the activities described in this procedure shall be conducted in a manner consistent with SSI.ESH-0002, *Integrated Safety Management System Description* and SSI.ESH-0008, *Environmental Management System*.
2. In order to avoid adverse chemical reactions, incompatible materials must NOT be stored in the same container or in close proximity to each other. Dikes and berms alone do not provide adequate means to separate incompatible wastes. Examples of incompatible wastes are those containing acids, bases, oxidizers, pyrophoric materials, etc. (Refer EPA document EPA-600/2-80-076, A method

for determining the compatibility of hazardous wastes [sic], for guidance).

3. Waste materials may react with their containers. The Waste Generator (WG) must use containers that are compatible with the wastes, as determined by testing literature, lessons learned and Department of Transportation (DOT) requirements. The ECS will assist with determining proper packaging.
4. Personal protective equipment, as specified in Activity Hazard Assessments prepared in accordance with ISSC-ESH-PR-001, *Hazard Assessments*, the health and safety plans, work permits, or other work control documents, must be worn while handling or inspecting wastes or waste containers.
5. Waste containers may be heavy and/or awkward to move. Workers must use approved waste handling processes and equipment.
6. Opening and sampling waste containers are tasks that shall be performed only by persons qualified and authorized to perform these tasks.
7. Waste containers may become pressurized due to heat or off-gas generation. IF these containers are opened, THEN they may cause personal injury or release contaminants to the environment. If a pressurized container is found, stop work immediately and contact the Environment, Safety, and Health (ES&H) manager for guidance. Also refer to DRC procedure CP3-WM-1017, *Safe Handling and Opening of Sealed Containers*, for additional information on these potential hazards.
8. Immediately report all spills to your Supervisor and the ECS. Depending upon the size and type of spill, notification to the Plant Shift Superintendent (PSS) may be required. The PSS can be reached at 333 or 6333 on a plant phone, 270-441-6211 on a cell phone, or by calling Alpha 1 on Channel 16 on plant radio.
9. Do NOT flush a spill into a storm drain without explicit permission from the ECS.
10. Any person may stop work on an activity in accordance with SST Procedure 03.01.03, *Suspension of Work*.
11. The supervisor or any other person may stop or limit work at any time if weather or other conditions exist that may

endanger personnel health and safety or that may adversely affect the environment.

12. Any step in this procedure that cannot be performed as specified requires the procedure user to stop and contact the supervisor for direction.

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13. SST employees who perform pre-transportation and transportation functions for off-site shipments of DOT hazardous materials, or perform on-site transfers of hazardous materials including radioactive materials (e.g., DOT Class 7 Radioactive Material), shall have the following minimum training (see section M):

- DOT General Awareness Training;
- DOT Hazardous Materials Regulations (Introduction);
- DOT Hazardous Materials Table;
- DOT Hazardous Materials Packaging; and
- DOT Materials of Trade.

NOTE: Filling and storage of a container or package prior to a carrier taking possession is not subject to the requirements of the DOT. All packages will be inspected and their contents verified by a trained hazardous materials employee prior to being offered for transportation.

WASTE GENERATOR OR DESIGNEE

**B. ESTABLISHING A GENERATOR STAGING AREA**

1. Determine the type and quantity of spent material or waste to be generated and stored in the GSA.
2. Consult the ECS to determine proper storage and disposition of the spent material.
3. Provide guidance on the establishment of GSAs, including proper packaging and notification to the DRC compliance representative.
4. Contact the DRC compliance representative to obtain an identification number for the GSA, which will be numbered using the building number preceded by a "G" and followed by 01, 02, etc. (e.g., G-743-T17-01).

ENVIRONMENTAL COMPLIANCE SPECIALIST OR DESIGNEE

NOTE: The DRC maintains an inventory of the temporary on-site waste storage areas (i.e., GSAs, Satellite Accumulation Areas, 90-Day Areas, PCB areas, and Comprehensive Environmental Response, Compensation, and Liability Act Areas) at the Paducah site.

5. IF the DRC compliance representative determines the GSA is a new solid waste management unit, THEN provide:
  - A detailed physical description of the area;
  - The location (e.g., dimensions of the area, Global Positioning System coordinates, appropriate inside locators such as column numbers in a process building); and
  - Digital photograph(s) with the date of the established area.
6. Assist the WG in establishing the GSA boundary with materials such as rope, chain, tape, or other suitable storage unit/structure.
7. Provide the WG with a sign similar to the one in Attachment A, "Example Generator Staging Area Sign," designating the area and identifying the responsible supervisor.
8. Provide the facility operator or designee with copies of ISSC-ESH-FO-017, *Waste Item Container Log*.
9. Provide guidance on the establishment of other GSAs, such as areas for recyclables.

### C. OPERATING A GENERATOR STAGING AREA

NOTE: Wastes that are transferred to the DRC for disposition shall be handled in accordance with applicable sections of the Paducah WAC (i.e., selection of containers, labeling, marking, required void space, and completion of the Request for Disposal [RFD] and associated paperwork).

#### WASTE GENERATOR OR DESIGNEE

1. Waste containers will be approved by the ECS, and must be free of visible cracks, holes, bulges, significant dents or corrosion, missing rings or bolts or other damage that could compromise container integrity or create a non-compliance with applicable DOT and EPA regulations. See Attachment B, "Container Requirements for Generator Staging Areas."
2. Containers to be dispositioned via the DRC must be marked and labeled in accordance with the WAC and/or DRC guidance. See Attachment C, "Example Waste Container Label."
3. Waste containers shall be labelled with the words accurately depicting contents and date the first item is

placed in it, or the date the items became a waste, whichever is earliest. Failure to document waste and mark the waste container as described above could result in a violation of EPA and DOT requirements.

4. Maintain adequate aisle space for inspection and emergency response purposes.
5. Segregate waste streams to the greatest extent possible. Contact the ECS for guidance.
6. Post an ISSC-ESH-FO-017 on or near each container.
7. WHEN an item/article is placed in the waste container, THEN:
  - Record the item/article on the applicable container log;
  - Denote the quantity placed in the container; and
  - Initial and date the entry in the sections provided on the sheet.
8. Ensure "Waste Generator" section of the ISSC-ESH-FO-017 has been completed.
9. Maintain each container in a "securely closed" condition except when inspecting, adding, or removing waste.
10. Fill containers to the maximum extent possible, allowing for adequate void space. The following void space is recommended:
  - 1 – 2" in 5 gallon drums
  - 3 – 4" in 20 and 30 gallon drums
  - 4 – 6" in 55 gallon drums
11. IF waste is removed from a GSA because it requires repackaging or over-packing, THEN contact the ECS.
12. Before a container is removed from the GSA for disposition, ensure it is properly closed, labeled and marked, and provide the ISSC-ESH-FO-017 to the ECS.
13. Personnel offering materials for transportation shall be trained in applicable DOT requirements, per 49 CFR 172.4, *Training* and section M of this procedure.
14. For wastes that are transferred to the DRC for disposition, contact DRC waste operations to determine WAC. WAC is waste stream specific. The following may be required depending on the type of waste being transferred:

- Waste item container log(s);
- Completed process knowledge form;
- Analytical data (if available);
- Radiological surveys;
- Safety Data Sheets (SDSs); and/or
- Characterization data.

15. When waste is transferred to the DRC or shipped off-site to an approved waste vendor, complete “Environmental Compliance” section of the ISSC-ESH-FO-017.
16. Commercial bills of lading and other commercial shipping documents shall be signed as described in section M.

**D. INSPECTING A GENERATOR STAGING AREA**

NOTE: An inspector may be any designated person (SST or other subcontractor) assigned or contracted to perform these inspections.

ENVIRONMENTAL  
COMPLIANCE  
SPECIALIST OR  
DESIGNEE

1. Conduct inspections of GSA once every 30 days at a minimum and document on the designated ISSC-ESH-FO-018, Generator Staging Area Inspection Checklist.
2. Sign and date the ISSC-ESH-FO-018.
3. Maintain the active copy of the inspection checklist as a field operating record.
4. Maintain original completed inspection checklists and container logs as records.

**E. DISCONTINUING A GENERATOR STAGING AREA**

NOTE: The WG is considered the “owner” of the waste until the waste is accepted into a DRC storage facility or until the waste is shipped to an approved off-site disposal vendor.

WASTE GENERATOR  
OR DESIGNEE

1. Consider closing the GSA when it is no longer in use, or processes have changed and the waste is no longer being generated.
2. Notify the ECS when planning to discontinue use of a GSA.
3. Assist the ECS to ensure the waste is properly dispositioned and/or transferred to the DRC. All waste is to be removed from the GSA prior to closure of the area.

ENVIRONMENTAL  
COMPLIANCE  
SPECIALIST OR  
DESIGNEE

4. Ensure postings or markings identifying the area as a GSA have been removed.
5. Notify the DRC compliance representative that the GSA is being removed from service.
6. Prior to closure, ensure no waste is present in this area.
7. Ensure sufficient documentation exists to demonstrate that the operation and closure of the GSA was conducted in a manner that controlled, minimized, or eliminated waste to the extent necessary to protect human health and the environment.

**F. DISPOSITION OF SPENT MATERIALS**

All waste streams are reviewed to determine proper disposition. Source reduction is the preferred method of preventing waste and pollution, as described in SSI.ESH-6002, *Pollution Prevention Plan for SST Facilities at the Paducah Gaseous Diffusion Plant*. In those cases where waste generation cannot be avoided, recycling is preferred over disposal. The following sections describe management guidelines for waste streams encountered during the performance of infrastructure activities. Before generating any waste, contact the ECS or designee to ensure compliance will be maintained during the lifecycle of the waste.

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Excess spoils are not considered spent materials and must be;

- Backfilled at the point of generation;
- Used at another approved location on the Paducah DOE reservation; or
- Stockpiled for future use on the Paducah DOE reservation.

The disposition of spent materials is determined based on process knowledge (PK) and sampling as needed to effectively characterize the materials. PK may be used to demonstrate that the generating process was well documented and controlled and did not involve the use or generation of any materials that could result in the waste being regulated. Conversely, PK may provide all the necessary information to properly identify wastes as RCRA hazardous, Low Level Waste (LLW), Polychlorinated Biphenyls (PCB), Asbestos Containing Materials (ACM), or combinations thereof. PK determinations shall be traceable and may be based on;

- A review of historical characterization results (e.g. SWMU maps, radiological postings, etc.);
- Visual observations of materials for potential non-conforming characteristics;
- General knowledge of materials known or suspected to contain PCBs, ACM, lead, etc.; and
- Discussions with individuals familiar with historical operations, incidents, characterizations, etc. related to the materials.

When PK is not sufficient to characterize waste, sampling and analyses will be employed.

ISSC-ESH-FO-051, *Project Waste Generation Forecast* is used to estimate project related waste and advanced planning of waste characterization and disposition.

#### **G. MUNICIPAL/SANITARY LANDFILL WASTE**

1. Material that will not be recycled or managed as Low-level waste (LLW) can potentially be disposed as municipal/sanitary landfill waste (MSLW). Radiological surveys and off-site release documentation may be required prior to being shipped off-site. Consult radiological control personnel for guidance. The following items must be reviewed on a case-by-case basis by the ECS to determine whether they may be managed as MSLW:
  - Respirator cartridges;
  - Vacuum cleaner bags;
  - Ventilation filters;
  - Paint chips;
  - Paint cans;
  - Concrete; and
  - Non-janitorial waste generated within the Limited Area fence.
2. The waste listed below shall not be managed as MSLW:
  - RCRA hazardous waste;
  - PCB waste;
  - Asbestos waste;
  - LLW;
  - Light bulbs;
  - Non-alkaline, rechargeable batteries;

- Aerosol cans; and
- Liquids.

Contact the ECS for guidance concerning disposal of items not listed.

#### **H. LOW-LEVEL RADIOACTIVE WASTE/RADIOLOGICALLY SUSPECT WASTE**

1. The Paducah DRC accepts and processes LLW from Paducah Site contractors. Due to the nature and history of operations at the Paducah Site, waste generated within radiologically controlled areas (e.g., Limited Areas, Fixed Contamination Areas, Underground Radioactive Material Areas, etc.) is considered potentially radiologically contaminated until certified otherwise. Unless approved for free-release by the Site office, these materials will be transferred to the DRC for disposition in accordance with applicable sections of the Paducah WAC (i.e., selection of containers, labeling, marking, void space, and completion of the RFD, etc.) and as directed by the DRC waste operations group. Radiological surveys and off-site release documentation may be required prior to placing LLW in DRC waste management facilities. Consult radiological control personnel for guidance. This waste category can include, but is not limited to:
  - Personal protective equipment such as totes, booties and shoe covers, Tyvek coveralls, etc.
  - Radioactive labeled bags of any color, orange rubber gloves, yellow maslin cloth, step-off pads, and tags, labels, boundary tape, etc., with words or symbols denoting radioactive materials.
  - Items from areas controlled for loose/transferrable contamination, or items containing fixed contamination, or radioactive materials.
2. Additionally, real property outside of the radiologically controlled areas referenced above (i.e. the entire DOE reservation) has a potential to be radiologically contaminated. Although such property does not require DOE approval for free-release or transfer to the DRC, such property does require some level of radiological screening for to ensure compliance with WAC.
3. Contact the ECS or Radiological Protection Supervisor PRIOR to generating waste to determine if it is eligible for free-release, or if it will be managed as LLW.

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4. ISSC-RAD-IN-012, *Off-Site Survey Instruction* will be used to assess the potential for radiological contamination of waste in accordance with DOE O 458.1.
5. Contact the DRC waste operations group for guidance on required WAC; including but not limited to packaging, sizing, segregation, documentation, etc.
6. Ensure all WAC are implemented into waste generation process.
7. Complete work as required under oversight of DRC waste operations.

#### I. RECYCLABLE MATERIALS

All waste streams are reviewed to determine if a legitimate recycling (including reuse, reclamation, energy recovery, etc.) option exists. The following materials can be recycled provided no radiological contamination is present AND there is no associated DOE moratorium in place. Free release of items must be granted before being shipped off-site to be recycled.

##### 1. Universal Waste Lamps

Once a lamp is spent or no longer of use, it shall be managed as a Universal Waste and recycled. Examples of eligible lamps are: fluorescent, high intensity discharge, mercury vapor, metal halide, high pressure sodium, neon, incandescent lamps, etc.

Contact the ECS for guidance on other lamps eligible for management under the EPA Universal Waste rules.

- Precautions – DO NOT intentionally break or crush lamps. Steps for handling a broken lamp are listed below, and can be found on applicable SDS.
  - Wear appropriate hand protection to avoid injury.
  - Double-bag broken glass and tape bag closed.
  - Do not vacuum loose debris – use tape to collect small pieces and place in bag.
  - Keep the area well ventilated.
  - Contact the ECS for additional guidance.
- Storage – Containerize spent lamps in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – Ensure all containers used for collecting spent lamps are marked with the words “Universal Waste Lamps”.

- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.
- Storage limitations – Universal wastes may be stored for up to one year from the start date.
- Universal Waste Lamps are shipped off-site to an approved vendor.

## 2. Universal Waste Batteries

Once a battery is spent or no longer of use, it shall be managed as a Universal Waste and recycled. Examples of eligible batteries are: nickel/cadmium, lead, silver, mercury and lithium. Take necessary precautions to prevent leakage or contents or damage to batteries. Containerize any battery that shows evidence of leakage, spillage, or damage. The container must be compatible with the contents of the battery.

Contact the ECS for guidance on handling batteries or information on batteries eligible for management under the EPA Universal Waste rules. Alkaline batteries can be disposed as MSLW.

- Precautions – Ensure battery terminals are covered to prevent sparks or heat generation.
- Storage – Containerize spent batteries in an established GSA. Ensure all containers are securely closed at all times not in use or that batteries are stored in a manner that will prevent tipping and spilling of contents (e.g., pallet).
- Labeling – Ensure all containers used for collecting universal waste batteries are marked with the words “Universal Waste Batteries”.
- Place start date on container.
- Records – fill out ISSC-ESH-FO-017.
- Storage Limitations – Universal wastes may be stored for up to one year from start date.

Universal Waste Batteries will be managed at an approved vendor. It is acceptable for consumer-type lead-acid batteries to be returned to the wholesaler or retailer from whom the battery was purchased.

## 3. Used Oil

Used oil includes, but is not limited to, synthetic oil, engine oil, transmission fluid, refrigeration oil, compressor oil, metalworking fluids and oil, laminating oils, oils used as a buoyant, and industrial hydraulic fluid. Contact the ECS for

guidance on determining which fluids are eligible for management under the EPA Used Oil standards.

- Storage – Place used oil in an approved, dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use. Do not reuse vendor containers for collecting used oil without approval from the ECS. Under some conditions, it is acceptable to mix antifreeze with used oil. Consult the ECS for guidance on this topic.
- Secondary Containment – ensure collection containers provide secondary containment by design, or are staged on secondary containment to collect drips that occur during transfer of material.
- Labeling – Ensure all containers (i.e., tanks, buckets, drip pans, etc.) used to collect used oil are marked with the words “Used Oil.”
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 4. Used Antifreeze

- Storage – place used antifreeze in an approved dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use. Do not reuse vendor containers for collecting used antifreeze without approval from the ECS. Under some conditions, it is acceptable to mix antifreeze with used oil. Consult the ECS for guidance on this topic.
- Secondary containment – ensure collection containers provide secondary containment by design, or are staged on secondary containment to collect drips that occur during transfer of material.
- Labeling – ensure all containers used for collecting used antifreeze are marked with the words “Used Antifreeze” or “Spent Antifreeze.”
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 5. Used Oil Filters

Used oil filters made of non-terne plated steel are considered scrap metal and can be recycled. The following manufacturers have confirmed that their filters do not contain terne plated steel: WIX, Fleetguard, and Caterpillar. Contact the ECS for guidance on other acceptable filter brands.

Draining oil filters prior to placing in collection containers is acceptable but is not required. Filters can be placed in designated containers immediately after removal.

- Storage – Place used oil filters in an approved, dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – ensure all containers used for collecting oil filters are marked with the words “Oily Solids” or equivalent.
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 6. Spent Fuel Filters

Spent metal fuel filters that have been properly drained and no longer contain a significant liquid component can be placed in the container used for accumulating oily solids. Draining fuel filters can result in fuel vapors. No flames, sparks, or heat-generating activities are allowed within the GSA, and the use of non-sparking tools is required. Always ensure the liquid collection container is properly grounded. Recovered fuel shall be reused to the greatest extent possible.

Recycling Process – Drain the fuel from the spent filter into a collection container that is labeled with the words “Spent Fuel”, or equivalent. This collection container will be managed as described in section I.8. Draining the spent filter for 24 hours to remove the fuel from the filter is recommended.

- Use non-sparking tools.
- Reuse the drained fuel from the filters in acceptable items such as weed eaters.
- Storage – Place spent fuel filters in an approved container in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – ensure all containers used for collecting drained fuel filters are marked with the words “Oily Solids” or equivalent.
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 7. Oily Solids

Oily solids can be processed for oil content as well as recycled for energy recovery.

- Storage – Oily solids are to be placed in an approved, dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – Ensure all containers used for collecting oily solids are marked with the words “Oily Solids”, or equivalent.
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 8. Spent Fuel

Fuel drained from fuel filters or otherwise deemed as unusable (spent) shall be collected for recycling for energy recovery. No flames, sparks, or heat-generating activities are allowed within the GSA, and the use of non-sparking tools is required. Ensure collection drum is grounded properly. Collected fuel shall be reused to the greatest extent possible. Diesel fuel and gasoline can be placed in the same collection container.

- Storage – place spent fuel in an approved, dedicated container in an established GSA. Ensure all containers are securely closed at all times not in use.
- Labeling – ensure all containers used for collecting spent fuel are marked with the words “Spent Fuel”.
- Place start date on container.
- Records – Fill out ISSC-ESH-FO-017.

#### 9. Scrap Metal

Eligible scrap metal can be recycled if the following conditions are met:

- Meets the moratorium criteria for scrap metal, and known to not have been staged in a radiologically contaminated area;
- Must be free of liquids (oil, fuel, etc.);
- Surveyed by Radiological Control personnel; and
- Approved by DOE Portsmouth/Paducah Project Office (PPPO) for off-site release.

Scrap metal meeting these requirements shall be placed in a container approved by the ECS.

#### 10. Electronic Scrap

Items meeting the definition of electronic scrap can be recycled if the following conditions are met:

- Must be free of liquids (oil, fuel, etc.);
- Surveyed by Radiological Control personnel;
- Approved by DOE PPPO for off-site release; and
- Refer to SST Procedure 06.02.03, *Reutilization and Excessing of Property, Staging of Excess Property, and Off-Site Removal of Property*, for additional information and guidance.

#### 11. Materials from Administrative Areas and Break Areas

The following items are collected from offices and break-areas for recycling:

- Metal cans - aluminum, steel, tin, etc.
- Paper and Cardboard – all sizes and colors of folders, magazines, books, etc.
- Plastic items (except Styrofoam)
- Toner and Printer Cartridges

Contact the ECS for information on items eligible for recycling.

### J. HAZARDOUS WASTE

Management of hazardous waste is governed by Kentucky and federal regulations. Items that can meet the definition of hazardous waste, based on characteristics of ignitability, corrosivity, reactivity and toxicity include, but are not limited to:

- Aerosol cans;
  - Unused solvent-based paint;
  - Used degreasers; and
  - Excess, unused cleaning products.
1. Consult the ECS to determine if a waste is potentially hazardous PRIOR to generation, and that all EPA and DOT requirements will be met.
  2. SST personnel must manage hazardous waste in the following manner:
    - Ensure hazardous waste is accumulated in an approved DRC waste area
    - Ensure each container holding hazardous waste is marked with word clearly describing the waste (e.g., aerosol cans, excess fuel, etc.);
    - Ensure each container is marked with the date the first item is placed in it, or the date the item became a waste, whichever is earliest;

- Ensure each container is securely closed at all times not in use; and
- Ensure each addition of waste is documented on the applicable DRC logsheet.

#### K. ASBESTOS WASTE

IM-2017-180  
IM-2017-350

Many materials at the Paducah Gaseous Diffusion Plant (PGDP) have the potential to contain asbestos at regulated levels (>1%); including siding, caulking, wall material, insulation, etc. Management of these materials is governed by Kentucky and federal regulations. Asbestos-containing waste generated inside a Limited Area is transferred to the DRC due to potential radiological contamination. Prior to generating LLW waste, contact DRC waste management group and arrange proper handling per section H. The DRC will provide handling guidance for low-level radioactive/asbestos waste.

Before generating asbestos containing waste, contact the ECS to ensure correct containers are available and a viable disposition pathway exists. Asbestos must be packaged and managed per EPA and DOT requirements, which vary depending on the physical characteristics (friable versus non-friable) and the source of the asbestos (impacted area versus non-impacted area). At a minimum, manage asbestos as follows:

1. Contact the ES&H manager or designee PRIOR to generating asbestos waste.
2. Adequately wet asbestos to minimize spread of material and limit personnel exposure.
3. Place asbestos containing materials in two layers of 6-mil plastic, with the required regulatory warnings present.
4. Tape the top of each bag in a manner that will not allow asbestos fibers to escape, do not push air out of bags in an effort to reduce volume.
5. Immediately place in a container approved by the ECS in an established GSA.
6. Document this action on an ISSC-ESH-FO-017.

#### L. POLYCHLORINATED BIPHENYL WASTE

Articles, items or materials destined for disposal that contain PCBs at concentrations  $\geq 50$  parts per million (ppm), or originate from a known source of PCBs  $\geq 50$  ppm, require special handling to meet the requirements of sections of the

Toxic Substance Control Act (TSCA) found at 40 CFR 761 “Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions”.

1. Contact the ECS PRIOR to generating PCB waste to ensure containers and GSA are available to properly manage the material. The following must be performed at a minimum to ensure compliance with TSCA:
  - Mark all PCB waste with a PCB ML or MS label, available through the ECS;
  - Place PCB waste in designated containers in an established PCB GSA; and
  - Ensure PCB containers are marked with the date the first item is placed in the container, or the date the waste item was removed from service (date-to-service, or DTS), whichever is the earliest date.
2. Document this action on an ISSC-ESH-FO-017.

#### **M. TRANSPORTATION OF WASTE**

IM-2017-112  
IM-2017-358

On-site and off-site transportation DOT hazardous materials (including waste) will be performed in accordance with DOE Order 460.1D *Hazardous Materials Packaging and Transportation Safety*, DOE 460.2A, *Departmental Materials Transportation and Packaging Management*, and applicable sections of DOT Hazardous Materials Regulations found at 49 CFR 171-180, including those found at 49 CFR 173.6, *Materials of Trade Exceptions*.

1. Personnel performing transportation functions will be trained as required by 49 CFR 172.704, *Training Requirements* including:
  - General awareness/familiarization and security training;
  - Hazardous Materials Regulations Introduction training;
  - Hazardous Materials Table training;
  - Hazardous Materials Packaging training; and
  - Materials of Trade training.
2. Commercial bills of lading will be signed in accordance with DOE Order 460.2A *Departmental Material Transportation and Packaging Management*, as follows:

FROM: “(Name of DOE contractor) on behalf of the US Department of Energy”

3. Contact DRC waste operations group for guidance on

transferring waste described under section I. Intra-plant transfers to DRC must be performed in accordance with DRC waste management procedures and transportation safety documents.

**Roles and Responsibilities**

**A. WASTE GENERATOR OR DESIGNEE**

- Communicating to the Environmental Compliance Specialist (ECS) the specific process by which spent materials and/or waste have been generated, thereby assisting with determining the type, quantity, final disposal options, and the appropriate type of temporary storage for that material.
- Ensuring that spent material and/or waste is properly segregated, packaged, handled, inventoried, and stored in accordance with applicable requirements and guidance provided by this procedure.
- Providing input to the ECS on the location and content of the Generator Staging Areas (GSAs).
- Operating, maintaining, and aiding in closure of GSAs.

**B. ENVIRONMENTAL COMPLIANCE SPECIALIST OR DESIGNEE**

- Assisting the WG with proper handling, storage, disposal or recycling of spent materials or waste.
- Establishing and closing GSAs.
- Providing guidance to the WG on operating the GSA.
- Ensuring inspections of the GSAs are completed once every 30 days at a minimum to ensure compliance with this procedure.

**Records**

- ISSC-ESH-FO-017, *Waste Item Container Log*
- ISSC-ESH-FO-018, *Generator Staging Area Inspection Checklist*
- Field notes from waste inspections
- Completed RFD forms
- Completed Process Knowledge Forms
- Analytical Data
- SDSs

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## **Definitions**

Asbestos Waste – Any waste that contains more than 1% asbestos

Disposal – The intentional or unintentional discharge, discard, or abandonment of a waste material with no intent of future use or removal.

Electronic Scrap – Unusable or un-needed electronics (e.g., any item that can be plugged into a wall outlet). Refer to SST Procedure 06.02.03, *Reutilization and Excessing of Property, Staging of Excess Property, and Off Site Removal of Property* for additional information and guidance.

Eligible Scrap Metal – Items meeting the intent of 40 CFR 261.4, *Exclusions*, and 40 CFR 261.6, *Requirements for Recyclable Materials*, and the conditions of letters issued by Bill Richardson titled “Release of Materials for Reuse and Recycle” dated February 14, 2000, and “Release of Surplus and Scrap Materials” dated July 13, 2000.

Generator staging area (GSA) – An area within a building or facility used for the staging of waste containers produced in the building or facility. The GSA is the responsibility of the Facility Manager or the WG.

Hazmat Employee – Any person who directly affects hazardous materials transportation safety, or meets other transportation functions as described at 49 CFR 171.8.

Hazardous Waste – Solid, liquid or contained gaseous material (compressed gas cylinder) that is characteristically hazardous or is a listed hazardous waste as defined by 40 CFR 261, and/or any environmental media that contains a listed hazardous waste.

Incompatible wastes – Wastes that, when mixed together, have the potential to generate heat, react violently, or generate a toxic vapor.

Low-level waste (LLW) – Low-level radioactive waste is radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in section 11e.(2) of the *Atomic Energy Act of 1954*, as amended), or naturally occurring radioactive material. Items from areas controlled for loose/transferrable contamination, items containing fixed contamination, and radioactive materials are managed as LLW.

Polychlorinated Biphenyl Waste – Those PCBs and PCB items that are subject to the disposal requirements of 40 CFR 761, Subpart D.

Pre-Transportation Functions – Includes but is not limited to; determining hazard class, selecting packaging, securing packaging on carrier vehicles, applying DOT markings and labels, preparing shipping papers, and reviewing and signing shipping papers.

Oily Solids – Includes, but not limited to; absorbent media contaminated with oils, grease or other petroleum product, oil filters, drained fuel filters, and empty plastic buckets with oil residue present.

Process knowledge – Documented knowledge of the processes and sources associated with the generation of a waste or waste stream that allows a reliable estimation of the constituents and their concentrations in the waste so that handling, storage, treatment,

and disposal requirements can be established. Process knowledge is information, ultimately based on data, that relates to the material to be characterized, but does not directly represent the material itself. Determinations made by process knowledge must be documented and recertified on a periodic basis.

Real Property – Land and anything permanently affixed to the land such as buildings, fences and those things attached to the buildings, such as light fixtures, plumbing and heating fixtures, or other such items, that would be personal property if not attached.

Solid waste – Any discarded material (i.e., liquid, gaseous, semisolid, or solid) that is abandoned including disposed of, burned or incinerated, or accumulated, stored, or treated before or in lieu of being abandoned or incinerated, recycled, or inherently waste-like.

Spoils – Naturally occurring earthen materials brought-up during an excavation. This term includes soil, rock, gravel, clay, vegetation, etc. or any mixture of these materials.

Start Date – The date in which the waste was first generated or placed in a waste container. Refer to Attachment B, “Container Requirements for Generator Staging Areas” for waste specific instructions.

Storage – The intentional or unintentional placement of wastes in an area from which retrieval is possible or intended.

Transportation Functions – Includes movement of hazardous material by vehicle, loading incidental to movement, unloading incidental to movement and storage incidental to movement.

Universal waste – According to 40 CFR 273, *Standards for Universal Waste Management*, universal waste means any of the following hazardous wastes that are managed under the universal waste requirements of 40 CFR 273: (1) batteries, (2) pesticides, (3) mercury-containing equipment, and (4) lamps.

Waste container – Any portable device (e.g., package, can, bottle, bag, barrel, drum, tank, or other device) that contains waste. A waste container also may be a waste.

Waste generator (WG) – The individual (e.g., facility manager, supervisor of a waste-generating activity, or appointee) or organization whose act or process produces wastes to be managed for DOE.

## References

- 40 CFR 261, *Identification and Listing of Hazardous Waste*
- 40 CFR 273, *Standards for Universal Waste Management*
- 40 CFR 279, *Standards for the Management of Used Oil*
- 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions*
- 40 CFR 763, *Asbestos*
- 49 CFR 173.6 *Materials of Trade Exemptions*

- 49 CFR 172.704, *Training Requirements*
- 401 Kentucky Administrative Regulations (KAR) 30, *Waste Management, General Administrative Procedures*
- 401 KAR 39, *Hazardous Waste*
- 81 Federal Register 85732, *Hazardous Waste Generator Improvement Rule, dated 11-28-16*
- 50 Federal Register 614, *Hazardous Waste Management, Definition of Solid Waste*
- EPA-600/2-80-076, *A method for determining the compatibility of hazardous wastes [sic]*
- EPA530-F-92-010, *Properly Managing Used Oil Filters (July 1994)*
- RCRA Online Number 14503, *Regulatory Status of Petroleum Product Contained in Absorbent Pads*
- RCRA Online Number 14184, *Regulatory Status of Spent Metal Fuel Filters Under RCRA (June 3, 1998)*
- Section 112, Clean Air Act, *National Emission Standards for Hazardous Air Pollutants (NESHAP)*
- DOE Order 435.1 Chg. 1, *Radioactive Waste Management*
- DOE Order 458.1 Chg. 3, *Radiation Protection of the Public and the Environment*
- DOE Order 460.1D *Hazardous Materials Packaging and Transportation Safety*
- DOE Order 460.2A, *Departmental Materials Transportation and Packaging Management*
- ISSC-ESH-PL-010, *Integrated Safety Management System Description*
- ISSC-ESH-PL-006, *Environmental Management System*
- ISSC-ESH-PL-005, *Pollution Prevention Plan for SST Facilities at the Paducah Gaseous Diffusion Plant*
- ISSC-ESH-PL-002, *Waste Management Plan*
- ISSC-ESH-PR-001, *Hazard Assessments*
- ISSC-PE-PR-001, *Reutilization and Excessing of Property, Staging of Excess Property, and Off-Site Removal of Property*
- CP2-WM-0001, *Four Rivers Nuclear Partnership, LLC. Paducah Deactivation and Remediation Project Waste Management Plan*
- CP2-WM-0011, *Waste Acceptance Criteria for the Treatment, Storage, and Disposal Facilities at the Paducah U.S. Department of Energy Site*

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- CP2-WM-0661, *Four Rivers Nuclear Partnership, LLC. Paducah Deactivation and Remediation Project Transportation Safety Document for On-Site Transportation*
- CP3-WM-1017, *Safe Handling and Opening of Sealed Containers*

### **Attachments**

ATTACHMENT A, *Example Generator Staging Area Sign*

ATTACHMENT B, *Container Requirements for Generator Staging Areas*

ATTACHMENT C, *Example Waste Container Label*

Attachment A. Example Generator Staging Area Sign

**GENERATOR STAGING AREA**

G-752-C-13

**CONTACT: ENVIRONMENTAL COMPLIANCE**

BELL 6294

CELL 270-210-7354

**EMERGENCY CONTACT: PSS**

BELL 6333

CELL 270-441-6211

PLANT RADIO ALPHA -1 CHANNEL 16

## Attachment B. Container Requirements for Generator Staging

Requirements	GSA
1. Must be in good condition.	Yes
2. Must be compatible with the waste in the container.	Yes
3. Must be closed at all times not in use.	Yes
4. Inspection Requirements	Once every 30 days, at a minimum
5. Marking Requirements	LLW, Universal Waste, Asbestos, PCB
6. Date Requirements	LLW – date the container is filled Asbestos Waste – date the container is filled Universal Waste – date the first item is placed in the container PCB Waste – date the first item is placed in the container
7. Maximum Length of Storage	LLW – 9 months (to allow DRC time to manage waste) Asbestos Waste – no limit Universal Waste – one year from start date PCB Waste – one year from start date.
8. Maximum Volume of Waste Allowed in Storage	LLW – no limit Asbestos Waste – no limit Universal Waste – no limit PCB Waste – < 99 lbs.

GSA = Generator Staging Area

LLW = low level (radiological) waste

PCB = Polychlorinated biphenyl

The following will be implemented as best management practices:

- Adequate aisle space will be maintained for inspection purposes;
- Area will be kept clear of debris and unnecessary clutter;
- There will be an ISSC-ESH-FO-017, *Waste Item Container Log*, available for each container;
- Containers for liquid waste will have secondary containment present to capture drips and leaks that occur during addition or removal of contents; and
- Spills will not be flushed to storm drain without explicit permission from the ECS.

**Attachment C. Example Waste Container Label**

<b>WASTE CONTAINER LABEL</b>	
<b>RFD/DRUM NUMBER</b>	_____
<b>CONTENTS</b>	_____ _____ _____
<b>SOURCE OF WASTE</b>	_____
<b>BUILDING</b>	_____
<b>COMMENTS</b>	_____ _____ _____ _____
<input type="checkbox"/> LIQUID	<input type="checkbox"/> SOLID
<input type="checkbox"/> SEMI-SOLID	<input type="checkbox"/> COMPRESSED GAS
<b>GENERATION DATE</b>	_____