

CCP-TP-118

Revision 0

CCP Sampling of Waste Containers

EFFECTIVE DATE: 05/20/2005

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PRINTED NAME

APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	xx/xx/2005	Initial issue.

TABLE OF CONTENTS

LIST OF TABLES..... 4

LIST OF ATTACHMENTS..... 4

1.0 PURPOSE..... 5

 1.1 Scope..... 5

2.0 REQUIREMENTS..... 5

 2.1 References 5

 2.2 Training Requirements..... 6

 2.3 Equipment List 6

 2.4 Precautions and Limitations..... 7

 2.5 Prerequisite Actions..... 8

 2.6 Definitions 8

3.0 RESPONSIBILITIES..... 10

 3.1 Vender Project Manager (VPM)..... 10

 3.2 HSG Technical Supervisor (TS)..... 10

 3.3 HSG Samplers..... 10

 3.4 Radiological Control Technician (RCT)..... 10

 3.5 Waste Handler 10

 3.6 Facility Records Custodian 10

4.0 PROCEDURE..... 11

 4.1 Waste Container Preparation..... 11

 4.2 Container Data..... 11

 4.3 Waste Container Sampling Activity 14

 4.4 Pre-Transport/Shipping Activities of Canister Samples to Laboratory 26

 4.5 Final Disposition of SUMMA[®] Canister to Laboratory 27

5.0 RECORDS..... 29

LIST OF TABLES

Table 1 - Headspace Gas Drum Age Criteria Sampling Scenario 30
Table 2 - Scenario 1 Drum Age Criteria (in days) Matrix 31
Table 3 - Scenario 2 Drum Age Criteria (in days) Matrix 32
Table 4 - Scenario 3 Packaging Configuration Groups 33
Table 5 - Scenario 3 Drum Age Criteria (in days) Matrix for S3000 and S4000 Waste by Packaging Configuration 35
Table 6 - Scenario 3 Drum Age Criteria (in days) Matrix for S5000 Waste by Packaging Configuration 38
Table 7 - DAC Diffusivity Reference Table 41

LIST OF ATTACHMENTS

Attachment 1 - Chain of Custody/Canister Tag 42
Attachment 2 - Sample Container Data Form 44

1.0 PURPOSE

The Central Characterization Project (CCP) will perform manual sampling of headspace gas (HSG) in transuranic (TRU) waste containers.

This procedure provides CCP-specific requirements and interface instructions for Manual Drum Gas Sampling, Needle Assembly and sample shipping/transport preparations.

1.1 Scope

This procedure identifies the steps to perform manual HSG sampling on TRU waste containers using a side port needle attached to a SUMMA[®] canister. This sampling procedure is conducted at a facility specified by the Host site. After sampling, the canisters are sealed and prepared for shipment/transport to a laboratory for analysis.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- *40 Code of Federal Regulations (CFR), Part 261, Appendix VIII, Hazardous Constituents*
- *CCP-QP-006, CCP Corrective Action Reporting and Control*
- *CCP-QP-011, CCP Notebooks and Logbooks*

Referenced Documents

- *49 CFR, Transportation*
- *CCP-QP-002, CCP Training and Qualification Plan*
- *CCP-QP-005, CCP TRU Nonconforming Item Reporting and Control*
- *CCP-QP-008, CCP Records Management*
- *CCP-TP-106, CCP Headspace Gas Sampling Batch Data Report Preparation*

2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan* prior to performing this procedure.

2.3 Equipment List

2.3.1 Materials

- [A] 250 milliliter(s) (ml) SUMMA® canisters cleaned and certified.
- [B] Needle assemblies containing:
 - 3 inches (in.) x 1/16 in. Side Port Needle
 - Swagelok 1/4 in. x 1/16 in. Reducing Union
 - Swagelok 1/4 in. Tube Adapter Gland
 - Cajon 1/4 in. VCR Nut
 - Cajon VCR Filter Gasket (0.5 micron)
 - 1/16 in. Swagelok Union Tee (Duplicate assembly)
 - 1/16 in. Teflon Tubing (Duplicate assembly)
 - Plastic Protective Cap
- [C] Ambient Pressure Meter - Calibrated and listed in the Measuring and Test Equipment (M&TE) database.
- [D] Ambient Temperature Thermometer - Calibrated and listed in the M&TE database.
- [E] Min/Max Memory Thermometer - Calibrated and listed in the M&TE database.
- [F] Latex or Equivalent Gloves.
- [G] Tamper Indicating Devices (TID).
- [H] Tools:
 - 5/16 in. Wrench
 - 1/2 in. Wrench
 - 9/16 in. Wrench
 - 1 1/8 in. Wrench
 - 5/8 in. Wrench
 - 3/4 in. Wrench
 - 5/64 in. Allen Wrench
 - Vise (recommended)

- Filter Cover Blank
- Latex Cover Material and Rubber O-Ring
- Side Cutters
- Hack Saw
- File
- Nylon Zip Ties

[I] High Efficiency Particulate Air (HEPA) system, if applicable.

[J] Valve Locking Device.

[K] 2 in. Vinyl Tape.

[L] Penetrating Tool.

2.4 Precautions and Limitations

2.4.1 Safety Precautions

[A] All container sampling activities using this procedure shall be performed in accordance with site-specific health, safety, and radiological work permit requirements. Applicable documents include CCP procedures, Host site procedures, and safety requirements for access control, radioactive and hazardous waste monitoring, personal protective equipment (PPE), operations, containment, and decontamination.

2.4.2 Hazards

[A] Hazards associated with the sampling process may include chemical and radiation exposure.

2.4.3 SUMMA[®] Canister Gauge Pressure Reading Limitations

[A] SUMMA[®] canisters are equipped with pressure gauges reading pressure or vacuum relative to atmospheric pressure (i.e., initial gauge reading of greater than or equal to 22 in. mercury (Hg)); full samples are less than 4 in. Hg.

2.4.4 Waste container and sampling equipment identification/descriptions may be prerecorded on Attachment 1 and Attachment 2 if the information is available.

2.5 Prerequisite Actions

2.5.1 Prior to any sampling activities, Sampling personnel shall perform the following:

[A] Check to see if any containers readied for sampling have Hold Tags.

[B] Verify, with Vendor Project Manager (VPM), if it is appropriate to collect a sample for HSG.

2.5.2 Before proceeding with the sampling activity, ensure the following documentation has been obtained for each canister:

[A] The designated analytical laboratory's canister tag.

2.5.3 If HSG samples are to be composited, ensure the waste stream for the containers being sampled in each batch are the same by reviewing the Container Traveler, Visual Examination (VE) Data Sheets or Real Time Radiography (RTR) Data Sheets or other documentation provided by the Host site.

2.5.4 Record the needle assembly cleanliness results in the applicable operational logbook(s) upon receiving results.

2.6 Definitions

2.6.1 **Duplicates** - Two separate, independent samples collected simultaneously from the same source using a duplicate sampling needle assembly (one needle connected to two SUMMA[®] canisters); stored in separate containers, and analyzed independently; duplicates are used to document the precision of the sampling and analysis process.

2.6.2 **Field Blank (FB)** - Samples of room air collected in the sampling area in the immediate vicinity of the waste container to be sampled using the sampling port; are collected daily prior to sample collection; field blanks are collected and analyzed per sampling batch. Field blanks are collected to evaluate background levels of Program required analytes to assess sampling system and analytical system cleanliness; and to determine impacts of ambient contamination, if any, on the sample results.

- 2.6.3 **Sampling Batch** - A suite of samples of similar matrix (i.e., gas or solid) collected consecutively using the same type of sampling equipment within a specified time period. A batch can be up to 20 samples (excluding Quality Control (QC) samples), all of which shall be collected within 14 days of the first sample in the batch.
- 2.6.4 **Composite Sample** - If samples are to be composited by the lab, containers used must be from the same waste stream with no more than 20 containers being included in a single composite sample.
- 2.6.5 **Single Sample** - Containers that must be analyzed individually.

3.0 RESPONSIBILITIES

3.1 Vender Project Manager (VPM)

3.1.1 Manages HSG operations.

3.2 HSG Technical Supervisor (TS)

3.2.1 Performs as the field supervisor for the implementation of the sampling procedure.

3.2.2 Oversees all operations for HSG sampling.

3.3 HSG Samplers

3.3.1 Receives sample canisters, collects, and prepares for shipment/transport of HSG samples.

3.3.2 Verifies compliance when applicable by signing, initialing, and dating the acceptance of the sampling canisters and the Chain of Custody (COC) documentation.

3.3.3 Prepares the waste containers for HSG sampling.

3.3.4 Performs activities including removing container filter protective caps, installing new filters or the installation of sample ports.

3.4 Radiological Control Technician (RCT)

3.4.1 Performs radiological surveys of the working area during sampling activities, the sampling equipment and the release of canisters for shipment/transport.

3.5 Waste Handler

3.5.1 Moves containers/stages containers in sampling area in accordance with Host site-specific requirements.

3.6 Facility Records Custodian

3.6.1 Transmits or receives and maintains all records generated by this procedure in accordance with CCP-QP-008, *CCP Records Management*.

4.0 PROCEDURE

4.1 Waste Container Preparation

4.1.1 Verify the waste containers have been properly vented by reviewing one of the following documents: Container Traveler, RTR or VE Data Sheet or other documentation provided by the Host site.

- [A] **IF** the waste containers have been properly vented, **THEN GO TO** Section 4.2.
- [B] **IF** the waste containers have **NOT** been properly vented, **THEN** contact the VPM, **AND** disposition in accordance with the applicable Host site specific procedures.

4.2 Container Data

NOTE

Drum Age Criteria (DAC) data may be obtained from Acceptable Knowledge (AK) documentation.

4.2.1 For all the containers to be sampled, verify the DAC by using Tables 1-7, **AND** perform the following:

- [A] Record the container information listed below on Sample Container Data Form, Attachment 2, as applicable:
 - [A.1] Container ID.
 - [A.2] Sampling Scenario.
 - [A.3] Summary Category Group (SCG)
 - [A.4] Rigid Liner (Y/N/NA).
 - [A.5] Rigid Liner Lid (Y/N/NA).
 - [A.6] Rigid Liner Lid Hole Diameter (Y/N/NA).
 - [A.7] Number of Inner Bags.
 - [A.8] Number of Liner Bags.
 - [A.9] Filter Model No.

[A.10] Number of Filters.

[A.11] Package Configuration Group No. (Scenario 3 only).

[A.12] Closure Date.

[A.13] Vent Date (for Scenario 2 and 3).

[A.14] Required Equilibrium Time (Days):

- (a) For Scenario 1 - Record the SCG DAC from Table 2 - *Scenario 1 Drum Age Criteria (in days) Matrix*.
- (b) For Scenario 2 - Add the Scenario 1 SCG DAC from Table 2 to the number of days listed in Table 3 - *Scenario 2 Drum Age Criteria (in days) Matrix*, for the SCG, hole diameter and diffusivity rate.
- (c) For Scenario 3 - Record the number of days for the SCG listed in Table 5 - *Scenario 3 Drum Age Criteria (in days) Matrix for S3000 and S4000 Waste by Packaging Configuration*, or Table 6 - *Scenario 3 Drum Age Criteria (in days) Matrix for S5000 Waste by Packaging Configuration Group*, for the Packaging Configuration Group, hole diameter and filter diffusivity.

[A.15] Filter Diffusivity (Table 7).

[A.16] Container Age (the difference in the number of days between the closure/vent date and the present date [e.g., date sampling for headspace]).

[A.17] Container Fill Factor %, if applicable.

[A.18] "Can This Container Be Sampled? (Y/N)" as determined from the following:

- (a) Container Age.
- (b) Does the Container meet the DAC and headspace volume criteria?
 - (b.1) **IF** the Container Fill Factor % is greater than 90%,
THEN contact the HSG TS.
- (c) **IF** "NO",
THEN STOP WORK, **AND** notify the HSG TS.

4.2.2 Record the Datalogger M&TE Serial or ID Number on Attachment 2, if applicable.

4.2.3 Print name, sign and date Attachment 2.

4.2.4 Place Attachment 2 in the Holding File.

4.2.5 Inspect all tools and parts to be used to ensure they are available and operable.

4.3 Waste Container Sampling Activity

NOTE

Point of origin is to be specific as to the location where sample was taken (e.g., building number, room). Sample location is to be specific as to the location within the waste container where sample is taken (e.g., Headspace).

NOTE

Needle Assembly Cleanliness Batches are defined the same way as Waste Container Field Batches as SITEHSGSYXXXX, where SITE is defined (e.g., LANL, IN), HSG is for headspace gas, S is SUMMA, YY is the year and XXXX is a sequential number not to exceed 9999. For example, the first field batch sampled in 2005, the field batch number would be INHSGS050001.

CAUTION

To prevent damage to the needle and needle assembly, the sample canister must be supported while performing sampling activities.

4.3.1 Preparing Waste Container COC/Sample Tags

- [A] Assign a Field Batch Number, **AND** record the number in the applicable operational logbook.
- [B] Record the following information on Attachment 1.
 - [B.1] Chain of Custody # (COC and sequential number starting with number 1) on page 1 and 2.
 - [B.2] Sample Location (i.e., Headspace).
 - [B.3] Point of Origin (i.e., Building Number, Room).
 - [B.4] Field Batch Number.
 - [B.5] Ambient Conditions:
 - (a) Pressure (in. Hg).
 - (b) Temperature (centigrade).

- [B.6] Log the following in the Instrument Section, if applicable:
- (a) Pressure Meter M&TE Serial or ID Number, **AND** Calibration Due Date.
 - (b) Thermometer M&TE Serial or ID Number, **AND** Calibration Due Date.
 - (c) Verify current calibration for pressure meter and thermometer by initialing and dating on Attachment 1, Page 2.

4.3.2 Preparing SUMMA[®] Canister with Certified Needle Assemblies for Sample Collection

- [A] Review the applicable operational logbook to ensure the cleaning batch results are satisfactory.

NOTE

Canisters that have **NOT** been evacuated to greater than or equal to 22 inches Hg will be rejected and **NOT** used for sampling.

- [B] Check that the sample canisters to be used have been evacuated to greater than or equal to 22 in. Hg.
- [C] Attach needle assemblies to the canisters as follows:
- [C.1] Verify the presence of a Cajon VCR filter gasket.
- (a) **IF** the needle assembly does **NOT** have a Cajon VCR filter gasket, **THEN** obtain a new needle assembly, **AND** repeat steps 4.3.2[A] through 4.3.2[C][C.1].
- [C.2] Attach the needle assembly to the canister, **AND** tighten per the manufacturer's instructions.

4.3.3 Field Blank Sample Collection

NOTE

HSG samples should take approximately 2 to 5 minutes to reach equilibrium. Collect the field blank sample in the vicinity of the waste container sampling area.

- [A] All personnel don PPE in accordance with the appropriate radiological control plan or equivalent.
- [B] Ensure the HEPA system has been turned on, if applicable.
- [C] Record NA in the Vent Seal block on Attachment 1.
- [D] Record the canister gauge Beginning Pressure and Start Time on Attachment 1, **AND** open the valve on the SUMMA® canister for a maximum of 5 minutes to allow the canister pressure to reach equilibrium (less than 4 inches Hg).
- [E] Close the valve on the SUMMA® canister **AND** record the canister End Pressure and End Time on Attachment 1.
- [F] **IF** the gauge does **NOT** reach less than 4 in. Hg, **THEN** obtain another SUMMA® canister and certified needle assembly, **AND** resample once by repeating steps 4.3.3[B] through 4.3.3[E].
 - [F.1] **IF** the second attempt fails, **THEN** notify the HSG TS.
- [G] Remove the needle assembly from the canister.
- [H] Attach a valve locking device, **AND** a TID to the canister.
 - [H.1] Record the TID number on Attachment 1.
 - [H.2] **IF** the TID is **NOT** numbered, **THEN** initial and date TID with a permanent marker, **AND** record NA on Attachment 1.

NOTE

Custody will be initiated after the Field Blank sample has been collected. The Date/Time block on Page 2 of Attachment 1 for Custody Initiated By will be the same as the Date and End Time for the Field Blank sample.

- [I] Sign the Custody Initiated By block on Page 2 of Attachment 1, **AND** record the Date/Time.

- [J] Enter the data listed below for the Field Blank, on Attachment 1:
 - [J.1] Sample No. (zzmmddy Canister ID No.)
Example: LA011205E1234.
 - (a) Site (zz) (Host site abbreviation).
 - (b) Date (date of the sample - mmddy, where mm is month in two digits, dd is date in two digits and yy is the last two digits of the year). **DO NOT** use slash marks when recording the date on Attachment 1.
 - (c) SUMMA[®] Canister No. (from the metal tag on the canister) Example: E1234.
 - [J.2] Canister Size (e.g., 250 ml).
 - [J.3] Container ID/Barcode No. (NA for Field Blank).
 - [J.4] Summary Category Group (NA for Field Blank).
 - [J.5] Cleaning Batch No. (from the laboratory canister tag).
 - [J.6] Needle Assembly Batch No.
 - [J.7] Record SS, CS, B, D, F, C (SS - Single Sample, CS - Composite Sample, B - Field Blank, D - Duplicate, F - Field Reference Standard, C - Needle Assembly Cleanliness Certification).

NOTE

Signatures of samplers can be found at the bottom of Attachment 1.

- [J.8] Sampler's Signature.

- [K] Copy the relevant data to the laboratory canister tag, including any additional information required by the analytical laboratory.
- [K.1] Record Field Blank in the Sample Description on the laboratory canister tag.
- [K.2] **IF** it is necessary to remove the laboratory canister tag to record the data, **THEN** remove the tag from the canister, record the data, **AND** immediately re-attach the tag to the canister.

4.3.4 Waste Container and Waste Container Duplicate HSG Sample Collection

NOTE

HEPA filtration will be used as determined by the Host site for waste container sampling. Contamination and radiation surveys may be performed at any step in this section as deemed necessary by the RCT.

NOTE

Any vent clips/filters present on the container being sampled must be blocked by placing an appropriate cover over the filter media.

- [A] Evaluate the containers staged or selected for the sampling batch as follows:
 - [A.1] **IF** the container has filters with a sample septum (e.g., NFT019DS, NFT007DS), **THEN GO TO** step 4.3.4[B],
- OR**
- IF** the container has a filter with a protective cap (e.g., NFT-013) or penetrable filter (e.g., NFT-020), **THEN** perform the following:
 - (a) Remove the protective cap from the filter, if applicable.
 - (b) Smooth any rough edges, as necessary.

-
- (c) Place latex cover material over filter medium, secure appropriately, **AND** cover all unused filters on container, **AND GO TO** step 4.3.4[D]

NOTE

Operator/Sampler does **NOT** need to prime septa if sampling through filter medium sample port assembly.

- [B] Insert filter cover blank between the protective cap and filter medium for filters that have protective caps, **OR** cover filters without protective caps with latex cover material secured appropriately, **AND** cover/block all other unused filters.
- [C] Prime the sample ports as follows:
- [C.1] If applicable, remove the sample port seal screw from the container sample port, **AND** insert the penetrating tool through the sample port septum.
- [C.2] Withdraw the penetrating tool from the sample port septum.
- [C.3] Hand the penetrating tool to the RCT for survey, **AND** re-use or dispose of as contaminated waste.
- [D] Insert the common needle of the duplicate sampling needle assembly through the septum of the sampling port, **OR** the filter medium sample port assembly, as applicable.
- [E] Record YES in the Vent Seal block on Attachment 1, **AND** seal all vents.
- [F] Record the canister gauge Beginning Pressure and Start Time of the Duplicate canisters on Attachment 1, **AND** simultaneously open the valves for the two canisters for a maximum of 5 minutes to allow the canister pressure of both canisters to reach equilibrium (less than 4 in. Hg).
- [G] Close the SUMMA[®] canister valves, **AND** record the canister End Pressures and End Times on Attachment 1.

- [H] **IF** the gauge does **NOT** reach less than 4 in. Hg, **THEN** obtain another SUMMA[®] canister and certified duplicate needle assembly, **AND** resample once by repeating steps 4.3.4[B] through 4.3.4[G].
- [H.1] **IF** the second attempt fails, **THEN** notify the HSG TS.
- [I] Withdraw the needle assembly from the container's sample port.
- [J] Remove the needle assembly from the canister, **AND** hand it to the RCT for survey and proper disposal as contaminated waste.
- [K] Attach a valve locking device, **AND** a TID to the canister.
- [K.1] Record the TID number on Attachment 1.
- [K.2] **IF** the TID is **NOT** numbered, **THEN** initial and date TID with a permanent marker, **AND** record NA on Attachment 1.
- [L] Re-install the sample port seal screw, **AND** remove the filter cover blank if sampling through a sample port, **OR** remove the latex cover material from filters that do **NOT** use cover blanks.
- [L.1] Discard the septum or latex material in accordance to Host site requirements.
- [L.2] Place a strip of vinyl tape over the damaged filter medium, if applicable.
- [M] Enter the following data for each Duplicate sample canister on Attachment 1, as applicable:
- [M.1] Sample No. (zzmmddy Canister ID No.)
Example: LA011205EI234.
- (a) Site (zz) (Host site abbreviation).

- (b) Date (date of the sample - mmddyy, where mm is the month in two digits, dd is the date in two digits and yy is the last two digits of the year). Do **NOT** use slash marks when recording the date on Attachment 1.
 - (c) SUMMA[®] Canister No. (from the metal tag on the canister) Example: EI234.
- [M.2] Canister Size (e.g., 250 ml).
- [M.3] Container ID No./Barcode No.
- [M.4] Summary Category Group.
- [M.5] Cleaning Batch No. (from the laboratory canister tag).
- [M.6] Needle Assembly Batch No.
- [M.7] Record SS, CS, B, D, F, C (SS - Single Sample, CS - Composite Sample, B - Field Blank, D - Duplicate, F - Field Reference Standard, C - Needle Assembly Cleanliness Certification).
- [M.8] Sampler's Signature.
- [N] Record the relevant data to the laboratory canister tag, including any additional information required by the analytical laboratory.
- [N.1] Record Duplicate in the Sample Description on the laboratory canister tag.
- [N.2] **IF** it is necessary to remove the laboratory canister tag to record data,
THEN remove the tag from the canister, record the data, **AND** immediately re-attach the tag to the canister.
- [N.3] Initial and date Container Traveler Form, **AND** reattach to the container, if applicable.
- [O] **IF** filter change out is required,
THEN have the Host site change out the filter.

4.3.5 Collection of Waste Container HSG Sample

[A] Evaluate the containers staged or selected for the sampling batch as follows:

[A.1] **IF** the container has filters with a sample septum (e.g., NFT019DS, NFT007DS), **THEN** proceed to step 4.3.5[B]

OR

IF the container has a filter with a protective cap (e.g., NFT-013) or penetrable filter (e.g., NFT-020), **THEN** perform the following:

- (a) Remove protective cap from the filter, if applicable.
- (b) Smooth any rough edges as necessary.
- (c) Place latex cover material over filter medium, secure appropriately, **AND** cover all unused filters on containers, **AND GO TO** (step 4.3.5[D])

NOTE

The following steps may be performed as many times as dictated by operational needs.

NOTE

HEPA filtration system will be used as determined by the Host site for waste container sampling activities. Contamination and radiation surveys may be performed at any step in this section as deemed necessary by the RCT.

NOTE

The following operations may be performed as often as necessary. Signatures on Attachment 1 will be obtained upon completion of the sampling activities.

NOTE

Any vent clips/filters present on the container being sampled must be blocked by placing an appropriate cover over the filter media.

NOTE

Operator/Sampler does **NOT** need to prime septa if sampling through filter medium sample port assembly.

- [B] Insert filter cover blank between the protective cap and filter medium for filters that have protective caps, **OR** cover filters without protective caps with latex cover material secured appropriately, **AND** cover/block all other unused filters.
- [C] Prime the sample ports as follows:
 - [C.1] If applicable, remove the sample port seal screw from the container sample port, **AND** insert the penetrating tool through the sample port septum.
 - [C.2] Withdraw the penetrating tool from the sample port septum.
 - [C.3] Hand the penetrating tool to the RCT for survey, **AND** re-use or dispose of as contaminated waste.
- [D] Insert the canister needle through the septum of the sampling port, **OR** the filter medium sample port assembly, as applicable.

- [E] Record YES in the Vent Seal block on Attachment 1, **AND** seal all vents.
- [F] Record the canister gauge Beginning Pressure and Start Time on Attachment 1, **AND** open the valve on the SUMMA[®] canister for a maximum of 5 minutes to allow the canister pressure to reach equilibrium (less than 4 in. Hg).
- [G] Close the SUMMA[®] canister valve, **AND** record the canister End Pressure and End Time on Attachment 1.
- [H] **IF** the gauge does **NOT** reach less than 4 in. Hg, **THEN** obtain another SUMMA[®] canister and certified needle assembly **AND** resample once by repeating steps 4.3.5[B] through 4.3.5[G].
 - [H.1] **IF** the second attempt fails, **THEN** notify the HSG TS.
- [I] Withdraw the needle assembly from the container's sample port.
- [J] Remove the needle assembly from the canister, **AND** hand it to the RCT for survey and proper disposal as contaminated waste.
- [K] Attach a valve locking device, **AND** a TID to the canister.
 - [K.1] Record the TID number on Attachment 1.
 - [K.2] **IF** the TID is **NOT** numbered, **THEN** initial and date TID with a permanent marker, **AND** record NA on Attachment 1.
- [L] Re-install the sample port seal screw, **AND** remove the filter cover blank if sampling through a sample port, **OR** remove the latex cover material from filters that do **NOT** use cover blanks.
 - [L.1] Discard the septum and/or latex material in accordance with Host site requirements.
 - [L.2] Place a strip of vinyl tape over the damaged filter medium, if applicable.

- [M] Enter the following data for each drum sample on Attachment 1, as applicable:
- [M.1] Sample No. (zzmmddy Canister ID No.)
Example: LA011205EI234.
- (a) Site (zz) (Host site abbreviation).
 - (b) Date (date of the sample - mmddy, where mm is the month in two digits, dd is the date in two digits and yy is the last two digits of the year). Do **NOT** use slash marks when recording the date on Attachment 1.
 - (c) SUMMA[®] Canister No. (from the metal tag on the canister) Example: EI234.
- [M.2] Canister Size (e.g., 250 ml).
- [M.3] Container ID No. /Barcode No.
- [M.4] Summary Category Group.
- [M.5] Cleaning Batch No. (from the laboratory canister tag).
- [M.6] Needle Assembly Batch No.
- [M.7] Record SS, CS, B, D, F, C (SS - Single Sample, CS - Composite Sample, B - Field Blank, D - Duplicate, F - Field Reference Standard, C - Needle Assembly Cleanliness Certification).
- [M.8] Sampler's Signature.
- [N] Initial and date Container Traveler Form, **AND** reattach to the container if applicable.
- [O] Record the relevant data to the laboratory canister tag, including any additional information required by the analytical laboratory.
- [P] **IF** it is necessary to remove the laboratory canister tag to record data, **THEN** remove the tag from the canister, record the data, **AND** immediately re-attach the tag to the canister.

- [Q] Repeat steps 4.3.5[B] through 4.3.5[P] for the remaining samples using only one needle and one SUMMA[®] canister assembly per sample.
- [R] **IF** filter replacement is required, **THEN** complete filter changeout in accordance with Host site procedures
- [S] Turn HEPA blower OFF, if applicable.
- [T] Place applicable documentation in the BDR Holding File.

4.4 Pre-Transport/Shipping Activities of Canister Samples to Laboratory

NOTE

Sample custody will be maintained by assuring that samples:

- are in the possession of an authorized individual
 - are in that individual's view
 - are in a sealed or locked container controlled by that individual, **AND**
 - are in a secure controlled access area
-

- 4.4.1 Prepare all the canisters from the Field Batch for shipping by verifying a valve locking device TID, and Canister Tag has been installed on each individual SUMMA[®] canister.
- 4.4.2 Verify the TID No. for each canister has been recorded on Attachment 1.
- 4.4.3 Place the canisters in a holding area secured by TID(s), along with Attachment 1.
 - [A] Install or verify installed a Datalogger or Min/Max Memory Thermometer in the holding area, **AND** record the M&TE Serial/ID Number in the applicable operational logbook.
 - [B] Record the holding area TID Number(s) in the applicable operational logbook.
 - [B.1] **IF** the TID is blank and does **NOT** contain a number, **THEN** initial and date TID with permanent marker **AND** record in the applicable operational logbook.

4.4.4 Ensure the RCT has surveyed all canisters in the sampling batch for contamination, **AND** released the SUMMA[®] canisters for shipment/transport, prior to their removal from the holding area.

[A] Review applicable operational logbook for TIDs in holding area.

4.4.5 Transferring Custody

[A] Ensure the Relinquished By box is signed, dated and time recorded by the Custody Initialed By Sampler or Received By individual on Page 2 of Attachment 1.

[B] Individual taking custody will sign, date and record time in Received By box on page 2 of Attachment 1.

[B.1] Check for damage on SUMMA[®] canisters and observable changes in End Pressures.

(a) Report any damage to relinquisher, **AND** note in Comments section on page 2 of Attachment 1.

4.5 Final Disposition of SUMMA[®] Canister to Laboratory

NOTE

Copies of Attachment 1 will be placed in the BDR Holding File.

NOTE

Samples are prepared for shipping according to the packing and shipping requirements presented in CCP-PO-001, and the 49 Code of Federal Regulations (CFR) Transportation regulations.

Shipping/transport of SUMMA[®] canisters will be processed through the Host site shipping/transportation department.

Special care should be taken to maintain the preservation of temperature.

4.5.1 Package the sample canisters into containers for shipment/transport to the HSG analysis laboratory.

[A] Check for damage on SUMMA[®] canisters and observable changes in End Pressures.

- 4.5.2 Record the name of the laboratory requested to analyze the canister samples (Analyzing Laboratory) as well as the type of Analysis Requested, on Attachment 1.
- 4.5.3 Package the canisters into the final container for shipment/transport to the HSG Analysis Laboratory, **AND** add a Min/Max Memory Thermometer.
- 4.5.4 Record the following on Attachment 1, page 2 of 2 (as applicable) for the Memory Min/Max Thermometer:
- [A] M&TE Serial/ID Number.
 - [B] Calibration Due Date.
 - [C] Initials of person making entry.
- 4.5.5 Record the Batch TID Number that will be used on the outside of the case, if applicable, as well as the date and initials of the person applying the Batch TID Initials and Date on page 2 of Attachment 1.
- 4.5.6 If applicable, record the Shipment Tracking # and Method of Shipping on Attachment 1, page 2 of 2.

NOTE

The last person to relinquish the COC will be the person who will be applying the TID on the shipping container.

- 4.5.7 Sign the Relinquished By and Date/Time block on Attachment 1.
- 4.5.8 Make a photocopy of Attachment 1.
- 4.5.9 Place original of Attachment 1 into the shipping container, **AND** apply the TID to the outside of the shipping container, **AND** initial and date with permanent marker.
- 4.5.10 Place in the BDR Holding File.
- 4.5.11 Complete a Host site Shipment Request Form **OR** equivalent documentation.
- 4.5.12 Deliver the container(s) with the SUMMA[®] canister samples to the Host site/responsible personnel for shipping/transporting the canisters to the HSG Analytical Laboratory.

5.0 RECORDS

- 5.1 Records generated during the performance of this procedure are maintained in accordance with CCP-QP-008. The records are the following:

NOTE

The records identified in step 5.1.1 are compiled into the BDR in CCP-TP-106, *CCP Headspace Gas Sampling Batch Data Report Preparation*.

5.1.1 QA/Lifetime

- [A] Attachment 1 - Chain of Custody/Canister Tag
- [B] Attachment 2 - Sample Drum Data Form
- [C] Host Site Shipment Request Form (or equivalent)

5.1.2 QA/Non-permanent

- [A] Applicable operational logbook

Table 1 - Headspace Gas Drum Age Criteria Sampling Scenario

Scenario	Description
1.	<p>A. Unvented drums without rigid poly liners are sampled through the drum lid at the time of venting.</p> <p>B1. Unvented drums with unvented rigid poly liners are sampled through the rigid poly liner at the time of venting or prior to venting.</p> <p>B2. Vented drums with unvented rigid poly liners are sampled through the rigid poly liner at the time of venting or prior to venting.</p> <p>C. Unvented drums with vented rigid poly liners are sampled through the drum lid at the time of venting.</p>
2.	Drums that have met the criteria for Scenario 1 and then are vented, but not sampled at the time of venting. ^a
3.	Containers (i.e., 55-gallon drums, 85-gallon drums, 100-gallon drums, SWBs, TDOPs and pipe components) that are initially packaged in a vented condition and sampled in the container headspace and containers that are not sampled under Scenario 1 or 2.

^a Containers that have not met the Scenario 1 DAC at the time of venting must be categorized under Scenario 3. This requires the additional information required of each container in Scenario 3 (i.e., determination of packaging configuration), and such containers can only be sampled after meeting the appropriate Scenario 3 DAC.

Table 2 - Scenario 1 Drum Age Criteria (in days) Matrix

Summary Category Group	DAC (days)
S3000/S4000	127
S5000	53

Note: Containers that are sampled using the Scenario 1 DAC do not require information on the packaging configuration because the Scenario 1 DAC are based on a bounding packaging configuration. In addition, information on the rigid liner vent hole presence and diameter do not apply to containers that are sampled using the Scenario 1 DAC because they are unvented prior to sampling.

Table 3 - Scenario 2 Drum Age Criteria (in days) Matrix

Filter H ₂ Diffusivity ^a	Summary Category Group S3000/S4000				Summary Category Group S5000			
	Rigid Liner Vent Hole Diameter (in) ^b				Rigid Liner Vent Hole Diameter (in) ^b			
(mol/s/mod fraction)	0.30	0.375	0.75	1.0	0.30	0.375	0.75	1.0
1.9 x 10 ⁻⁶	36	30	23	22	29	22	13	12
3.7 x 10 ⁻⁶	30	25	19	18	25	20	12	11
3.7 x 10 ⁻⁵	13	11	11	11	7	6	6	4

a The documented filter H₂ diffusivity must be greater than or equal to the listed value to use the DAC for the listed filter H₂ diffusivity (e.g., a container with a filter H₂ diffusivity of 4.2 x 10⁻⁶ must use a DAC for a filter with a 3.7 x 10⁻⁶ filter H₂ diffusivity). If a filter H₂ diffusivity for a container is undocumented or unknown or is less than 1.9 X 10⁻⁶ filter H₂ diffusivity, a filter of known H₂ diffusivity that is greater than or equal to 1.9 X 10⁻⁶ filter H₂ diffusivity must be installed prior to initiation of the relevant DAC period.

b The documented rigid liner vent hole diameter must be greater than or equal to the listed value to use the DAC for the listed rigid liner vent hole diameter (e.g., a container with a rigid liner vent hole of 0.5 in. must use a DAC for a rigid liner vent hole of 0.375 in.). If the rigid liner vent hole diameter for a container is undocumented during packaging, repackaging, and/or venting, that container must use a DAC for a rigid liner vent hole diameter of 0.30 in.

Note: Containers that are

sampled using the Scenario 2 DAC do not require information on the packaging configuration because the Scenario 2 DAC are based on a bounding packaging configuration.

Table 4 - Scenario 3 Packaging Configuration Groups

Packaging Configuration Group	Covered S3000/S4000 Packaging Configuration Groups	Covered S5000 Packaging Configuration Groups
Packaging Configuration Group 1, 55-gal. drums ^a	<ul style="list-style-type: none"> • No layers of confinement, filtered inner lid^b • No inner bags, no liner bags (bounding case) 	<ul style="list-style-type: none"> • No layers of confinement, filtered inner lid^b • No inner bags, no liner bags(bounding case)
Packaging Configuration Group 2, 55-gal. drums ^a	<ul style="list-style-type: none"> • 1 inner bag • 1 filtered inner bag • 1 liner bag (bounding case) • 1 filtered liner bag 	<ul style="list-style-type: none"> • 1 inner bag • 1 filtered inner bag • 1 liner bag • 1 filtered liner bag • 1 inner bag, 1 liner bag • 1 filtered inner bag, 1 filtered liner bag • 2 inner bags • 2 filtered inner bags • 2 inner bags, 1 liner bag • 2 filtered inner bags, 1 filtered liner bag • 3 inner bags • 3 filtered inner bags • 3 filtered inner bags, 1 filtered liner bag • 3 inner bags, 1 liner bag (bounding case)
Packaging Configuration Group 3, 55-gal. drums ^a	<ul style="list-style-type: none"> • 1 inner bag, 1 liner bag • 1 filtered inner bag, 1 filtered liner bag • 2 inner bags • 2 filtered inner bags • 2 liner bags (bounding case) • 2 filtered liner bags 	<ul style="list-style-type: none"> • 2 liner bags • 2 filtered liner bags • 1 inner bag, 2 liner bags • 1 filtered inner bag, 2 filtered liner bags • 2 inner bags, 2 liner bags • 2 filtered inner bags, 2 filtered liner bags • 3 filtered inner bags, 2 filtered liner bags • 4 inner bags • 3 inner bags, 2 liner bags • 4 inner bags, 2 liner bags (bounding case)

Table 4 - Scenario 3 Packaging Configuration Groups (continued)

Packaging Configuration Group	Covered S3000/S4000 Packaging Configuration Groups	Covered S5000 Packaging Configuration Groups
Packaging Configuration Group 4, pipe components	<ul style="list-style-type: none"> No layers of confinement inside a pipe component 1 filtered inner bag, 1 filtered metal can inside a pipe component 2 inner bags inside a pipe component 2 filtered inner bags inside a pipe component 2 filtered inner bags, 1 filtered metal can inside a pipe component 2 inner bags, 1 filtered metal can inside a pipe component (bounding case) 	<ul style="list-style-type: none"> No layers of confinement inside a pipe component 1 filtered inner bag, 1 filtered metal can inside a pipe component 2 inner bags inside a pipe component 2 filtered inner bags inside a pipe component 2 filtered inner bags, 1 filtered metal can inside a pipe component 2 inner bags, 1 filtered metal can inside a pipe component (bounding case)
Packaging Configuration Group 5, Standard Waste Box or Ten-Drum Overpack ^a	<ul style="list-style-type: none"> No layers of confinement 1 SWB liner bag (bounding case) 	<ul style="list-style-type: none"> No layers of confinement 1 SWB liner bag bounding case)
Packaging Configuration Group 6, Standard Waste Box or Ten-Drum Overpack ^a	<ul style="list-style-type: none"> Any combination of inner and/or liner bags that is less than or equal to 6 5 inner bags, 1 SWB liner bag (bounding case) 	<ul style="list-style-type: none"> Any combination of inner and/or liner bags that is less than or equal to 6 5 inner bags, 1 SWB liner bag (bounding case)
Packaging Configuration Group 7, 85-gal. Drums and 100-gal. Drums ^a	<ul style="list-style-type: none"> No inner bags, no liner bags, no rigid liner, filtered inner lid (bounding case)^b No inner bags, no liner bags, no rigid liner 	<ul style="list-style-type: none"> No inner bags, no liner bags, no rigid liner, filtered inner lid (bounding case)^b No inner bags, no liner bags, no rigid liner
Packaging Configuration Group 8, 85-gal. Drums and 100-gal. Drums ^a	<ul style="list-style-type: none"> 4 inner bags and 2 liner bags, no rigid liner, filtered inner lid (bounding case)^b 	<ul style="list-style-type: none"> 4 inner bags and 2 liner bags, no rigid liner, filtered inner lid (bounding case)^b

^a If specific Packaging Configuration Groups cannot be determined based on the data collected during packaging and/or repackaging, a conservative default Packaging Configuration Group of 3 for 55-gal. drums and 6 for SWBs must be assigned provided the 55-gal. drums do not contain pipe component packaging. If pipe components are present as packaging in the 55-gal. drums, the pipe components must be sampled following the requirements for Packaging Configuration Group 4.

^b A "filtered inner lid" is the inner lid on a double lid drum that contains a filter.

Definitions:

Liner Bags: One or more optional plastic bags that are used to control radiological contamination. Liner bags for drums have a thickness of approximately 11 mils. SWB liner bags have a thickness of approximately 14 mils. Liner bags are typically similar in size to the container.

Inner Bags: One or more optional plastic bags that are used to control radiological contamination. Inner bags have a thickness of approximately 5 mils and are typically smaller than liner bags.

Table 5 - Scenario 3 Drum Age Criteria (in days) Matrix for S3000 and S4000 Waste by Packaging Configuration

Packaging Configuration Group 1						
Rigid Liner Vent Hole Diameter ^b						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	0.3-inch Diameter Hole	0.375-inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole	No Liner Lid	No Liner
1.9 x 10 ⁻⁶	131	95	37	24	4	4
3.7 x 10 ⁻⁶	111	85	36	24	4	4
3.7 x 10 ⁻⁵	28	28	23	19	4	4

Packaging Configuration Group 2						
Rigid Liner Vent Hole Diameter ^b						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	0.3-inch Diameter Hole	0.375-inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole	No Liner Lid	No Liner
1.9 x 10 ⁻⁶	213	175	108	92	56	18
3.7 x 10 ⁻⁶	188	161	105	90	56	17
3.7 x 10 ⁻⁵	80	80	75	71	49	10

Packaging Configuration Group 3						
Rigid Liner Vent Hole Diameter ^b						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	0.3-inch Diameter Hole	0.375-inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole	No Liner Lid	No Liner
1.9 x 10 ⁻⁶	283	243	171	154	107	34
3.7 x 10 ⁻⁶	253	225	166	151	106	31
3.7 x 10 ⁻⁵	121	121	115	110	84	13

Table 5 - Scenario 3 Drum Age Criteria (in days) Matrix for S3000 and S4000 Waste by Packaging Configuration (continued)

Packaging Configuration Group 4	
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Headspace Sample Taken Inside Pipe Component
>1.9 x 10 ⁻⁶	152

Packaging Configuration Group 5	
Filter H ₂ Diffusivity ^{a,c} (mol/s/mol fraction)	Headspace Sample Taken Inside SWBs
>7.4 x 10 ⁻⁶ (SWB)	15
3.33 x 10 ⁻⁵ (TDOP)	15

Packaging Configuration Group 6	
Filter H ₂ Diffusivity ^{a,c} (mol/s/mol fraction)	Headspace Sample Taken Inside SWBs
>7.4 x 10 ⁻⁶ (SWB)	56
3.33 x 10 ⁻⁵ (TDOP)	56

Packaging Configuration Group 7 ^d			
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Inner Lid Filter Vent Minimum H ₂ Diffusivity (mol/s/mol fraction) ^a		
	7.4 x 10 ⁻⁶	1.85 x 10 ⁻⁵	9.25 x 10 ⁻⁵ ^e
3.7 x 10 ⁻⁶	13	7	2
7.4 x 10 ⁻⁶	10	6	2
1.85 x 10 ⁻⁵	6	4	2

Packaging Configuration Group 8	
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Inner Lid Filter Vent Minimum H ₂ Diffusivity (mol/s/mol fraction)
	7.4 x 10 ⁻⁶
3.7 x 10 ⁻⁶	21

^a The documented filter H₂ diffusivity must be greater than or equal to the listed value to use the DAC for the listed filter H₂ diffusivity (e.g., a container with a filter H₂ diffusivity of 4.2 x 10⁻⁶ must use a DAC for a filter with a 3.7 x 10⁻⁶ filter H₂ diffusivity). If a filter H₂ diffusivity for a container is undocumented or unknown or is less than 1.9 x 10⁻⁶ filter H₂ diffusivity, a filter of known H₂ diffusivity that is greater than or equal to 1.9 x 10⁻⁶ filter H₂ diffusivity must be installed prior to initiation of the relevant DAC period.

Table 5 - Scenario 3 Drum Age Criteria (in days) Matrix for S3000 and S4000 Waste by Packaging Configuration (continued)

- b The documented rigid liner vent hole diameter must be greater than or equal to the listed value to use the DAC for the listed rigid liner vent hole diameter (e.g., a container with a rigid liner vent hole of 0.5 in. must use a DAC for a rigid liner vent hole of 0.375 in.). If the rigid liner vent hole diameter for a container is undocumented during packaging, repackaging, and/or venting, that container must use a DAC for a rigid liner vent hole diameter of 0.30 in.
- c The filter H₂ diffusivity for SWBs or TDOPs is the sum of the diffusivities for all of the filters on the container because SWBs and TDOPs have more than 1 filter.
- d Headspace sample taken between inner and outer drum lids. If headspace sample is taken inside the filtered inner drum lid prior to placement of the outer drum lid, then a DAC value of 2 days may be used. Footnote "e" is also applicable. Packaging Configuration Group 7 DAC values apply to drums with up to two lids.
- e While a DAC value of 2 days may be determined, containers must comply with the equilibrium requirements of 72 hours at 18°C or higher. The equilibrium requirement for headspace gas sampling shall be met separately.

Table 6 – Scenario 3 Drum Age Criteria (in days) Matrix for S5000 Waste by Packaging Configuration Group

Packaging Configuration Group 1						
Rigid Liner Vent Hole Diameter ^b						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	0.3-inch Diameter Hole	0.375-inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole	No Liner Lid	No Liner
1.9 x 10 ⁻⁶	131	95	37	24	4	4
3.7 x 10 ⁻⁶	111	85	36	24	4	4
3.7 x 10 ⁻⁵	28	28	23	19	4	4

Packaging Configuration Group 2						
Rigid Liner Vent Hole Diameter ^b						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	0.3-inch Diameter Hole	0.375-inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole	No Liner Lid	No Liner
1.9 x 10 ⁻⁶	175	138	75	60	30	11
3.7 x 10 ⁻⁶	152	126	73	59	30	11
3.7 x 10 ⁻⁵	58	57	52	47	28	8

Packaging Configuration Group 3						
Rigid Liner Vent Hole Diameter ^b						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	0.3-inch Diameter Hole	0.375-inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole	No Liner Lid	No Liner
1.9 x 10 ⁻⁶	199	161	96	80	46	16
3.7 x 10 ⁻⁶	175	148	93	79	46	16
3.7 x 10 ⁻⁵	72	72	67	62	42	10

Table 6 - Scenario 3 Drum Age Criteria (in days) Matrix for S5000 Waste by Packaging Configuration Group (continued)

Packaging Configuration Group 4	
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Headspace Sample Taken Inside Pipe Component
>1.9 x 10 ⁻⁶	152

Packaging Configuration Group 5	
Filter H ₂ Diffusivity ^{a,c} (mol/s/mol fraction)	Headspace Sample Taken Inside SWB
>7.4 x 10 ⁻⁶ (SWB)	15
3.33 x 10 ⁻⁵ (TDOP)	15

Packaging Configuration Group 6	
Filter H ₂ Diffusivity ^{a,c} (mol/s/mol fraction)	Headspace Sample Taken Inside SWB
>7.4 x 10 ⁻⁶ (SWB)	56
3.33 x 10 ⁻⁵ (TDOP)	56

Packaging Configuration Group 7 ^d			
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Inner Lid Filter Vent Minimum H ₂ Diffusivity (mol/s/mol fraction) ^a		
	7.4 x 10 ⁻⁶	1.85 x 10 ⁻⁵	9.25 x 10 ⁻⁵ e
3.7 x 10 ⁻⁶	13	7	2
7.4 x 10 ⁻⁶	10	6	2
1.85 x 10 ⁻⁵	6	4	2

Packaging Configuration Group 8	
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Inner Lid Filter Vent Minimum H ₂ Diffusivity (mol/s/mol fraction)
	7.4 x 10 ⁻⁶
3.7 x 10 ⁻⁶	21

Table 6 - Scenario 3 Drum Age Criteria (in days) Matrix for S5000 Waste by Packaging Configuration Group (continued)

- b The documented rigid liner vent hole diameter must be greater than or equal to the listed value to use the DAC for the listed rigid liner vent hole diameter (e.g., a container with a rigid liner vent hole of 0.5 in. must use a DAC for a rigid liner vent hole of 0.375 in.). If the rigid liner vent hole diameter for a container is undocumented during packaging, repackaging, and/or venting, that container must use a DAC for a rigid liner vent hole diameter of 0.30 in.
- c The filter H₂ diffusivity for SWBs or TDOPs is the sum of the diffusivities for all of the filters on the container because SWBs and TDOPs have more than 1 filter.
- d Headspace sample taken between inner and outer drum lids. If headspace sample is taken inside the filtered inner drum lid prior to placement of the outer drum lid, then a DAC value of 2 days may be used. Footnote "e" is also applicable. Packaging Configuration Group 7 DAC values apply to drums with up to two lids.
- e While a DAC value of 2 days may be determined, containers must comply with the equilibrium requirements of 72 hours at 18°C or higher. The equilibrium requirement for headspace gas sampling shall be met separately.

Table 7 - DAC Diffusivity Reference Table

Manufacturer	Model Number	WWIS Data Entry Number (limited to six characters)	Restrictive Hydrogen Diffusivity (m/s/mf)	Scenario 3 Drum age criteria for S5000 (Days)	Scenario 3 Drum age criteria for S3000 & S4000 (Days)
NFT	NucFil®-012	NF012	1.9E-6	199	283
NFT	NucFil®-013	NF013	3.7E-6	175	253
NFT	NucFil®-013 GorTex	NF013G	3.7E-6	175	253
NFT	NucFil®-013 SSS	NF013S	3.7E-6	175	253
NFT	NucFil®-016	NF016	3.7E-6	175	253
NFT	NucFil®-019	NF019	3.7E-6	175	253
NFT	NucFil®-D019DS	NF019D	3.7E-6	175	253
NFT	NucFil®-019DS	NF019D	3.7E-6	175	253
NFT	NucFil®-019-HCR	NF019H	3.7E-6	175	253
NFT	NucFil®-020	NF020	1.9E-6	199	283
NFT	NucFil®-049	NF049	3.7E-6	175	253
NFT	NucFil®-049LS	NF049L	3.7E-6	175	253
NFT	NucFil®-049S	NF049S	3.7E-6	175	253
NFT	NucFil®-007	NF007	3.7E-6	175	253
NFT	NucFil®-072	NF072	3.7E-6	175	253
NFT	NucFil®-072 SSS	NF072S	3.7E-6	175	253
NFT	NucFil®-073	NF073	3.7E-6	175	253
NFT	NucFil®-074	NF074	3.7E-6	175	253
NFT	NucFil®-075	NF075	3.7E-6	175	253
NFT	NucFil®-DVS3	NFDVS3	3.7E-6	175	253
NFT	NucFil®-DVS3 IP	DVS3IP	3.7E-6	175	253
NFT	NucFil®-DVS307	NFD307	3.7E-6	175	253
UltraTech	9400	UT9400	3.7E-6	175	253
UltraTech	9402	UT9402	1.9E-6	199	283
UltraTech	9414	UT9414	3.7E-6	175	253
UltraTech	9415	UT9415	1.9E-6	199	283
UltraTech	9416	UT9416	1.9E-6	199	283
UltraTech	9500	UT9500	3.7E-6	175	253
Fairey	98867*	98867	3.7E-6	175	253
Fairey	99421	99421	3.7E-6	175	253

Key:

NFT = Nuclear Filter Technology, Inc.
UltraTech = UltraTech International, Inc.
Fairey = Fairey Microfiltrex, Inc.
m/s/mf = mole per second per mole fraction
* = wildcard character assigned by the manufacturer

These are only packaging configuration group 3 values to use with the default .3 in diameter rigid liner vent hole.

Attachment 1 - Chain of Custody/Canister Tag (continued)

CHAIN OF CUSTODY #: _____

Page 2 of 2

Comments:				Instrument Section	M&TE Serial / ID Number	Calibration Due Date	Initials/ Date
Analyzing Laboratory				Pressure Meter			
Shipment Tracking #		Method of Shipping		Thermometer			
				Min/Max Memory Thermometer			
				Preservation Method:			
Analysis Requested	VOCs	Hydrogen	Methane				
Batch TID Number(s) or NA:		Batch TID Initials and date:					

At completion of the above, return a copy of this form to the shipper.

Custody Initiated By: (Sampler Name/Organization)	Date/Time		
Relinquished By: (Name/Organization)	Date/Time	Received By: (Name/Organization)	Date/Time
Relinquished By: (Name/Organization)	Date/Time	Received By: (Name/Organization)	Date/Time
Relinquished By: (Name/Organization)	Date/Time	Received By: (Name/Organization)	Date/Time
Relinquished By: (Name/Organization)	Date/Time	Received By: (Name/Organization)	Date/Time
Final Disposition By: (Name/Organization) (Canister to be cleaned upon notification by Site Project Manager)	Date/Time	Disposition:	

Attachment 2 - Sample Container Data Form

		1	2	3	4	5	6	7	8	9	10	11
Container ID		Sampling Scenario	Summary Category Group	Rigid Liner (Y/N/NA)	Rigid Liner Lid (Y/N/N/A)	Rigid Liner Lid Hole Diameter (Y/N/NA)	Number of Inner Bags	Number of Liner Bags	Filter Model No.	Number of Filters	Restrictive Hydrogen Diffusivity (m/s/mf)	Package Configuration Group No.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												

Filter Diffusivity: Refer to Table 7

Attachment 2 - Sample Container Data Form (continued)

		12	13	14	15	16	17	18	
Container ID		Closure Date	Vent Date	Required Equilibrium Time (Days)	Container Age (Days)	Container Fill Factor (%)	Can This Container Be Sampled? (Y/N)	Datalogger M&TE Serial/ID No.:	
								72 - Hour Drum Equilibrium	
								Start Date/Time	End Date/Time
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

HSG Sampler: _____
Print Name

Signature

Date