Perform Sub-Atmospheric Head Space and Stack Exhaust Grab Sampling through Use of an Evacuated Canister

Tank Farm Operating Procedure

Industrial Hygiene

USQ # N/A-4

CHANGE HISTORY (≤ LAST 5 REV-MODS)

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-0</td>
<td>11/06/2017</td>
<td>Industrial Hygiene Request</td>
<td>New Procedure</td>
</tr>
</tbody>
</table>

This is a new procedure. The **First Time Use process** as defined in TFC-OPS-OPER-C-13 can be used during the initial performance of this revision.

Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>PURPOSE AND SCOPE</td>
<td>2</td>
</tr>
<tr>
<td>1.1</td>
<td>Purpose</td>
<td>2</td>
</tr>
<tr>
<td>1.2</td>
<td>Scope</td>
<td>2</td>
</tr>
<tr>
<td>2.0</td>
<td>INFORMATION</td>
<td>2</td>
</tr>
<tr>
<td>2.1</td>
<td>Terms and Definitions</td>
<td>2</td>
</tr>
<tr>
<td>2.2</td>
<td>General Information</td>
<td>2</td>
</tr>
<tr>
<td>3.0</td>
<td>PRECAUTIONS AND LIMITATIONS</td>
<td>3</td>
</tr>
<tr>
<td>3.1</td>
<td>Personnel Safety</td>
<td>3</td>
</tr>
<tr>
<td>3.2</td>
<td>Equipment Safety</td>
<td>3</td>
</tr>
<tr>
<td>3.3</td>
<td>Radiation and Contamination Control</td>
<td>3</td>
</tr>
<tr>
<td>4.0</td>
<td>PREREQUISITES</td>
<td>5</td>
</tr>
<tr>
<td>4.1</td>
<td>Performance Documents</td>
<td>5</td>
</tr>
<tr>
<td>4.2</td>
<td>Field Preparation</td>
<td>5</td>
</tr>
<tr>
<td>5.0</td>
<td>PROCEDURE</td>
<td>6</td>
</tr>
<tr>
<td>5.1</td>
<td>Sub-Atmospheric Head Space &amp; Stack Exhaust Grab Sampling</td>
<td>6</td>
</tr>
<tr>
<td>5.2</td>
<td>Records</td>
<td>7</td>
</tr>
</tbody>
</table>
Perform Sub-Atmospheric Head Space and Stack Exhaust Grab Sampling through Use of an Evacuated Canister

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the instructions for the collection of Industrial Hygiene “grab” samples through the use of an evacuated canister; these instructions are in support of, and further described in TFC-PLN-163, “Industrial Hygiene Sampling and Analysis Plan for Tank Head Space and Exhaust Stack Sampling.” All sampling activities are performed using approved work packages and the applicable Industrial Hygiene Sample Plan (IHSP-COPC-RC-16).

1.2 Scope

This procedure provides the steps for collecting evacuated canister grab samples during quiescent (static) and waste disturbing activities for tank head space samples, Single-Shell Tank (SST) passive stack exhaust samples, and Double-Shell Tank (DST), active stack exhaust samples. Tank head space and stack exhaust sampling processes, including evacuated canister samples, are iterative; as necessary, this procedure may be revised as additional data are obtained and evaluated. Sampling changes must be approved by the Field Industrial Hygienist in conjunction with the Vapor Program Industrial Hygienist.

2.0 INFORMATION

2.1 Terms and Definitions

No terms or phrases unique to this procedure are used.

2.2 General Information

The evacuated canister should be operated within the following parameters:

- Evacuated Canister, as supplied by 222S Laboratories per IH-LT-523-150, “Industrial Hygiene – Determination of Volatile Organic Compounds in Vapor Samples Using Canisters and GC-MS Analysis.”

- Ensure that the evacuated canister is tagged or provided with a certification of cleanliness from 222S Laboratories preparing the canister per ATS-LO-080-153, “Cleaning Air Sample Canister.”

- Teflon®-Lined Tygon® tubing or tubing authorized by Project Industrial Hygienist.

- Evacuated canisters may be utilized for timed sample collection through the use of calibrated flow controllers. This procedure does not provide the guidance for timed sample collection through the use of evacuated canisters.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Evacuation of Tygon tubing line requires downwind release of potential hazardous gases or vapors.

3.2 Equipment Safety

NOTE - The following cautions are applicable throughout the entire procedure.

CAUTION - Canister handles are to be used to transport or carry canisters.

CAUTION - Canister should not be opened prior to sampling evolution.

CAUTION - Teflon, Teflon-Lined Tygon, or other approved sample tubing for evacuated canister sample collection.

CAUTION - Canisters should not be stored below a certain temperature to prevent the loss of vapor sample through internal canister condensation.

3.3 Radiation and Contamination Control

3.3.1 Planned work in radiological areas must be approved by Radiological Control personnel per the Radiological Risk Screening procedure TFC-ESHQ-RP-RWP-C-01.

3.3.2 Filtration requirements for evacuated canister equipment from Headspace and Exhaust Stack sampling are addressed in a comprehensive Release Survey Plan (RSP).

- Headspace sampling requires a minimum of two forms of filtration (e.g., a Bacterial Air Vent filter or similar filter, AND a radiological filter assembly, or two radiological filters) shall be installed in the sample tubing.

- Exhaust Stack sampling should use an in-line or parallel radiological filter in areas of known or suspected contamination potential.

- Filters shall be a minimum of 1~5 micron pore size when monitoring in a Contamination Area (CA), High Contamination Area (HCA), or Airborne Radioactivity Area (ARA), if equipment is capable. Not required, but encouraged in a posted Radiological Buffer Area (RBA).
3.3 Radiation and Contamination Control (Cont.)

3.3.3 Before conducting sampling or monitoring, contact the responsible Radiological Control personnel for the facility or area to determine any specific survey or monitoring requirements.
- Pre, during, and post contamination survey needs.
- Discuss requirements of any applicable Release Survey Plan (RSP) for your specific equipment or task.

3.3.4 Comply with the requirements set forth by the RWP, RSP, Health Physics Technician (HPT) coverage, and any other applicable procedures as appropriate.

3.3.5 When exiting radiological areas where different HPT’s are performing release, inform the radiological control personnel performing release surveys of the use/history for the equipment being presented (e.g., only sampled air in the normally occupied Contamination Area, No known history of contamination based on use, etc.) to aid in the evaluation for radiological release.

3.3.6 Samples collected in a radiological area shall not be removed from the facility, transported by personnel, or submitted to an analytical laboratory until they have been evaluated by an HPT in accordance with approved procedures.
Perform Sub-Atmospheric Head Space and Stack Exhaust Grab Sampling through Use of an Evacuated Canister

4.0 PREREQUISITES

4.1 Performance Documents

The following documents may be needed to perform this procedure:

- TFC-BSM-IRM_DC-C-02, “Records Management”
- TFC-ESHQ-S_IH-C-46, “Industrial Hygiene Reporting and Records Management”
- TFC-ESHQ-RP_RWP-C-03, “ALARA Work Planning”
- TF-OPS-IHT-007, “Using Direct Reading Instruments”

4.2 Field Preparation

4.2.1 **PERFORM** a review of the applicable industrial hygiene sampling plan prior to execution of this procedure.

4.2.2 **ENSURE** that ambient conditions and site information data, if available, are recorded in the field logbook, including for each evacuated canister sample event; conditions include:

- Tank name
- Sample location (riser)
- Time of day and date
- Active or passive ventilation
- On-going waste disturbance
- Ambient temperature and pressure
- Ambient humidity
- Wind speed and direction
- Adjacent work activities.

4.2.3 Canisters should be inspected for cleanliness certification and the manufacturer’s label includes the canister’s unique serial number and must be within the inspection 30 day inspection period.

- There should be no additional labels attached to canister other than labels provided by the manufacturer or 222S-Labs.
- Canister hardware is to remain intact to canister (i.e. gauges and valves).

4.2.4 **COLLECT** an evacuated canister field blank in a controlled area, outside the tank farm, upwind of the farm and away from adjacent work activities; IHT should monitor for Volatile Organic Compounds (VOCs) and Ammonia (NH3) prior to the collection of field blank.
5.0 PROCEDURE

5.1 Sub-Atmospheric Head Space & Stack Exhaust Grab Sampling

5.1.1 ENSURE that the required length of sample tubing is in place (sample head array or separate sample line) for the tank head space or stack exhaust sample specified in the associated Industrial Hygiene Sample Plan.

5.1.2 PURGE the sample tubing with tank head space or stack exhaust atmosphere with a minimum of three times the volume of the tubing/apparatus.

5.1.3 INSTALL two filtration assemblies (bacterial & radiological or both radiological) in the sample upstream of the canister(s).

5.1.4 CONNECT rad filter to purge tubing if applicable.

5.1.5 REMOVE the dust cap from the evacuated canister inlet and place the cap in a clean plastic bag; DO NOT OPEN the canister purge controller while performing this step.

5.1.6 CONNECT the evacuated canister inlet to the purged tubing.

5.1.7 OPEN the evacuated canister purge controller slowly until fully opened.

5.1.8 LISTEN for the sound of air quickly entering the canister until the sound stops (less than 1 minute total sample time)

OR

LOOK at the gauge until canister reads zero.

5.1.9 CLOSE the evacuated canister purge controller after indications that the sample air entering the canister has stopped.

5.1.10 VERIFY that the evacuated canister purge controller is closed.

5.1.11 DISCONNECT the evacuated canister at the rad filter from the sample tubing.

5.1.12 CAP or SEAL the sample tubing.
### 5.1 Sub-Atmospheric Head Space & Stack Exhaust Grab Sampling (Cont.)

- **5.1.13** Evaluate the radiological filters for release of the canister(s).
- **5.1.14** Replace the dust cap on the evacuated canister inlet.
- **5.1.15** Complete the Industrial Hygiene Chain of Custody.
- **5.1.16** Transport the sample to the laboratory.

### 5.2 Records

The performance of this procedure generates no records.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.