Summa Sampling from Tank Farm Stacks

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

1.1 Purpose

This procedure provides instructions for collection of samples through the use of an evacuated canister from Tank Farm ventilation exhaust stacks to meet permit conditions. The principles of collection are based upon EPA Method 18.

1.2 Scope

1.2.1 This procedure applies to ventilation exhaust stacks located in East and West Tank Farms that are permitted by the Washington Department of Ecology (WDOE).

1.2.2 This procedure includes site-specific appendices. Changes or revisions to the instructions may affect the appendices and must be approved by Environmental.

1.2.3 This procedure is worked in accordance with approved work package.
2.0 INFORMATION

2.1 General Information

2.1.1 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 Sampling Canisters Using the Entech 3100D Cleaning Station”

- 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 The Hazards relating to the task(s)/step(s) within the scope of this work package have been analyzed and determined to fall within the General Hazard Analysis.

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

3.1.3 Contact IH for current and appropriate TVIS (Tank Vapor Information Sheet) and Seg (Similar Exposure Group) sampling plan.
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 to prevent damage to canister.

CAUTION - Canister should not be opened prior to sampling evolution to prevent loss of sample.

CAUTION - Teflon-Lined Tygon, or stainless steel sample tubing must be used for evacuated canister sample collection to ensure sample integrity.

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 When this procedure is worked in radiological areas, an approved radiological work permit (RWP) is required. If radiological conditions or work performed falls outside the scope of the RWP, all work activities must be discontinued until a new or revised RWP has been issued in accordance with TFC-ESHQ-RP_RWP-C-03.

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

- 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).

3.3.3 Without proper use of a drape and the wiping of equipment upon removal from the ventilation system could cause personnel and/or environmental contamination.

3.3.4 The following controls shall be implemented when working on potentially contaminated tank farm ventilation systems:

- Directed airflow is maintained at the inspection point
- Insertion probes shall be wiped as they are removed from the port
- Yellow plastic bags shall be positioned close to the work to receive radioactive waste
- HPT Job Coverage is required for initial system breaching
- The work area will have CA posting or a well-defined boundary controlled as a CA by the job coverage HPT.

3.3.5 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.
3.4 Environmental Compliance

3.4.1 All planned and unplanned outages of Tank Farm ventilation systems, abatement control equipment and exhaust monitoring systems must be reported to the applicable shift office per TF-REC-001 and Environmental per TFC-ESHQ-ENV_FS-C-01.

3.4.2 Sampling shall be conducted in accordance with an approved sampling and analysis plan (SAP).

3.4.3 If additional clarification is needed, contact the Environmental Field Representative (EFR) for further information.
4.0 PREREQUISITES

4.1 Special Tools and Equipment

The following equipment and supplies may be needed to perform this procedure:
- Sample line with stainless steel or Teflon line. Sample Teflon lined, Tygon tubing (as short as possible not to exceed 3 feet)
- Sample probe consisting of an approximately 12-inch-long stainless steel or rigid Teflon tube
- Sample pump.

4.2 Performance Documents

The current revisions of the following documents may be needed to perform this procedure:
- Industrial Hygiene surveys (including forms)
- Site Form A-6006-444, Radiological Survey Report Tracking Table
- Site Form A-6005-438, Post Job Review
- Site-Specific Appendix, as required
- TF-REC-001, Response to Environmental Condition
- TFC-ESHQ-ENV_FS-C-01, Environmental Notification
- TFC-ESHQ-RP_RWP-C-03, ALARA Work Planning
- TO-100-052, Perform Waste Generation, Segregation, Accumulation and Clean-up.
4.3 Field Preparation

NOTE - Steps 4.3.1 through 4.3.6 may be worked concurrently, in any logical order, AND/OR repeated.

4.3.1 **PERFORM** a documented Pre-Job Briefing prior to working in the field.

4.3.2 **CONFIRM** ventilation system to be sampled is operating.

4.3.3 **CONTACT** 222-S lab at least 24 hours in advance AND **CONFIRM** lab is ready to receive samples.

4.3.4 **PREPARE** shipping equipment.

4.3.5 **PREPARE** chain of custody for samples.

4.3.6 **PERFORM** a review of the applicable Environmental Sampling Plan prior to execution of this procedure.

4.3.7 **ENSURE** the follow inspections are performed for canister:

- Canisters should be inspected for cleanliness certification and the manufacturer’s label includes the canister’s unique serial number and must be within the 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).

4.3.8 **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 Perform Stack Exhaust Grab Sampling

5.1.1 PERFORM pre-job radiological survey of work area.

5.1.2 CONTACT Hanford Weather Forecaster by telephone (373-2716).

5.1.2.1 REQUEST absolute barometric pressure and temperature for closest weather station AND

RECORD pressure, temperature and time of pressure reading on Appendix Data Sheet 1.

5.1.3 IDENTIFY Operating Exhauster Train on Appendix Data Sheet 1.

NOTE - Stack Flow Rate may be obtained from stack flow instrumentation, or from Vent and Balance measurement, per applicable Appendix.

5.1.4 OBTAIN Stack Flow and Stack Temperature from Operations by telephone (373-2618) AND

RECORD on Appendix Data Sheet 1.

5.1.5 CONFIRM there is vacuum in the SUMMA.

5.1.6 REMOVE all caps, plugs, or instrumentation on Test Port as indicated in stack specific Appendix.

5.1.7 ENSURE sample probe assembly is inserted into the center of stack.

NOTE - Either valve on sample probe assembly may be used for sampling.

5.1.8 ENSURE that the required length of sample tubing is installed on sample probe assembly.

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

5.1.10 CONNECT rad filter to purge tubing if applicable.

5.1.11 ATTACH sample pump AND

PURGE the sample tubing with stack exhaust atmosphere for a minimum of ten (10) minutes at a flow rate of ≥ 4mL/minute.
5.1 Perform Stack Exhaust Grab Sampling (Cont.)

5.1.12 DO NOT OPEN the canister purge controller while performing Step 5.1.13.

5.1.13 REMOVE the dust cap from the evacuated canister inlet AND PLACE the cap in a clean plastic bag.

5.1.14 CONNECT the evacuated canister inlet to the purged tubing.

5.1.15 OPEN the evacuated canister purge controller slowly until fully opened.
5.1 Perform Stack Exhaust Grab Sampling (Cont.)

5.1.16 RECORD Start time on applicable Appendix, Data Sheet 2.

NOTE - Sound of air can stop after approximately less than one (1) minute total sample time.

5.1.17 LISTEN for the sound of air quickly entering the canister until the sound stops

OR

LOOK at the gauge until canister reads zero.

5.1.18 CAREFULLY CLOSE the evacuated canister purge controller after indications that the sample air entering the canister has stopped AND RECORD Stop time on applicable Appendix, Data Sheet 2.

5.1.19 VERIFY that the evacuated canister purge controller is closed.

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

5.1.21 CAP OR SEAL the sample tubing.

5.1.22 EVALUATE the radiological filters for release of the canister(s).

5.1.23 REPLACE the dust cap on the evacuated canister inlet.

5.1.24 ENTER the following information on applicable appendix Data Sheet 2:
- Sample Number
- Sign
- Printed Name (First and Last)
- Date
- Time.

5.1.25 IF additional samples required by Environmental Sample Plan, REPEAT Steps 5.1.7 through 5.1.22.

5.1.26 ENSURE all caps, valves, plugs and instrumentation have been restored to original configuration.

5.1.27 TRANSPORT the sample to the laboratory.
5.2 Testing and Restoration

5.2.1 FWS ENSURE all caps, valves, plugs and instrumentation have been restored to original configuration.

5.2.1.1 CIRCLE YES or NO on Appendix Data Sheet 3.

5.2.2 FWS ENTER the following on Appendix Data Sheet 3:
- Signature
- Printed name (First and Last)
- Date
- Time.

5.2.3 FORWARD to Environmental for review.

5.2.4 SEND work package to the Area Operations Engineer for OPS acceptance.
5.3 Records

5.3.1 PERFORM the following for records identified within this procedure.

5.3.1.1 RECORD the number of times the record was generated in applicable column

OR

PLACE a check mark (✓) in the N/A column.

5.3.1.2 SUBMIT the package for verification of completed records.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiological Survey Tracking Table (A-6006-444)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Job Review (A-6005-438)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Hygiene surveys (including forms)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SEND the completed records to the Central Shift Office for records retention.

________________________ / ______________________ / _________________
Signature                  Print (First and Last)                   Date

Area Ops Engineer

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.