

WP 12-VC1686

Revision 3

Passive VOC Grab Sampling

Technical Procedure

EFFECTIVE DATE: 11/30/10

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APPROVED FOR USE

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CHANGE HISTORY SUMMARY

REVISION NUMBER	DATE ISSUED	DESCRIPTION OF CHANGES
3	11/30/10	Added wording to first bullet in the Precautions and Limitations on trainees

INTRODUCTION ¹

This procedure provides instructions for handling (receipt, storage, use, and shipping) sample canisters and obtaining time integrated grab samples of air at the Waste Isolation Pilot Plant (WIPP) site.

Samples will be collected at various locations determined to have specific informational value. These samples may be collected at any accessible location in the underground or on surface.

Deviations from procedure will be considered variances. The Program Manager must preapprove variances. Variances are recorded in the project files. Unintentional deviations, equipment malfunctions, and other problems are nonconformances. Documentation of nonconformances will be handed according to requirements in WP 13-1.

Performance of this procedure generates the following record(s), as applicable. Any records generated are handled in accordance with departmental Records Inventory and Disposition Schedules.

- Attachment 1, Passive VOC Sampling Data Sheet
- Environmental Chain-of-Custody Record (Example Attachment 3)
- Request for Analysis (Example Attachment 4)
- Passive Air Sampling Kit (PASK) Logbook

REFERENCES

BASELINE DOCUMENTS

- Hazardous Waste Facility Permit, Waste Isolation Pilot Plant, Permit No. NM4890139088-TSDF issued by the New Mexico Environment Department
- WP 12-VC.01, VOC Monitoring Plan

REFERENCED DOCUMENTS

- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description
- Shipping Documents (shipping authorization and air bill)

- Canister Certification Sheets

EQUIPMENT

- Wrench, 9/16-in. open end
- Wrench, 1/2-in. open end
- Allen Wrench, 1/8-in.
- Six-liter passivated stainless steel SUMMA canisters
- PASK
- Vacuum Gauge (calibrated)
- Mass Flow Meter (calibrated)
- Air Pump

PRECAUTIONS AND LIMITATIONS

- Individuals performing this procedure must be qualified per Qualification Card L-16, Volatile Organic Compound Sampling Operations or be a trainee working to Qualification Card L-16 under qualified supervision, excluding Radiological Control Technicians (RCTs).
- A RCT must perform Step 1.2.28, as applicable.
- All tubing connections SHALL be kept capped or plugged at all times until final connections or disconnections are made.
- All equipment must be within calibration date prior to sampling event.

PREREQUISITE ACTIONS

- Ensure that sample canisters are cleaned and certified as indicated by certification tag prior to use.
- Ensure equipment is in calibration prior to use.

PERFORMANCE

NOTE

The signing of Environmental Chain-of-Custody (COC) Record (Example Attachment 3) demonstrates the verification of sample and canister identification (ID).

NOTE

Sample canisters may be stored in the underground prior to sampling in secured areas to aid in process efficiency. The custody documentation will apply the same as any other custody transfer.

1.0 SAMPLE COLLECTION AND CANISTER HANDLING

1.1 Sampling Preparation

1.1.1 Obtain certified clean sample canister(s) and assigned COC from storage area.

1.1.2 Record date and time, and sign "Received By" line on COC.

1.1.3 Inspect each sample canister for the following conditions:

- [A] Certification tag attached
- [B] Sample canister valve fully closed
- [C] Tubing cap installed on sample canister valve.

1.1.4 **IF** any conditions identified in Step 1.1.3 are **NOT** as specified, **THEN** return sample canister for exchange.

1.1.5 Assign a sample number to each canister from the sample canister log.

1.1.6 Attach canister Sample Tag(s) to canister(s), as applicable.

1.1.7 Obtain clean PASK from storage area.

1.1.8 Record the following on Passive Grab Sampling Data Sheet, Sample Tag, and Chain of Custody as applicable:

- Date
- Sample Location
- Sample Type
- Sample Number
- Canister Serial Number

- PASK Serial Number
- Collection Rate
- Mass Flow Controller Number
- Mass Flow Calibration Expiration Date
- Vacuum/Pressure Gauge Number
- Vacuum/Pressure Gauge Calibration Expiration Date

1.1.9 Record the following in the PASK Logbook:

- Date
- Sample Location
- Collection Rate
- Sample Number
- Canister Serial Number

1.1.10 Prior to leaving the equipment storage area, ensure that the installed Sampling equipment is within calibration due date.

NOTE

Store voided canisters in the out-of-service cabinet and tag to prevent future use until they are shipped for cleaning and certification.

1.2 Passive Grab Sampling

NOTE

Vacuum/pressure gauge reads in hg units. Vacuum is shown as negative in hg on the gauge. Vacuum readings shall be interpreted as absolute value (positive) where results are defined as vacuum.

NOTE

A field canister is a non-certified evacuated SUMMA canister (or equivalent) that is used to simulate a sample canister for purposes of setting the flowrate.

1.2.1 Ensure particulate filters are installed in filter housing.

1.2.2 To set the collection rate, perform the following:

- [A] Connect suction hose of pump to evacuated field canister.
- [B] Open field canister valve and start pump to get approximately 20 in. hg of vacuum.
- [C] Close field canister valve and turn pump off.

- [D] Connect mass flow meter to field canister.
- [E] Turn on mass flow meter and pump.
- [F] Open valve on field canister.
- [G] Adjust the set screw to 10.5 sccm (9 to12) based on mass flow meter readout.
- [H] Close valve on field canister.
- [I] Deactivate pump and flow meter.
- [J] Install cover on flow set screw.
- [K] Disconnect mass flow meter.

NOTE

If at any time during the sampling events sample criteria are not achieved, Volative Organic Compound (VOC) Team Leader or Cognizant Manager must be notified, sample voided, and sampling equipment deactivated.

- 1.2.3 Install vacuum gauge on canister.
- 1.2.4 Open the valve on the sample canister and record initial vacuum reading on Attachment 1. If vacuum reading is below 24 in. hg, void the canister and return to Section 1.0.
- 1.2.5 Close valve.
- 1.2.6 Remove vacuum gauge.
- 1.2.7 Install filter housing on PASK.
- 1.2.8 Install PASK on sample canister.
- 1.2.9 Place sample canister in desired sampling location.
- 1.2.10 Open valve to initiate sample.
- 1.2.11 Record sample initiation time on Attachment 1.

NOTE

Sample collection time will be 6 hours. Sampling personnel must be present at the end of the 6 hours to close the valve.

- 1.2.12 Verify the sample canister has a minimum of 2 in. hg as indicated by vacuum/pressure gauge, and record ending vacuum on Attachment 1.
 - [A] If ending vacuum is ≤ 2 in. hg, void canister and return to Section 1.0.
 - [B] If ending vacuum is satisfactory, proceed to next step.
- 1.2.13 Close valve on sample canister, and record collection end time on Attachment 1.
- 1.2.14 Remove PASK from sample canister.
- 1.2.15 Install vacuum gauge on canister.
- 1.2.16 Open canister valve to verify final canister vacuum using calibrated vacuum/pressure gauge.
- 1.2.17 Close canister valve.
- 1.2.18 Record final vacuum on Attachment 1.
- 1.2.19 Remove vacuum/pressure gauge and filter housing.
- 1.2.20 Install caps and plugs on sample canister and PASK.
- 1.2.21 Record any issues or observations in comment section of Attachment 1.
- 1.2.22 Record time and date of removal on the Sample Tag and Attachment 1.
- 1.2.23 Print, sign, and date Attachment 1.
- 1.2.24 If sample was collected in the exhaust of the disposal air circuit, call Central Monitoring Room to determine if a Radiological event has occurred during sampling.
- 1.2.25 If a Radiological event has occurred during sampling, proceed to Step 1.2.27.

- 1.2.26 If there was not a radiological event, remove and discard filters, and proceed to Step 1.3.
- 1.2.27 After each required location has been sampled, transfer filters to RCTs for analysis.
- 1.2.28 RCT, analyze the primary filter, and perform one of the following:
- [A] If the filter is less than minimum detectable activity (MDA) alpha and beta/gamma, proceed to Step 1.2.29.
 - [B] If the primary filter is greater than MDA for alpha and beta/gamma, control filter, and analyze secondary filter.
 - [C] If secondary filter is less than MDA for alpha and beta/gamma, proceed to Step 1.2.29.
 - [D] If both filters are above MDA, contact Radiological Technology to determine equipment disposition.
- 1.2.29 Complete the RCT Section of Attachment 1.
- 1.2.30 Print, Sign, and Date the RCT signature line of the Attachment 1.
- 1.2.31 After filters have been released, transfer sample canister for sample storage.
- 1.3 Sample Canister Interim Storage
- 1.3.1 Return the following to the VOC Monitoring storage area:
- Filled sample canister(s)
 - Passive Grab Sampling Data Sheet
 - COC
- 1.3.2 Place filled sample canister(s) in "Canisters Ready for Shipment" locker.
- 1.3.3 Record date and time, and sign "Relinquished By" line of COC.

NOTE

Shipping of voided canisters does not require a Request for Analysis or a COC. Voided canisters will be shipped separately as general freight or directly delivered to the contract laboratory.

2.0 SAMPLE CANISTER DELIVERY AND SHIPMENT**2.1 Delivering Samples to Contract Laboratory**

- 2.1.1 Retrieve sample canister(s), respective COC(s), and completed Request for Analysis (RFA[s]).
- 2.1.2 Record date and time, and sign "Received By" line of COC.
- 2.1.3 Record Control Number from Attachment 4, Request for Analysis on the COC.
- 2.1.4 Mark on Request for Analysis pressure "vacuum in hg."
- 2.1.5 Obtain sturdy cardboard box and inner boxes, if necessary, for sample canister(s).
- 2.1.6 Ensure Sample Tag is connected to the correct sample canister and each canister is part of the intended shipment before placement in shipping container.
- 2.1.7 Place the canister(s) inside the box(es), leaving them accessible to inspection.
- 2.1.8 Give the following forms to VOC Program Manager or designee, for review:
 - COC(s)
 - Request for Analysis
 - Passive Grab Sampling Data Sheet(s)
- 2.1.9 Complete COC(s) for sample canisters to be delivered.
- 2.1.10 Deliver samples to the laboratory.
- 2.1.11 Record date and time, and sign "Relinquished By" line of COC.

2.1.12 Return the following to Project Records Services files in accordance with the departments Records Inventory and Disposition Schedule:

- Yellow copy of the COC
- Yellow copy of Request for analysis
- Passive Grab Sampling Data Sheet(s)

2.2 Shipping Samples via Commercial Carrier

2.2.1 Retrieve sample canister(s), respective COC(s), and completed RFA(s).

2.2.2 Record date and time, and sign "Received By" line of COC.

2.2.3 Complete COC for sample canisters to be shipped.

2.2.4 Record Control Number from Request for Analysis on the COC.

2.2.5 Mark on Request for Analysis pressure "vacuum in hg."

2.2.6 Obtain sturdy cardboard box and inner boxes, if necessary, for sample canister(s).

2.2.7 Ensure Sample Tag is connected to the correct sample canister and each canister is part of the intended shipment before placement in shipping container.

2.2.8 Place the canister(s) inside the box(es), leaving them open.

2.2.9 Mark the outer box, and each inner box (if used), with the sample identification numbers in a manner that they can be read by all persons transporting the samples.

2.2.10 Place address label on the outermost box (as applicable).

2.2.11 Record the following on the Shipping Authorization:

- Sample numbers
- COC numbers
- Canister serial numbers
- Sample pressure

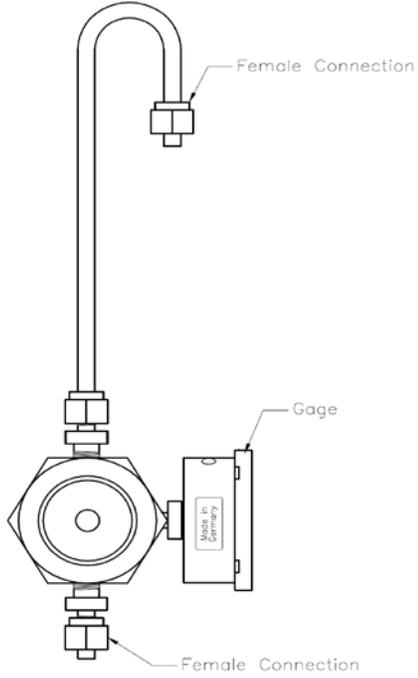
- 2.2.12 Give the following forms to VOC Program Manager or designee, for review:
- COC
 - Request for Analysis
 - Passive Grab Sampling Data Sheet(s)
- 2.2.13 Transport shipping container(s) and shipping documents to the warehouse or designated shipping location.
- 2.2.14 Record date and time, and sign "Relinquished By" line of COC.
- 2.2.15 Have warehouse personnel verify contents, sign, date, and enter time, on the individual COC(s) as received.
- 2.2.16 Have warehouse personnel sign, date, and enter time on the COC(s) as "Relinquished By."
- 2.2.17 Record on COC the shipping document number of each shipping container for all sample canister(s) in that container.
- 2.2.18 Insert original COC copies with corresponding samples inside the box(es).
- 2.2.19 Tape the box(es) with clear packaging tape.
- 2.2.20 Place COC tape over packaging tape to prevent tampering.
- 2.2.21 Retain copy of shipping documents and copy of airbill, as applicable.
- 2.2.22 Return the following to Project Records Services files in accordance with the departments Records Inventory and Disposition Schedule:
- Yellow copy of the COC
 - Yellow copy of Request for Analysis
 - Passive Grab Sampling Data Sheet(s)
 - Copy of shipping documents
 - Copy of airbill

3.0 PASSIVE SAMPLING KIT HANDLING

- 3.1 Deliver used PASK to laboratory, when sample results indicate (\geq Method Reporting Limit) that cleaning is needed and record in PASK Logbook.
- 3.2 Record in PASK Logbook the receipt date of cleaned PASK units.
- 3.3 Clean PASK are to be stored separately from used PASK.

Attachment 2 – Passive Air Sampling Kit

Attachment 2 – Passive Air Sampling Kit



PASSIVE AIR SAMPLING KIT

Attachment 3 – Example of Chain of Custody Record

Environmental VOC Chain-of-Custody Record

No 4277

SAMPLE NUMBER _____

Canister Serial No. _____

Date of Receipt: _____ / _____ / _____

Equipment Type: _____

Cleaning Cert. Date: _____

Storage Location: _____

Installation Location: _____

C/C Control _____

R/A Control No. _____

Shipping Document No. _____

Cal. Due Date: _____

Date: _____ / _____ / _____ Time: _____

Date: _____ / _____ / _____ Time: _____

1. Received By: _____
Signature Date Time

Relinquished By: _____
Signature Date Time

2. Received By: _____
Signature Date Time

Relinquished By: _____
Signature Date Time

3. Received By: _____
Signature Date Time

Relinquished By: _____
Signature Date Time

4. Received By: _____
Signature Date Time

Relinquished By: _____
Signature Date Time

5. Received By: _____
Signature Date Time

Relinquished By: _____
Signature Date Time

6. Received By: _____
Signature Date Time

Relinquished By: _____
Signature Date Time

Performers responsible for data entry or step completion SHALL enter their printed names, signatures, and date below.

NAME (print)	SIGNATURE	DATE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Remarks: _____

Completion of this step constitutes validation of this record and is found to be complete.

Name (print) Signature Date

Attachment 4 – Request for Analysis

Waste Isolation Pilot Plant
 P. O. Box 2078
 Carlsbad, NM 88221-2078

VOC Monitoring Program _____
 Purchase Order No. _____

R/A Control _____
 C/C Control No. _____
 Date Samples Shipped _____
 Lab Destination _____
 Laboratory Contact _____
 Send Lab Report To _____
 Date Report Required _____
 Project Contact _____
 Project Contact Phone No. _____

Serial No.	Sample No.	C-of-C No.	Sample Type	Sample Pressure	Pressure	Contract-Specific Testing	Special Instructions

TURNAROUND TIME REQUIRED: (Rush must be approved by appropriate Manager) NORMAL _____ RUSH _____ (Subject to rush surcharge)
 POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances.)
 NONHAZARD _____ FLAMMABLE _____ SKIN IRRITANT _____ HIGHLY TOXIC _____ BIOLOGICAL _____ OTHER _____
 SAMPLE DISPOSAL (Please indicate disposition of sample following analysis.) RETURN TO CLIENT _____ DISPOSAL BY LAB _____
 (Please Specify)

FOR LAB USE ONLY
 RECEIVED BY _____ DATE/TIME _____

Attachment 5 – Canister Sample Tag

Attachment 5 – Canister Sample Tag

Sample Number: _____ Canister Serial Number _____

Sample Location: _____

Date/Time Installed: _____

Performer's Printed Name: _____

Signature: _____

Date/Time Removed: _____

Performer's Printed Name: _____

Signature: _____