

Attachment 1

WASTE ANALYSIS PLAN

**Appendix E
AMBIENT AIR MONITORING FOR PCBs
SAMPLING PLAN**

**MIXED WASTE FACILITY
RCRA/TSCA PERMIT APPLICATION**

**PERMA-FIX NORTHWEST RICHLAND, INC.
RICHLAND, WASHINGTON**

Mixed Waste Facility

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1.0 PURPOSE

The goals of this Sampling and Analysis Plan are the following:

1.1 Assure Protection to Human health and the Environment

To assure that operations during the treatment of TSCA Regulated PCB waste in the Mixed Waste Facility (MWF) are conducted in accordance with the Permit Conditions associated with the management of TSCA-Regulated PCB Waste in Building 13. Results obtained from Ambient Air Sampling for PCBs will be used to verify that fugitive emissions generated from treatment processes conducted in the MWF are not likely to impact human health and the environment.

1.2 Obtain Quality Data

To obtain representative samples capable of providing statistically valid and legally defensible data. This plan identifies the appropriate sampling methodology, sample type, sample locations and number of samples to obtain when treating TSCA Regulated PCB waste.

1.3 Derive Data Pertaining to the Concentrations of Aroclors Present in the Ambient Air During the Processing of TSCA Regulated Waste

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2.0 SCOPE

This Sampling and Analysis Plan will address the following activities associated with TSCA Regulated PCB waste in Building 13.

2.1 Waste Treatment / Activity

- In-container Mixing (TT-03)
- Low Capacity Mixing (TT-02)
- Super Compaction/In-drum Compactor (TP-07)
- Extraction Mixing System (TP-10)
- Low Capacity Mixing (TT-02)
- Cutting and Shearing (TP-02)
- Sorting (TP-13) (Not Treatment).

4.0 SAMPLE METHODOLOGY

The method used to analyze the ambient air samples for PCBs is Method TO-10A, Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection.

Method TO-10A allows for the collection of a quality sample. A quality sample is defined here as a sample that:

- Is collected during the entire processing event
- Has a sufficient volume as required by the analytical laboratory
- Has a sufficient volume to achieve the Minimum Detection Limit as required

4.1. Scope

The TO-10A method is based on the adsorption of chemicals from ambient air on polyurethane foam (PUF) or a combination of PUF and granular sorbent using a low volume sampler. The low volume PUF sampling procedure is calls for sampling over a 4 to 24 hour period, depending on the anticipated concentration of PCBs. The limits of detection will depend on the length of the sampling period. Method TO-10A is currently employed by laboratories throughout the US. It was originally published in 1989. The method was modified for indoor air application in 1990. In an effort to keep the method consistent with current technology, Compendium Method TO-10A has incorporated ASTM Method D4861-94 (1) and is published as Compendium Method TO-10A.

4.2. Summary of Method

A low-volume (1-5 liters per minute) sample is used to collect vapors on a sorbent cartridge container PUF or PUF in combination with another solid sorbent. PCBs are extracted from the sorbent cartridge with 5 percent diethyl ether in hexane and determined by gas chromatography coupled with an electron capture detector (ECD), Hall electrolytic conductivity detector (HECD) or a mass spectrometer (MS). During sampling, the temperature & barometric pressure must be recorded.

A copy of the analytical method, TO-10A, is attached to this SAP.

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4.3. Target Analytes

Aroclor PCBs – PCB-1016, PCB-1211, PCB-1232, PCB-1242, PCB-1248, PCB-1254, and PCB-1260.

4.4. Action Level

As directed by the EPA, 1 ug/m³

The minimum detection level (OHS-026) is 0.5 ug/m³

4.5. Required Sample Concentration

The analytical laboratory has required a minimum volume of 1000 Liters.

4.6. Quantification of Samples

The quantities of PCB in each sample will be reported by the analytical laboratory as a specific Aroclor in ug/PUF, and then converted to ug/m³ by dividing by the reported air volume to provide ambient concentrations.

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5.0 SAMPLING EQUIPMENT

The equipment required for sampling ambient air is described below.

5.1. Continuous Flow Sampling Pump – Commercially Available

Pump should provide a constant air flow (< + 5%) and should be set at a flow rate of 1-5 liters per minute.

5.2. Primary Calibration Unit

See OHS-025 procedure.

5.3. Sample Media

Sample media shall be obtained from SKC, Inc. The sample media to be used is SKC Product Number 226-124. All media received from SKC includes a certification that states that the media meets the specifications of EPA and ASTM sampling methods, and that the media has been cleaned according to SKC, Inc. proprietary procedures, and have passed a quality control check for background contamination.

NOTE: Use of a different sample media is not approved until laboratory data is provided, and approved by the Agencies, demonstrating acceptable sample recovery for all of the PCB of interest using only the PUF media.

5.4. Tri-pod

A tri-pod is used to place the sample media approximately 3-4 feet off the floor.

5.5. Tygon Tubing

5.6. Miscellaneous

Miscellaneous equipment for the packaging of samples for shipping purposes. This may include blue ice to be used in the sample shipping container. Method TO-10A does not require preservation at 40 Celsius; however, the analytical laboratory recommends it.

7.0 SAMPLING FREQUENCY

Sampling will be conducted during events where TSCA regulated PCB wastes are present during one or more activity listed in Section 2.0 above.

7.1. When Sampling Must be Initiated

Sampling shall be initiated at the start of processing of TSCA regulated PCB waste at the locations determined in accordance with Section 3.1 above.

7.2. Minimum Duration of Sampling

Once started, sampling is to continue for at least 4 hours or until the processing event is completed, whichever period is longer.

7.3. Minimum Sampling Frequency

The minimum sampling frequency is once per week per type of processing activity. Monitoring less frequently will only be conducted in the event that TSCA regulated PCB waste processing occurs on a less frequent schedule.

7.4. Discontinuation of Sampling

When a negative exposure assessment can be developed for each matrix (such as debris, soil) for any of the waste processing activities listed in Section 2.0 above, sampling may be discontinued.

A negative exposure assessment will be based on sample results which indicate that exposures to fugitive emissions are below 1 ug/m³.

Periodic sampling will then be conducted at least annually.

Re-initiation of sampling shall occur if/when the following conditions occur:

- A change in the waste profile

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- A current processing activity is changed
- New processing activity
- Personal sampling activities indicate an exposure in excess of the WISHA PEL (permissible exposure limit)

- Currently, WAC 296-841-20025, Table 3 lists the WISHA PELs as follows:

Polychlorobiphenyls	CAS Number	TWA mg/m ³	STEL mg/m ³
42% Chlorine	53469-21-9	1	3
54% Chlorine	11097-69-1	0.5	1.5

- These values are subject to change. The facility will abide by the most recent WISHA PEL level as incorporated by the WAC.

9.0 SAMPLING DOCUMENTATION AND PROCEDURE

The procedures described in this section are used to document and control samples collected and shipped to an off-site laboratory for PCB analyses.

All samples will be collected by, or under the direct supervision of the PFNW Industrial Hygienist.

9.1. Air Sampling Pump Setup and Operation, OHS-025

This procedure includes the following elements:

- Precautions and Limitations
- Initial Set Up
- Use of the Primary Calibration Unit
- Flow Rate Determination to reach required sample concentrations
- Sample Pump Operation
- Leak Test

9.2. Ambient Air Sampling for PDBs, OHS-026

This procedure includes the following elements:

- Sample Locations
- Sample Frequency
- Blanks
- Sample media
- Sample Handling (preservation, packaging)
- Sampling strategy (location and placement of the sampler)
- Air Sampling Survey Documentation Requirements, to include –
 - Sampling location
 - Sampling Start Time
 - Sampling End Time
 - Description of PCB Activities Conducted during the Air Sampling Event

