

CLOSURE PLAN CONTENTS AND TECHNICAL REVIEW

3.7 - CONFIRMATION SAMPLING PLAN FOR CONTAINMENT STRUCTURES, TANKS, AND EQUIPMENT

This section of the closure plan must contain a confirmation sampling plan that the facility proposes to implement to confirm that either:

1. Contaminated equipment, structures, and/or buildings have been properly decontaminated; that is, cleanup performance standard has been met; or
2. Certain equipment, structures, and/or buildings are not contaminated; therefore, decontamination is not necessary.

The confirmation sampling plan must contain the following elements:

- c Sampling Objectives/Purpose
- c Number and Locations of Samples to be Taken
- c Type of Sample
- c Field Sampling Method
- c Quality Control Samples
- c Decontamination of Sampling Equipment
- c Chain-of-Custody Procedures
- c Labeling, Packaging/Preservation, and Transportation
- c Documentation
- c Analytical Test Methods (see Chapter 3.9)

Each of the elements listed above are described in detail below:

1. Sampling Objectives/Purpose - The specific objectives for sampling must describe the intended uses of the data.
2. Number and Locations of Samples to be Taken - The rationale for choosing the number of samples to be taken must be provided.

The rationale for each sampling location should also be provided. Any use of a random or statistical approach in selecting the locations should be described. Appendix B contains a typical random sampling method.

A drawing or map of the site and specifically the area defining the boundaries of the regulated unit depicting sampling locations should be included.

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Appendix B contains an example of rationale that a permit writer may expect to see but should not be used as a standard. The permit writer should use his/her own judgement/experience when determining the adequacy of the rationale provided.

3. Types of Sampling - To confirm that equipment, structures, and buildings have not been or are no longer contaminated with hazardous constituents, a surface sample must be taken. The following sections of these instructions represent a range of guidance from general to specific on sampling. This information was obtained

from reviewing U.S. EPA guidance documents and discussions with the Department's technical specialists. A sample of the cleaning solution can be used for pumps, piping, and small equipment where wipe samples are inaccessible. A table listing the unit (i.e., equipment, structure, tank) and the type of sample to be taken from that unit along with the rationale for choosing that type of sample should be provided. However, as a cautionary note, the permit writer should carefully check if the surface of the pad is porous, e.g., concrete pad with no epoxy coating, or with cracks. In this case, core sampling may be warranted.

a. Structures, Tanks and Equipment - To monitor potential contamination to buildings, structures, and equipment or to demonstrate that cleanup levels have been met, surface sampling or an alternative method that the permit writer agrees to must be conducted. Rinsewater sampling alone is not recommended for measuring decontamination of tanks since it is not conclusive evidence that hazardous constituents have been removed. However, rinsewater from other equipment components (e.g., pumps, filters, etc.) May be used to determine decontamination effectiveness of the equipment.

Surface sampling is appropriate for surfaces contaminated with non-volatile species of analytes (i.e., metals, cyanides, etc.). Detection limits are analyte specific. Three common types of surface sampling are:

- i. Wipe Sampling - Applicability : Smooth and impervious solid surfaces such as metal tanks, epoxy coated concrete, vinyl liners, etc. Wipe samples are not appropriate for porous surfaces such as asphalt, uncoated concrete or wood. Chip sampling is recommended for porous surfaces.

Number and Location of Samples: No specific guidance was found on the actual number and location of samples that should be taken. However, it is suggested that a minimum of three (3) samples (top, bottom, side) be taken. The permit writer should be aware that hazardous constituents from the materials of construction of the tank itself may show in the analysis.

Structures (i.e., walls, ceilings, pad) - No literature was found on the actual number and location of samples that should be taken. However, it is suggested that a minimum of one (1) sample per wall and one sample per ceiling be taken. A wall wipe sample are should represent no more than an area of 300 square feet. The sample location should be biased towards the areas where waste management activities took place. The facility should provide a rationale why they plan to take samples in specific areas.

Sample Size: Typical wipe sample are is 100 cm². However, based upon sampling location, the are may need modification due to space constrictions. A wall wipe sample area should represent no more than an area of 300 square feet.

Procedures: Procedures will vary depending on the type of contamination. It is recommended that the following document be used for guidance: Compendium of Waste Sampling Procedures, EPA/540/P-91/008.

An Example of a Wipe Sample Procedure Is: The surfaces should be sampled by using filter paper or gauze pads that are moistened with an appropriate solvent. The gauze pad is usually held with a pair of stainless steel forceps and is used to thoroughly swab a 100 cm² area that was previously marked with a template.

Care must be taken to ensure proper use of a sampling template. Different templets may be used for the variously shaped areas that must be sampled. A 100 cm² are may be a 10 cm x 10 cm square, a rectangle (e.g., 1 cm x 100 cm or 5 cm x 20 cm), or any other shape. The use of a template assists the sampler in the collection of a 100 cm² sample and in the selection of representative sampling sites. When a template is used it must be thoroughly cleaned between

samples to prevent contamination of subsequent samples by the template.

- ii. Chip Sampling- Applicability: Porous surfaces such as asphalt, concrete, and wood.

Number and Location of Samples: No specific guidance exists at this time. The permit writer should determine these numbers based on his/her scientific/engineering common sense judgement.

Sample Size: The top one inch of a 10 cm x 10 cm area of the porous surface should be chiseled out and collected for analysis.

Procedures: It is recommended that the following documents be used for guidance: Compendium of Waste Sampling Procedures, EPA/540/P-91/008.

- iii. Polychlorinated Biphenyls (PCB) Wipe Sampling Procedures - A specific procedure for PCBs has been found in an EPA document entitled, "Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup."

- iv. Number and Location of Samples: Not applicable.

Sample Size: Actual volume required for analysis should be determined in conjunction with the laboratory performing the analysis.

Procedures: No specific guidance exists at this time.

4. Field Sampling Method/Procedures - This section should describe the procedures and equipment that will be used for sample collection. There should be a sampling method/technique for each type of sample to be taken. In general, the procedures should include a detailed description of the following:

- c Equipment - design and materials of construction
- c Step-by-Step Instructions for Taking the Sample
- c Sample Containers - type, size, and cleaning specifications

5. Quality Control Samples - See Chapter 3.8, item number 5, of these instructions on what type of quality control samples are required.

6. Decontamination of Sampling Equipment - Procedures on preventing cross-contamination is required in this section.

7. Chain-of-Custody Procedures - See Chapter 3.8, item number 6, for guidance on this section.

8. Labeling, Packaging/Preservation, and Transportation - See Chapter 3.8, item number 3.8, item 7, for guidance on this section.

9. Documentation - See Chapter 3.8, item number 8, for guidance on this section.

10. Analytical Test Methods - Guidance on what is required in this section can be found in Chapter 3.9 of these instructions.

NOTE: QA/QC procedures have been incorporated into the sampling plan and there fore do not need to be specifically requested as a separate document.

Key Questions

- c Does the plan list all contaminated or possibly contaminated buildings, structures, and equipment? This list should have been provided in Chapter 3.6, if so, then it does not have to be listed again but a reference to the list in Chapter 3.6 should be given.
- c Is there a description of the sampling technique for buildings, structures, and equipment?
- c Are the type and number of samples reasonable for the unit?
- c Did the sampling method take into account the depth/penetration of the contaminant?
- c Was the proper cleaning solution used?