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Environment & Remediation Support Services

Standard Operating Procedure

for **SCREENING OF POLYCHLORINATED BIPHENYLS
(PCBs) IN SOIL**

APPROVAL SIGNATURES:

Subject Matter Expert:	Organization	Signature	Date
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1.0 PURPOSE AND SCOPE

The purpose of this procedure is to describe the process for using test kits to screen for Polychlorinated Biphenyls (PCBs) in soil during activities at Los Alamos National Laboratory (Laboratory) Environment & Remediation Support Services (ERSS).

2.0 BACKGROUND AND PRECAUTIONS

2.1 Background

This procedure is used in conjunction with an approved Site-Specific Health and Safety Plan (SSHASP). Also, consult the SSHASP for information on and use of all PPE.

PCBs have been used extensively for over half a century. Their properties make them ideal for use a plasticizers, adhesives, and dielectric fluids in capacitors and transformers. PCBs are extremely lipophilic compounds. This characteristic permits rapid penetration of cell membranes and uptake by tissues. Joint consideration of cancer studies and environmental processes leads to a conclusion that environmental PCB mixtures are highly likely to pose a risk of cancer to humans (EPA, IRIS, <http://www.epa.gov/iris/subst/0294.htm>).

2.2 PRECAUTIONS

PCB field-screening kits should only be used to help guide an investigation, corrective action, etc.; they cannot be used to substantiate regulatory compliance. Data used to make no-further-action decisions or conduct risk assessments must be analyzed using EPA-approved methods.

PCB field-screening kits provide simple, economical, and quick (~1 hr) results in the field. The kits are generally PCB-specific; however, Pentachlorophenol, 2, 2', 5, 5'-Tetrabromobiphenyl, Tetradifon, Holowax, and other chlorinated compounds may cause interference. These kits are most effective when PCBs are the only contaminant present in the field sample.

Hazards associated with using a PCB field-screening kit include the possibility of field team members being exposed to the chemicals and/or PCB-contaminated media used for the analysis. These compounds are typically contained in glass ampules. Precautions should be taken when opening the ampules; these hazards (and their mitigation methods) should be included in the SSHASP.

The chemicals that are part of the kit, as well as the process of the analysis, must be considered when preparing the waste characterization strategy form for the work being done: some of the chemicals may be classified as hazardous. In addition, consideration should be given to how the chemicals are stored, handled, and disposed of, to ensure compliance with appropriate procedures for waste management (EP-ERSS-SOP-5022, Management of ER Project Waste).

3.0 EQUIPMENT AND TOOLS

- PCB screening kit (this may include balance, differential photometer, etc.). A complete list of the components should appear in the manufacturer's instruction manual.
- PPE (as described in the SSHASP).

4.0 STEP-BY-STEP PROCESS DESCRIPTION

4.1 Pre-Operation Activities

- | | |
|----------|---|
| Operator | <ol style="list-style-type: none">1. [NOTE: Because many types of PCB field-screening kits are available, the instructions provided by the manufacturer of the kit must be followed. <hr/> |
| | <ol style="list-style-type: none">2. Obtain a copy of the manufacturer's instruction manual for using the kit. <hr/> |
| | <ol style="list-style-type: none">3. Submit it to the ERSS Project's Records Processing Facility (RPF) to obtain an ER ID number. <hr/> |
| | <ol style="list-style-type: none">4. Ensure all personnel using the screening kit are properly trained in the conduct of the analysis. <hr/> |
| | <ol style="list-style-type: none">5. Gather all necessary materials, as specified in the PCB field-screening kit's instruction manual. <hr/> |
| | <ol style="list-style-type: none">6. Obtain sample collection logs and labels from the Sample Management Office. <hr/> |
| | <ol style="list-style-type: none">7. Control samples collected for screening in accordance with procedure EP-ERSS-SOP-5058, Sample Control and Field Documentation. <hr/> |
| | <ol style="list-style-type: none">8. Record any information pertaining to the type of kit, the lot, and the serial number in the Screening Data Sheet (see Attachment 1), the Sample Collection Log, and Daily Activity Log, or the field notebook. |

4.2 Screening Operation

- | | |
|----------|---|
| Operator | <ol style="list-style-type: none">1. Follow the manufacturer's instructions for conducting the screening analysis. <hr/> |
| | <ol style="list-style-type: none">2. To determine the effectiveness of a PCB field-screening kit, initially a split of 10% of the samples must be submitted for fixed-base laboratory analysis using EPA-approved methods.

[NOTE: This analysis determines if the specific PCB field-screening kit that was chosen is appropriate for the site-specific conditions. It also helps determine if the matrix being analyzed, or other contaminants that are present, could cause interference and detection problems with the particular kit being used.] <hr/> |
| | <ol style="list-style-type: none">3. Once an acceptable correlation has been made between the concentrations found at the site (as measured by approved methods) and those being measured by the kit, reduce or eliminate the percent of samples submitted for fixed-base laboratory analysis. |

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Operator
(Continued)

4. If possible, describe the process of reducing the number of splits that undergo fixed-base analysis in such planning documents as a field implementation plan or voluntary corrective action plan.

[NOTE: This is because reduction decisions are based on how a kit is being used.]
5. If a kit is being used to help guide a cleanup effort, for example, and that kit has a demonstrated good performance record, eliminate additional fixed-base laboratory splits with the justification that all cleanup verification samples are going to be submitted for fixed-base laboratory analysis.
6. Document the decision in accordance with procedure EP-ERSS-SOP-5058, Sample Control and Field Documentation, or procedure EP-ERSS-SOP-5009, Notebook Documentation for Environmental Restoration Technical Activities.
7. With every set (typically 10) of samples analyzed, a duplicate sample should be analyzed using the PCB field-screening kit.
8. Complete a Screening Data Sheet (Attachment 1) by recording the date, sample ID, and the results of the screening analysis.

4.3 Post-Operation Activities

- Operator
1. Decontaminate equipment, if needed, in accordance with EP-ERSS-SOP-5061, Field Decontamination of Equipment.
 2. Properly dispose of kits along with all other generated waste in accordance with procedure EP-ERSS-SOP-5022, Management of ER Project Waste.

4.4 Records

- Field Team Leader
1. Submit the following records generated by this procedure to the Records Processing Facility:
 - Any Sample Collection Logs, if appropriate;
 - Any Screening Data Sheets;
 - Any Daily Activity Logs or field notebooks, if appropriate; and
 - Manufacturer's Instruction Manual for a specific PCF field-screening kit.

5.0 PROCESS FLOW CHART

Flow chart is to be included at a later date.

6.0 ATTACHMENTS

Attachment 1: 5048-1 Screening Data Sheet

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7.0 REVISION HISTORY

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Revision No. <i>[Enter current revision number, beginning with Rev.0]</i>	Effective Date <i>[DCC inserts effective date for revision]</i>	Description of Changes <i>[List specific changes made since the previous revision]</i>	Type of Change <i>[Technical (T) or Editorial (E)]</i>
0.0	2/9/07	Reformatted and renumbered, supersedes SOP-10.01	E

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