Region 4
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
Athens, Georgia

OPERATING PROCEDURE

Title: **Wipe (Contaminated Surface) Sampling**

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Revision History

This table shows changes to this controlled document over time. The most recent version is presented in the top row of the table. Previous versions of the document are maintained by the SESD Quality Manager.

History	Effective Date
SESDPROC-304-R1, *Wipe (Contaminated Surface) Sampling*, replaces SESDPROC-304-R0. **General** Corrected any typographical, grammatical and/or editorial errors. **Title Page** Changed title for Antonio Quinones from Environmental Investigations Branch to Enforcement and Investigations Branch. **Section 1.3** Updated information to reflect that the procedure is located on the H: drive of the LAN. Clarified Field Quality Manager (FQM) responsibilities. **Section 1.4** Updated referenced operating procedures due to changes in title names. Alphabetized and revised the referencing style for consistency. Added one reference (49 CFR). **Section 1.5.1** Corrected the title of the Safety, Health, and Environmental Management Program Procedures and Policy Manual. **Section 1.5.2, 4th bullet** Added references to the CFR and IATA's Dangerous Goods Regulations. **Section 2.4** Updated referenced operating procedures due to changes in title names.	November 1, 2007
SESDPROC-304-R0, *Wipe (Contaminated Surface) Sampling*, Original Issue	February 05, 2007

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1 General Information

1.1 Purpose

This document describes general and specific procedures, methods and considerations to be used and observed when collecting wipe samples of contaminated surfaces for field screening or laboratory analysis.

1.2 Scope/Application

The procedures contained in this document are to be used by field personnel when collecting and handling wipe samples in the field. These procedures are normally used to sample various surfaces, such as documents, building materials (walls, doors, floors, etc.) and equipment to determine whether or not they are contaminated and to determine the relative degree to which these surfaces are contaminated. These procedures are also used to evaluate the effectiveness of decontamination procedures. On the occasion that SESD field personnel determine that the procedures described in this section are either inappropriate, inadequate or impractical and that another procedure must be used to obtain a wipe sample, the variant procedure will be documented in the field log book, along with a description of the circumstances requiring its use.

1.3 Documentation/Verification

This procedure was prepared by persons deemed technically competent by SESD management, based on their knowledge, skills and abilities and have been tested in practice and reviewed in print by a subject matter expert. The official copy of this procedure resides on the H: drive of the SESD local area network. The Field Quality Manager (FQM) is responsible for ensuring the most recent version of the procedure is placed on the H: drive and for maintaining records of review conducted prior to its issuance.

1.4 References

International Air Transport Authority (IATA). Dangerous Goods Regulations, Most Recent Version

SESD Operating Procedure for Control of Records, SESDPROC-002, Most Recent Version

SESD Operating Procedure for Sample and Evidence Management, SESDPROC-005, Most Recent Version

SESD Operating Procedure for Logbooks, SESDPROC-010, Most Recent Version

SESD Operating Procedure for Field Sampling Quality Control, SESDPROC-011, Most Recent Version

SESD Operating Procedure for Equipment Inventory and Management, SESDPROC-108, Most Recent Version

SESD Operating Procedure for Field Equipment Cleaning and Decontamination, SESDPROC-205, Most Recent Version

SESD Operating Procedure for Field Equipment Cleaning and Decontamination at the FEC, SESDPROC-206, Most Recent Version

SESD Operating Procedure for Packaging, Marking, Labeling and Shipping of Environmental and Waste Samples, SESDPROC-209, Most Recent Version

SESD Operating Procedure for Waste Sampling, SESDPROC-302, Most Recent Version

Title 49 Code of Federal Regulations, Pts. 171 to 179, Most Recent Version

United States Environmental Protection Agency (US EPA). 1981. "Final Regulation Package for Compliance with DOT Regulations in the Shipment of Environmental Laboratory Samples," Memo from David Weitzman, Work Group Chairman, Office of Occupational Health and Safety (PM-273), April 13, 1981.

US EPA. 2001. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual. Region 4 Science and Ecosystem Support Division (SESD), Athens, GA

US EPA. Analytical Support Branch Laboratory Operations and Quality Assurance Manual. Region 4 SESD, Athens, GA, Most Recent Version

US EPA. Safety, Health and Environmental Management Program Procedures and Policy Manual. Region 4 SESD, Athens, GA, Most Recent Version

1.5 General Precautions

1.5.1 Safety

Proper safety precautions must be observed when collecting wipe samples. Refer to the SESD Safety, Health and Environmental Management Program (SHEMP) Procedures and Policy Manual and any pertinent site-specific Health and Safety Plans (HASP) for guidelines on safety precautions. These guidelines, however, should only be used to complement the judgment of an experienced professional. Address chemicals that pose specific toxicity or safety concerns and follow any other relevant requirements, as appropriate, such as ensuring that any personal

protective equipment (PPE) is compatible with the solvents used for wipe sampling.

1.5.2 Procedural Precautions

The following precautions should be considered when collecting wipe samples.

- Special care must be taken not to contaminate samples. This includes storing samples in a secure location to preclude conditions which could alter the properties of the sample. Samples shall be custody sealed during long-term storage or shipment.
- Collected samples are in the custody of the sampler or sample custodian until the samples are relinquished to another party.
- If samples are transported by the sampler, they will remain under his/her custody or be secured until they are relinquished.
- Shipped samples shall conform to all U.S. Department of Transportation (DOT) rules of shipment found in Title 49 of the Code of Federal Regulations (49 CFR parts 171 to 179), and/or International Air Transportation Association (IATA) hazardous materials shipping requirements found in the current edition of IATA's Dangerous Goods Regulations.
- Documentation of field sampling is done in a bound logbook.
- Chain-of-custody documents shall be filled out and remain with the samples until custody is relinquished.
- All shipping documents, such as bills of lading, etc., shall be retained by the project leader and stored in a secure place.

2 Special Sampling Considerations

2.1 Parameters Not Suitable for Wipe Sampling

Some compounds or analyte groups are not suitable for wipe sampling because of their volatility. These include, but are not limited to, mercury and volatile organic compounds.

2.2 Special Precautions for Trace Contaminant Wipe Sampling

- Wipe samples are normally taken from non-absorbent, smooth surfaces, such as metal, glass, plastic, finished concrete, etc. Rough surfaces may be sorbent or may cause the material used for wiping to tear apart. These surfaces should be sampled using procedures described in SESD Operating Procedure for Waste Sampling (SESDPROC-302), Section 4.5, Miscellaneous Contaminated Materials.
- A clean pair of new, non-powdered, disposable gloves will be worn each time a different surface is sampled and the gloves should be donned immediately prior to sampling. The gloves should not come in contact with the media being sampled and should be changed any time during sample collection when their cleanliness is compromised.
- If possible, one member of the field sampling team should take all the notes and photographs and provide other sampling support activities, while the other member(s) collect the samples.
- Samplers must use new, verified certified-clean disposable or non-disposable equipment cleaned according to procedures contained in SESD Operating Procedure for Equipment Cleaning and Decontamination at the FEC (SESDPROC-206) or SESD Operating Procedure for Field Equipment Cleaning and Decontamination (SESDPROC-205), for collection of samples for trace metals or organic compound analyses.

2.3 Quality Control

Equipment blanks should be collected if equipment, such as tongs or tweezers, are field cleaned and re-used on-site or if necessary to document that low-level contaminants were not introduced by sampling tools. Blanks of the material used for wiping, such as diaper squares or sterile gauze pads, must also be submitted for analysis for each of the parameters for which the samples are being collected.

2.4 Records

Information generated or obtained by SESD personnel will be organized and accounted for in accordance with SESD records management procedures found in SESD Operating Procedure for Control of Records, SESDPROC-002. Field notes, recorded in a bound field logbook, will be generated, as well as chain-of-custody documentation in

accordance with SESD Operating Procedure for Logbooks, SESDPROC-010 and SESD Operating Procedure for Sample and Evidence Management, SESDPROC-005.

3 Wipe (Contaminated Surface) Sampling Methods

3.1 Wipe Preparation

3.1.1 Wipe Material

Wipes may be prepared using a variety of absorbent materials, including sterile gauze pads, new cotton diaper swatches or other cotton material. Where the project data quality objectives require trace level analysis and high sensitivity, such as dioxin analysis, it may be appropriate to subject all wipe sample material to the Sohxlet extraction procedure to ensure that the wipes are clean, to the degree necessary, prior to their use. Sorbent material composed of synthetic material is generally not acceptable due to potential incompatibilities with solvents used in the wipe sampling process.

Wipes should be prepared so that each pad is no more than several inches on a side and is composed of several layers of material, i.e., a four-inch square of single layer material that is folded in half, then folded in half again.

3.1.2 Wipe Solvent

Wipes are saturated with a solvent that is appropriate for the objectives of the study. Typical solvents used for wiping include methylene chloride, hexane, isopropanol and analyte-free water. Any of the organic solvents may be used for wipe sampling for organic compounds, as well as metals or other inorganic analytes. If metals or other inorganic analytes are the sole contaminant of concern, analyte-free water is acceptable.

- Note: Sampling personnel should be aware of hazards associated with the selected solvent and should take precautions to prevent any skin contact or inhalation of these solvents. The PPE worn by the field investigator must be compatible with the solvent used to saturate the wipe material.

3.1.3 Containerization

After the wipe pads have been prepared and wetted with the appropriate solvent or analyte-free water, they are placed in 8-ounce or similar size glass sample containers. Normally three pads are prepared and placed in each sample container. All persons involved in the preparation and use of wipe pads should always ensure that the sample container lids are securely tightened to prevent evaporation of the solvent used to saturate the pads.

3.2 Surface Area

Wipe samples are typically collected from an area measuring 100 cm^2 (10 cm X 10 cm square). This area is usually defined using a disposable template made of either aluminum foil or thin cardboard, such as poster board, which is either held in place by the sampler or other sample team member or is securely taped in place.

3.3 Sample Collection Procedures

The following procedures should be followed when collecting wipe (contaminated surface) samples:

1. Remove a prepared wipe pad from the sample container using either previously cleaned stainless steel tongs, tweezers or gloved hands. If the pad appears to be saturated to the point of excessive dripping, squeeze excess solvent from the pad back into the sample container before proceeding to Step 2.

2. Using either the tongs, tweezers or gloves, begin in one corner of the template and wipe in one direction, moving across the templated area. If the area is heavily contaminated and the wipe becomes extremely soiled, refold the wipe, placing the dirty side inside, exposing the clean side. Be careful not to touch any of the contaminated surface of the wipe while re-folding. Re-wipe the templated area using the same pattern but executed in a direction perpendicular to the initial wipe. Place the soiled wipe back in the sample container.

3. Pick up another wipe and repeat Steps 1 and 2.

4. This procedure is repeated until the area is free of visible contamination or no more wipes remain. Three wipe pads are normally adequate to completely remove visible contamination.

5. After all wipe pads have been used and placed in the sample container, make sure the lid is tightly closed.

3.4 Sampling Strategy

All surfaces and areas selected for sampling should be based on the study's objectives. Typically, when interiors of building or other structures are sampled, wipes from horizontal surfaces, where greater amounts of dust collect, will have higher reporting values than vertical surfaces, such as walls, in the same area.

3.5 Reporting and Usability of Data

Analytical results for wipe sampling are not reported as true concentrations, as are most types of samples. They are reported simply as a mass or weight of material present on the wipes that were analyzed. Wipe sampling data, therefore, can be used for two purposes. One is to determine what compounds are present at a give location or on a particular surface. The other is to determine the relative degree of contamination between different areas, surfaces or other locations within the investigated area.

A typical sample result for a routine semi-volatile organic or metals sample would be reported by the laboratory as XX.X ug per wipe(s). The project leader is normally responsible for taking this number and relating it to the templated surface area. As most wipe sampling is conducted using a 100 cm^2 template, the number reported by the laboratory is usually reported, in the site investigation report, as XX.X ug/100 cm^2. Alternatively, the laboratory value may be divided by 100 and reported as XX.X ug/cm^2.

3.6 Coordination With the Laboratory

All requests for support from the Region 4 Analytical Support Branch for wipe preparations and wipe analysis should be made well in advance of the scheduled sampling event. This is particularly true if wipe pad material needs to be subjected to the Sohxlet extraction procedure before they are placed in the sample containers prior to mobilizing to the field. EIB personnel are responsible for supplying the 8-ounce sample containers to the appropriate Analytical Support Branch staff if Sohxlet extraction is required.