

<b>Region 4</b> <b>U.S. Environmental Protection Agency</b> <b>Laboratory Services and Applied Science Division</b> <b>Athens, Georgia</b>	
<b>Operating Procedure</b>	
<b>Title: Packing, Marking, Labeling and Shipping of Environmental and Waste Samples</b>	<b>ID: FSBPROC-209-R6</b>
<b>Issuing Authority: Field Services Branch Chief</b>	
<b>Effective Date: May 31, 2024</b>	<b>Next Review Date: May 31, 2028</b>
<b>Method Reference: N/A</b>	<b>SOP Author: Paula Whiting</b>

### **Purpose**

Regulations for packing, marking, labeling, and shipping of dangerous goods by air transport are promulgated by Department of Transportation under 49 CFR, Subchapter C, Hazardous Materials Regulations, and the International Air Transport Authority (IATA), which is equivalent to United Nations International Civil Aviation Organization (UN/ICAO). Transportation of hazardous materials (dangerous goods) by EPA personnel is covered by EPA Order 1000. This document describes general and specific procedures, methods, and considerations to be used and observed by LSASD field investigators when packing, marking, labeling, and shipping environmental and waste samples to ensure that all shipments are in compliance with the above regulations and guidance.

### **Scope/Application**

The procedures contained in this document are to be used by field personnel when packing, marking, labeling, and shipping environmental samples and dangerous goods by air transport. Samples collected during field investigations or in response to a hazardous materials incident must be classified prior to shipment, as either environmental or hazardous materials (dangerous goods) samples.

In general, environmental samples include drinking water, most groundwater and ambient surface water, soil, sediment, treated municipal and industrial wastewater effluent, biological specimens, or any samples not expected to be contaminated with high levels of hazardous materials. Samples collected from process wastewater streams, drums, bulk storage tanks, soil, sediment, or water samples from areas suspected of being highly contaminated may require shipment as dangerous goods.

Government employees transporting samples or hazardous materials (i.e., preservatives or waste samples) in government vehicles are not subject to the requirements of this section in accordance with 49 CFR 171.1(d)(5). EPA contractors, however, are not covered by this exemption and may not transport these materials without full compliance with 49 CFR. Mention of trade names or commercial products in this operating procedure does not constitute endorsement or recommendation for use.

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## **1 General Information**

### **1.1 Documentation/Verification**

This procedure was prepared by persons deemed technically competent by LSASD 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 LSASD local area network (LAN). The Document Control Coordinator (DCC) is responsible for ensuring the most recent version of the procedure is placed on the LAN and for maintaining records of review conducted prior to its issuance.

### **1.2 General Precautions**

#### **1.2.1 Safety**

Proper safety precautions must be observed when packing, marking, labeling, and shipping environmental or waste samples. Refer to the LSASD Safety, Health, and Environmental Management Program (SHEMP) Procedures and Policy Manual and any pertinent site-specific Health and Safety Plans (HASPs) for guidelines on safety precautions. These guidelines, however, should only be used to complement the judgment of an experienced professional. Minimally, gloves and safety glasses should be utilized when completing work covered in this operating procedure.

#### **1.2.2 Training**

Employees required to handle samples to be shipped as dangerous goods shall be trained in DOT hazardous materials regulations for bulk or non-bulk ground shipments and IATA Dangerous Goods Regulations (DGR) to ship hazmat/dangerous goods by passenger and/or cargo aircraft as required in the 49 CFR Hazardous Materials Regulations (HMR). The employees shall receive certifications in Hazmat Ground Shipper Certification (DOT) and Hazmat Air Shipper Certification (IATA). Under DOT rules, all hazmat employee training must be repeated at least every three years. For IATA, training shall be repeated every two years.

## **2 Shipment of Dangerous Goods**

**2.1** The project leader is responsible for determining if samples collected during a specific field investigation meet the definitions for dangerous goods. If a sample is collected of a material that is listed in the Dangerous Goods List, Section 4.2, IATA, then that sample must be identified, packaged, marked, labeled, and shipped according to the instructions given for that material. If the composition of the collected sample(s) is unknown, and the project leader knows or suspects that it is a regulated material (dangerous goods), the sample may not be offered for air transport. If the composition and properties of the waste sample or highly

contaminated soil, sediment, or water sample are unknown, or only partially known, the sample may not be offered for air transport.

In addition, the shipment of pre-preserved sample containers or bottles of preservatives (e.g., NaOH pellets, HCL, etc.) which are designated as dangerous goods by IATA is regulated. Shipment of nitric acid (HNO<sub>3</sub>) is strictly regulated. Consult the IATA Dangerous Goods Regulations for guidance. ***Dangerous goods must not be offered for air transport by any personnel except LSASD's dangerous goods shipment designee or other personnel trained and certified by IATA in dangerous goods shipment.***

### 3 Shipment of Environmental Samples

3.1 Guidance for the shipment of environmental laboratory samples by personnel is provided in a memorandum dated March 6, 1981, subject "Final National Guidance Package for Compliance with Department of Transportation Regulations in the Shipment of Laboratory Samples". By this memorandum, the shipment of the following unpreserved samples is not regulated:

- 3.1.1 Drinking water
- 3.1.2 Treated effluent
- 3.1.3 Biological specimens
- 3.1.4 Sediment
- 3.1.5 Water treatment plant sludge
- 3.1.6 POTW sludge

3.2 In addition, the shipment of the following preserved samples is not regulated, provided the amount of preservative used does not exceed the amounts found in 40 CFR 136.3 or the USEPA Region 4 Laboratory Services Branch Laboratory Operations and Quality Assurance Manual (LOQAM), Most Recent Version. This provision is also discussed in correspondence between DOT and EPA (Department of Transportation, Letter from Edward T. Mazzullo, Director, Office of Hazardous Materials Standards, to Henry L. Longest II, Acting Assistant Administrator, USEPA, Ref No.: 02-0093, February 13, 2003). It is the shipper's (individual signing the air waybill) responsibility to ensure that proper amounts of preservative are used:

- 3.2.1 Drinking water
- 3.2.2 Ambient water
- 3.2.3 Treated effluent
- 3.2.4 Biological specimens
- 3.2.5 Sediment
- 3.2.6 Wastewater treatment plant sludge
- 3.2.7 Water treatment plant sludge

- 3.3** Samples determined by the project leader to be in these categories are to be shipped using the following protocol, developed jointly between USEPA, OSHA, and DOT. This procedure is documented in the "Final National Guidance Package for Compliance with Department of Transportation Regulations in the Shipment of Environmental Laboratory Samples."
- 3.4** Untreated wastewater and sludge from Publicly Owned Treatment Works (POTWs) are considered to be "diagnostic specimens" (not environmental laboratory samples). However, because they are not considered to be etiologic agents (infectious) they are not restricted and may be shipped using the procedures outlined below.
- 3.5** Environmental samples should be packed prior to shipment by air using the following procedures:
- 3.5.1** Allow sufficient headspace (ullage) in all bottles (except VOA containers with a septum seal) to compensate for any pressure and temperature changes (approximately 10 percent of the volume of the container).
  - 3.5.2** Ensure that the lids on all bottles are tight (will not leak).
  - 3.5.3** Place bottles in separate and appropriately sized polyethylene bags and seal the bags. If available, the use of Whirl-Pak bags is preferable; if unavailable, seal regular bags with tape (plastic electrical tape).
  - 3.5.4** Select a sturdy cooler in good repair. Secure and tape the drain plug with fiber or duct tape inside and outside. Line the cooler with a large heavy duty plastic bag.
  - 3.5.5** Place cushioning/absorbent material in the bottom of the cooler and then place the containers in the cooler with sufficient space to allow for the addition of cushioning between the containers.
  - 3.5.6** If required by the method for preservation, put "blue ice" (or ice that has been "double bagged" in heavy duty polyethylene bags and properly sealed) on top of and/or between the containers. Fill all remaining space between the containers with absorbent material.
  - 3.5.7.** If the samples are preserved with ice, include a temperature blank for the laboratory to verify that the samples are received at the appropriate temperature.
  - 3.5.8** Securely fasten the top of the large garbage bag with tape (preferably plastic electrical tape).

- 3.5.9** Place the Chain-of-Custody Record or the CLP Traffic Report Form (if applicable) into a plastic bag and tape the bag to the inner side of the cooler lid.
- 3.5.10** Close the cooler and securely tape (preferably with fiber tape) the top of the cooler shut. Chain-of-custody seals should be affixed to the top and sides of the cooler within the securing tape so that the cooler cannot be opened without breaking the seal.

## 4 References

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

Title 40 Code of Federal Regulations (CFR), Pt. 136.3, Identification of Test Procedures, July 1, 2001. See Table II, Footnote 3.

Title 49 CFR, Pt. 171.1(d)(5), Applicability of Hazardous Materials Regulations (HMR) to Persons and Functions.

United States Department of Transportation (US DOT). 2003. Letter from Edward T. Mazzullo, Director, Office of Hazardous Materials Standards, to Henry L. Longest II, Acting Assistant Administrator, USEPA, Ref No. 02-0093, February 13, 2003.

US Environmental Protection Agency (US EPA) Order 1000.18, February 16, 1979.

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 (LSASD), Athens, GA.

US EPA. Laboratory Services Branch Laboratory Operations and Quality Assurance Manual (LOQAM). Region 4 LSASD, Athens, GA (LSBPROC-120, Most Recent Version).

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

## 5 Revision History

This table shows the most recent changes to this controlled document. For previous revision history information, archived versions of this document are maintained by the LSASD Quality Assurance Coordinator on the LSASD local area network (LAN).

History	Effective Date
<p>FSBPROC-209-R6, <i>Packing, Marking, Labeling and Shipping of Environmental and Waste Samples</i>, replaces LSASDPROC-209-R5</p> <p><b>General:</b> Corrected any typographical, grammatical, and/or editorial errors.  <b>Section 1.2.1:</b> Included recommended PPE.  <b>Section 1.2.2:</b> New section added to include relevant training requirements.</p>	<p>May 31, 2024</p>
<p>Replaced Chief with Supervisor; General formatting revisions.</p>	<p>April 22, 2023</p>
<p>LSASDPROC-209-R4 <i>Packing, Marking, Labeling and Shipping of Environmental and Waste Samples</i>, replaces LSASDPROC-209-R3</p> <p>Reformatted document to Divisional Format</p>	<p>February 23, 2020</p>
<p>LSASDPROC-209-R3, <i>Packing, Marking, Labeling and Shipping of Environmental and Waste Samples</i>, replaces LSASDPROC-209-R2.</p> <p><b>Cover Page:</b> Changes made to reflect reorganization of LSASD from two field branches to one: John Deatrick listed as the Chief, Field Services Branch. The FQM was changed from Liza Montalvo to Hunter Johnson.</p> <p><b>Revision History:</b> Changes were made to reflect the current practice of only including the most recent changes in the revision history.</p>	<p>February 4, 2015</p>
<p>LSASDPROC-209-R2, <i>Packing, Marking, Labeling and Shipping of Environmental and Waste Samples</i>, replaces LSASDPROC-209-R1.</p>	<p>April 20, 2011</p>
<p>LSASDPROC-209-R1, <i>Packing, Marking, Labeling and Shipping of Environmental and Waste Samples</i>, replaces LSASDPROC-209-R0.</p>	<p>November 1, 2007</p>
<p>LSASDPROC-209-R0, <i>Packing, Marking, Labeling and Shipping of Environmental and Waste Samples</i>, Original Issue</p>	<p>February 05, 2007</p>