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Universal Waste – Mercury Containing Equipment Management Practice

1.0 Purpose / Background

On May 11, 1995, EPA promulgated a final rule (40 CFR 273) establishing streamlined collection and management requirements for universal waste batteries, pesticides and mercury-containing equipment. Mercury-containing equipment subject to this rule includes thermostats; medical devices such as thermometers, sphygmomanometers, esophageal dilators; and manometers and other devices containing mercury as a part integral to their operation.

2.0 Scope

This practice applies all employees, faculty, and students at Duke University, the Duke University Medical Center, and the Duke University Health Systems.

3.0 Procedures

3.1. General Procedures

3.1.1 Facilities Management and Medical Center Engineering and Operations – Personnel responsible for the replacement of thermostats or mercury-containing equipment used in facilities operations and maintenance shall:

- Remove thermostats or other mercury-containing equipment;
- Place such equipment in a box or an appropriate container ;
- Mark the container with “Waste-mercury Containing Equipment”, the date, and the number of devices in the container; and
- Call OESO Environmental Program Division to schedule a pick-up.

3.1.2 OESO EP personnel collect the container(s) and transport them to the OESO storage facility for packing for shipment to an approved recycler.

3.2 Requirements for Managing Mercury-Containing Equipment

3.2.1 Waste Management – Mercury-containing equipment must be managed in a way that prevents releases of any universal waste or component of a universal waste to the environment in the following manner:

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(1) *Handling* – waste mercury-containing equipment must be placed into containers that are structurally sound, compatible with the contents in the device, lack evidence of leakage, spillage, or damage that could cause leakage. Containers must remain closed except when devices are added to or removed from the container.

(2). *Removal of Ampules* – Mercury-containing ampules may be removed from universal waste mercury-containing equipment provided that:

- a. Ampules are removed and handled in a manner designed to prevent breakage,
- b. Ampules are removed over or in a containment device,
- c. A mercury clean-up system is readily available to immediately transfer any mercury from spills or leaks of broken ampules from the containment device to a container,
- d. The area where ampules are removed is well ventilated and monitored to assure compliance with applicable OSHA exposure levels,
- e. Employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures,
- f. Ampules are stored in closed, non-leaking containers that are in good condition,
- g. Ampules are packed with packing material adequate to prevent breakage.

(3). *Removal of Original Housing* - The open original housing holding the mercury from universal waste mercury-containing equipment may be removed provided that:

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a. The housing that holds the mercury is immediately sealed with an air-tight seal to prevent the release of mercury, and

b. All requirements for removing and managing ampules are followed.

(4). Waste Determination - Whenever mercury-containing ampules are removed or mercury from mercury-containing equipment is sealed in its original housing, a determination of hazardous waste characteristics must be made for:

a. mercury or clean-up residues resulting from spills,

b. Other solid waste generated as a result of the removal of mercury-containing ampules or housings.

3.2.2 Labeling and Marking - Universal Waste Mercury-Containing Equipment or the container holding such equipment must be labeled and clearly marked with one of the following:

“Universal Waste - Mercury-Containing Equipment”
“Waste Mercury-Containing Equipment”
“Used Mercury-Containing Equipment”

Or, if thermostats or containers holding thermostats:

“Universal Waste - Mercury-Containing Thermostat”
“Waste Mercury-Containing Thermostat”
“Used Mercury-Containing Thermostat”

Or, if thermometers or containers holding thermometers:

“Universal Waste - Mercury-Containing Thermometer”
“Waste Mercury-Containing Thermometer”
“Used Mercury-Containing Thermometer”

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3.2.3 Accumulation Time Limits – Mercury-containing equipment may be accumulated for no longer than one year from the date that they are generated or received by OESO. The length of time that the universal waste battery has been accumulated may be demonstrated by:

- (1) Placing the universal waste in a container and marking or labeling the container with the earliest date than any individual waste in the container became a waste or was received;
- (2) Marking or labeling the individual item with the date it became a waste or was received; or
- (3) Maintaining an inventory system that identifies the date the universal being accumulated became a waste or was received.

3.2.4 Employee Training – All employees who handle universal wastes must be thoroughly familiar with proper waste handling and emergency procedures, relative to their responsibilities during normal operations and during emergencies.

3.2.4 Response to Releases – A handler of universal waste must immediately contain all releases of universal wastes and other residues from universal wastes. The handler must determine whether the material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with applicable requirements.

3.2.5 Off-site Shipment – Universal waste can be sent to or transported only to another universal waste handler or a destination facility.

If the universal waste offered for shipment meets the definition of hazardous materials under 49 CFR 171 – 180, it must be packaged, labeled, marked, placarded, and shipped with proper shipping papers in accordance with applicable Department Of Transportation regulations (49 CFR parts 172 – 180).

3.2.6 Tracking Universal Waste Shipments –

- (1) Shipments Off-site – The handler of universal waste must keep a record of each shipment sent to other facilities. The record may be in the form of a log, invoice, manifest, bill of lading or other shipping documents. The record must include the following:

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- a. The name and address of the universal waste handler and the destination facility;
- b. The quantity of each type of universal waste sent; and
- c. The date the shipment left the facility.

(2). Record Retention – The handler of universal waste must retain shipping records for a least three years from the date the shipment left the facility.

4.0 Roles & Responsibilities

1. Facilities Management and Engineering & Operations personnel are responsible for:

- Removal or replace mercury-containing equipment;
- Collection of mercury-containing equipment ;
- Packaging mercury-containing equipment into structurally sound containers;
- Marking the container with “Universal Waste – Mercury-Containing Equipment”, the date, and the number of pieces of equipment; and
- Requesting pick-up from OESO Environmental Programs.

OESO EP Personnel are responsible for:

- Collection and management of the of mercury-containing equipment;
- Sorting and containerizing mercury-containing equipment by type;
- Arranging for the shipment and recycling with an approved recycling contractor;
- Ensuring that all containers are sent for recycling within one year from the date a container(s) was started;
- Maintaining disposal documents in accordance with state and federal regulations; and
- Spill response.

5.0 Training

Employees with universal waste responsibilities shall receive training appropriate to their specified duties. Training records shall be maintained by the employee’s supervisor or designated individual.

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6.0 Performance Monitoring

OESO will conduct periodic audits to assess compliance with the local, state, and federal regulations. Any deficiencies will be noted in writing and a plan will be presented to bring the program into compliance.

7.0 Recordkeeping

7.1 Bills of Lading or other transportation records will be stored at OESO for at least 3 years.

7.2 Any inspection and corrective action reports prepared by OESO will also be kept on record at OESO.

7.3 Training records will be maintained by OESO and/or the operating department.

8.0 References

8.1. Standards

40 CFR 773 - Standards for Universal Waste Management

9.0 Definitions

Container - Structurally sound box that is capable of preventing leaks/releases from occurring.

Mercury-Containing Equipment - A device or part of a device, excluding batteries and lamps that contain elemental mercury integral to its function

Thermostat - a temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273.13(c)(2) or 273.33(c)(2).

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