

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

Universal Waste Management Plan

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Division Vice President for Research and Economic Development-Office of Environmental Health and Safety

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Purpose The purpose of this manual is to provide rules and guidelines for recycling, treatment, and disposal of universal hazardous waste.

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Introduction

Universal wastes are common, everyday items with a hazardous component. Universal wastes include items such as: batteries, mercury-containing devices, certain pesticides and lamps. Although electronics and ballasts are not considered a universal waste they are managed the same as the above listed items. Although handlers of universal wastes must meet less stringent standards for storing, transporting, and collecting wastes, the wastes must comply with full hazardous waste requirements for final recycling, treatment, or disposal. This approach helps to remove these wastes from municipal landfills and incinerators, providing stronger safeguards for public health and the environment.

Regulatory Authority

The Environmental Protection Agency under 40 CFR 273 (Standards for Universal Waste Management) and the Alabama Department of Environmental Management (ADEM) 335-14-11, Requirements for Universal Waste Management), regulate universal waste.

Roles and Responsibilities

Deans, Directors, Department Chairs, and Administrators

1. Require faculty, staff, and students to adhere to the requirements listed in this plan.
2. Require faculty, staff, and students who handle or generate Universal Waste to receive Universal Waste Management Training and Hazardous Waste Management Training.
3. Require inspections of all locations where Universal Waste is stored to ensure it is being managed properly.

Universal Waste Handlers

1. Read and understand the Universal Waste Management Plan.
2. Take the Universal Waste Management Training.
3. Take the Hazardous Waste Management Training.
4. Inspect locations where Universal Waste is stored to ensure it is being managed properly.
5. Properly label, store, use, and dispose of Universal Waste as described in the Universal Waste Management Training.

Universal Waste Coordinator

1. Maintain appropriate and current hazardous waste certifications.
2. Maintain applicable and relevant Universal Waste Management Training content.
3. Audit the Universal Waste Management Plan at least annually.

4. Review laws and regulations for changes impacting Universal Waste.
5. Ensure proper reporting to the Environmental Protection Agency and the Alabama Department of Environmental Management (ADEM)

Universal Waste Generation and Identification

The success of the Universal Waste Management Program begins with how well individuals that generate universal wastes are aware of their responsibilities. Universal wastes must be properly packaged, labeled, and then stored at the UAH Universal Waste Storage Building. If in doubt with any aspect of the waste identification, reference uah.edu/oehs for current contact numbers.

What is the Universal Waste Rule?

The Universal Waste Rule was established to streamline requirements for certain widely generated hazardous wastes.

Criteria for waste to be included in the Universal Waste Rule are:

1. The waste is generated in a wide variety of settings
2. The waste is generated by a vast community
3. The waste may be present in significant volumes in non-hazardous management systems

The federal universal waste regulations include hazardous waste batteries, mercury-containing equipment, pesticides, and lamps. To be covered under the Universal Waste Program, these items must first be identified as hazardous waste. Items that still have product value and that are still being used are not wastes and, therefore, are not subject to RCRA. In addition, wastes excluded from the RCRA definition of solid or hazardous waste is not subject to the Universal Waste Program.

What wastes are covered by this rule?

Only material identified as a hazardous waste that meets the definition of **battery, mercury-containing equipment, pesticide, or lamp** in 40 CFR Part 273 can be managed under the universal waste regulations.

Universal Waste Handler Status: Small Quantity Handlers of Universal Wastes

A universal waste handler is someone who generates universal wastes; receives universal wastes from other universal waste handlers; accumulates universal wastes; or sends universal wastes to another handler, a destination facility, or a foreign destination. UAH is a small quantity universal waste handler (SQUWH). As a small quantity handler of universal wastes, UAH is allowed to store less than 5,000 kilograms (11,000 pounds) of universal wastes on-site at any time and no amount of universal waste for longer than one year.

Regulatory Requirements for SQUWH

1. Are not required to notify of universal waste handling activity but notify during our annual filing of ADEM form 8700;
2. Must manage universal waste in a manner that prevents release to the environment;
3. Must label or mark the containers with the words "universal waste batteries", "waste batteries", "waste pesticides", "waste mercury lamps" or similar wording;
4. May accumulate universal wastes for no more than one year from the date the waste is first generated or received, and must be able to demonstrate how long the waste has been stored;
5. Must inform employees of proper handling and emergency procedures associated with the type of waste at the facility; and
6. Must contain releases of universal waste and manage the recovered waste appropriately.
7. Manifest and other tracking documents are not required for Small Quantity Handlers of universal waste. If the waste is hazardous waste material as defined by 49 CFR Parts 171-180, appropriate labeling, placarding, and shipping papers must be utilized.

Universal Waste Accumulation Sites

Universal Waste Central Accumulation Area: Universal waste mercury containing devices, pesticides, universal waste batteries, and lamps, are stored at this location.

Address:

301 Sparkman Drive
Universal Waste Storage Building
Huntsville, AL 35899

Universal Waste Management Requirements

There are a few general requirements for the management of universal wastes:

- Universal wastes must not be disposed on site.
- Universal wastes must not be treated or diluted.
- Releases must be prevented.
- An enclosed, secure storage area for the wastes must be designated with a sign saying "Universal Waste Storage Area."
- Place the universal waste in a container and label the container with the earliest date that any universal waste in the container became a waste or was received.
- Containers holding universal wastes must be closed while not being used and securely closed by taping with packing tape when full.
- Mark each individual item of universal waste with the date it became a waste or was received.
- As a SQUWH, UAH doesn't require an EPA identification number.

- Personnel handling universal waste are required to undergo necessary training.

Universal Waste Labeling Requirements

The universal waste or the container of universal waste must be labeled or clearly marked with the words "Universal Waste", the type of universal waste inside the container, and the date waste was first added to the container. Refer to the Universal Waste Label in Appendix A.

Handling of Universal Waste

Batteries

Battery means a device consisting of one or more electrically connected electrochemical cells which are designed to receive, store, and deliver electric energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed.

A small quantity handler of universal waste must contain any universal waste battery that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container. The container must be closed, structurally sound, compatible with the contents of the battery, and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. If a battery shows evidence of leakage or damage that could cause leakage, you must place the battery in a closed, structurally sound container.

UAH may conduct the following activities, so long as the casing of each individual battery cell is not breached and remains intact and closed:

- Sort the batteries by type;
- Mix battery types in one container;
- Discharge batteries to remove the electric charge;
- Regenerate used batteries;
- Disassemble batteries or battery packs into individual batteries or cells;
- Remove batteries from consumer products; and
- Remove the electrolyte from batteries (cells may be opened to remove the electrolyte but must be immediately closed after removal).

If electrolyte from batteries, or other solid waste (e.g., battery pack materials, discarded consumer products) is generated as a result of the activities listed above, it must be determined whether the electrolyte and/or other solid waste exhibit a characteristic of hazardous waste identified in 40 CFR part 261, subpart C.

Pesticides

This category includes hazardous waste pesticides that are either suspended and recalled under Section 6 of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), suspended or cancelled as part of a voluntary recall by the registrant or collected in waste pesticide programs.

Other waste pesticides are not Universal Wastes. Non-universal waste pesticide wastes are managed under hazardous waste regulations if they are listed or exhibit a characteristic.

A small quantity handler of universal waste must manage universal waste pesticides in a way that prevents releases of any universal waste or component of a universal waste to the environment. The universal waste pesticides must be contained in one or more of the following:

1. Universal waste pesticides must be containerized in a container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions;
2. Over-packed in a waste container that is compatible.

Thermostats and Other Mercury-containing Equipment

Mercury-containing equipment consists of devices, items, or articles (excluding batteries and lamps) that contain varying amounts of elemental mercury that is integral to their functions. Some commonly recognized devices are thermostats, mercury switches, such as light switches in automobiles. Universal waste thermostats must be managed in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

As a small quantity handler of universal waste UAH must manage universal waste mercury-containing equipment in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

1. Must place in a container any universal waste mercury-containing equipment with non-contained elemental mercury or that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. The container must be closed, structurally sound, compatible with the contents of the device, must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions, and must be reasonably designed to prevent the escape of mercury into the environment by volatilization or any other means.
2. UAH may remove mercury-containing ampules from universal waste mercury-containing equipment provided it:
 - a. Removes and manages the ampules in a manner designed to prevent breakage of the ampules;
 - b. Removes the ampules only over or in a containment device (e.g., tray or pan sufficient to collect and contain any mercury released from an ampule in case of breakage);
 - c. Ensures that a mercury clean-up system is readily available to immediately transfer any mercury resulting from spills or leaks from broken ampules from that containment device to a container that meets the requirements of 40 CFR 262.15;
 - d. Immediately transfers any mercury resulting from spills or leaks from broken ampules from the containment device to a container that meets the

- requirements of 40 CFR 262.15;
- e. Ensures that the area in which ampules are removed is well ventilated and monitored to ensure compliance with applicable OSHA exposure levels for mercury;
 - f. Ensures that employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures, including transfer of mercury from containment devices to appropriate containers;
 - g. Stores removed ampules in closed, non-leaking containers that are in good condition;
 - h. Packs removed ampules in the container with packing materials adequate to prevent breakage during storage, handling, and transportation;

Lamps

Lamps are defined as the bulb or tube portion of an electric lighting device. Lamps can exhibit the toxicity characteristic for some heavy metals (i.e., mercury, lead, cadmium). Examples of universal waste lamps include incandescent, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium and metal halide lamps.

Universal waste lamps must be managed in a way that prevents releases of any universal waste or hazardous waste to the environment, as follows:

- Lamps must be placed in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. The original packaging, if sound, meets these requirements. Such containers and packages must remain closed and must lack evidence of damage that could cause leakage.
- Any lamp that shows evidence of breakage, leakage, or damage that could cause the release of mercury must be immediately cleaned up and placed in a container. Containers must be kept closed, be structurally sound, be compatible with the contents of the lamps and must lack evidence of leakage, spillage or damage that could cause leakage or releases of mercury.

The intentional crushing or breaking of spent mercury-containing lamps, including the use of drum top crushing devices, falls within the definition of "treatment" in accordance with 40 CFR 260.10. This treatment activity is prohibited by both the federal and state universal waste regulations.

Broken Fluorescent Lamp Clean Up Guidelines

Only trained, authorized personnel may perform the clean-up of broken fluorescent light bulbs.

Clean-up Procedures

The following procedures are to be used in the event that up to four 4-foot fluorescent light tubes, two 8-foot fluorescent light tubes, or eight compact fluorescent light bulbs, break at one time. The generating department with the assistance of the OEHS will hire an environmental

contractor to manage the clean-up of broken bulbs in excess of these quantities.

1. Gather clean up materials or a pre-prepared fluorescent bulb clean up kit. This must include safety glasses, heavy gloves (use nitrile, natural rubber, or PVC that cannot be easily cut), disposable shoe covers, a dust pan, a squeegee, small pieces of cardboard with at least one straight edge, paper towels, a small spray bottle filled with water, air-tight sealable 6-mil plastic disposable bags or a rigid plastic container with a tight-fitting lid, a flashlight, duct tape, and mercury absorbent powder (commercially available from various safety distributors).
2. Put on personal protective equipment (gloves, disposable shoe covers, and safety glasses).
3. Secure the area around the breakage to keep broken bulb debris from being tracked to other areas. Close doors and restrict access to the room until clean-up has been completed.
4. Turn off all fans and air conditioning systems to prevent mercury vapors from being circulated to other areas. Open a window for ventilation.
5. Wait 5 minutes before beginning. Never use a vacuum cleaner to clean a mercury spill and never flush mercury down the drain.
6. Hard Flooring: Begin removing broken glass with dustpan, cardboard, or squeegee. Work from the outer edge of the debris area, moving in towards the center. Place the broken pieces in a disposal bag or container. Shine a flashlight to find glass fragments. Use duct tape to pick up glass fragments. Avoid skin contact.
7. Carpeted Areas: Fold or roll the carpet so that mercury debris is trapped inside and place the carpet in a plastic bag for disposal. If breakage is on wall-to-wall carpet, the Facilities and Operations work order desk will contact the OEHS for clean-up assistance.
8. Sprinkle mercury absorbent powder on the breakage site to stop the release of vapors. Mist powder with water from a spray bottle. Wipe up the powder with a moist paper towel and place in a sealed container with other contaminated debris.
9. Carefully remove gloves by turning them inside out to contain any powder on the surface of the gloves. Place all debris, clean up materials, tools and equipment, and any contaminated clothing in a double bag and place in a sealed container and keep in a safe place for pickup. Wash skin using soap and water following clean up.
10. Contact the Office of Environmental Health and Safety to remove waste.

Fluorescent Light Ballasts

Used fluorescent light ballasts and capacitors may also be disposed of as Universal Waste if stored and labeled properly. Ballasts manufactured after 1978 are usually marked "Non-PCB" and may be handled as non-regulated solid waste. Many older ballasts contain PCB, polychlorinated biphenyl, a known human carcinogen or the PCB replacement DEHP, which is a probable human carcinogen. As long as these were once part of fluorescent light fixtures, they can be classed as Universal Waste. (Similar items that did not come from fluorescent fixtures cannot be classed as Universal Waste. In fact, disposal of non-fluorescent electrical components becomes very difficult if they contain more than 50 ppm (parts per million) of

PCB.) Leaking ballasts and capacitors, whether they contain PCB or not, must be handled with extreme care, using chemically impervious gloves. ANY OIL FROM THESE DEVICES MUST NOT BE ALLOWED TO CONTACT THE SKIN. They should be stored, labeled, and disposed as hazardous waste.

Packing PCB Ballasts for Disposal

- Ballasts are packed, according to PCB regulations, in 55-gallon drums for transportation.
- One drum holds 150 to 300 ballasts depending on how tightly the ballasts are packed.
- Fill void space with an absorbent packing material (sawdust, kitty litter, vermiculite, soil, etc.) for safety reasons.
- Label drums according to Toxic Substances Control Act and Department of Transportation regulations.
- Note that tightly packed drums may weigh more than 1,000 pounds, which may present a safety risk, particularly when moving the drum for loading or unloading.

Transportation

Transporters of leaking PCB ballasts and PCB contaminated waste need to be licensed hazardous waste transporters. All PCB-containing ballasts must be shipped using a hazardous waste manifest and transported by a hazardous waste transporter registered by the EPA to transport PCBs.

Record Keeping

To track transported leaking PCB ballasts and PCB-contaminated waste, generators must prepare a hazardous waste manifest. The manifest identifies the type and quantity of waste, the generator, the transporter and its ultimate destination.

Cathode Ray Tubes (CRTs)

CRTs are vacuum tubes that constitute the video display components of computer monitors, TVs, oscilloscopes, and other medical and automotive displays. Significant quantities of lead are used to make color cathode ray tubes, with the average TV/monitor containing four pounds of lead (depending on the size and make). The large quantity of lead causes the disposal of CRTs to be regulated by the Environmental Protection Agency (EPA). The other electronic waste that is of concern is circuit boards. Most circuit boards will contain lead and sometimes chromium, which, like the CRTs, causes their disposal to be regulated by the EPA. Circuit boards can be found in a wide variety of equipment, particularly computer CPUs, keyboards, and other digital devices. In accordance with ADEM Admin. Code rule 335-14-2-.01(4)(a)22, used, intact CRTs are not solid waste unless they are disposed or accumulated speculatively. Contact Central Receiving Services for the disposal of CRTs.

Waste Antifreeze

Ethylene glycol and propylene glycol are the common constituents of antifreeze. Neither of these is regulated as a hazardous waste if not used in an automotive application. During

automotive use, antifreeze chemically breaks down and becomes acidic, corroding the engine's cooling system. This corrosion causes the antifreeze to become contaminated with lead particles. Additionally, the antifreeze may become contaminated with gasoline, which contains benzene.

Used antifreeze must be stored in containers. The container must be closed, structurally sound, compatible with the contents, must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions, and must be reasonably designed to prevent the escape of antifreeze into the environment by volatilization or any other means.

Off-Site Shipment/Transportation

Universal waste may only be sent to another universal waste handler or a Transfer, Storage, Disposal, or Recycling Facility (TSDRF). Prior to shipping universal waste off-site, the generator of the waste must obtain approval from the destination facility. If a universal waste meets the definition of a hazardous material under US Department of Transportation regulations, the handler must comply with the DOT requirements set forth in 49 CFR Parts 172 through 180.

Record Keeping and Tracking

The handler must keep a record of each shipment. The record can be in the form of a log sheet, an invoice, a manifest, a bill of lading, or another type of shipping document. The record must include the following information:

- The name and address of the universal waste handler;
- Destination facility;
- Quantity of each type of universal waste; and
- Date of shipment.

The Office of Environmental Health and Safety maintains all the documentations pertaining to the disposal of universal wastes. These records will be kept for at least three years from the date of shipment.

Responding to Releases: Standards for SQUWH

As a small quantity handler of universal waste, UAH must immediately contain all releases of universal wastes and other residues from universal wastes. UAH must also determine whether any material resulting from the release is hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable requirements of EPA and ADEM. Waste must be packed, stored, managed and disposed according to EPA and ADEM regulations.

Employee Training

A small quantity waste handler must ensure that all employees who manage or handle universal waste are thoroughly familiar with waste handling methods and emergency procedures applicable to the waste they are handling, relative to their responsibilities during normal

University operations and emergencies. Additionally, employees who handle or manage universal waste pesticides must be trained in accordance to the requirements of 40 CFR 265.16.

UAH personnel who manage universal waste are trained in accordance with the requirements of the Hazardous Waste Regulations. This training meets the training requirements for hazardous waste and universal waste (including universal waste pesticides). Handlers of universal waste will receive initial training followed by refresher training every three years.

Appendix

Universal Waste Lamps Label

Universal Waste Lamps

University of Alabama, Huntsville

Accumulation Start date:

Categories (Circle One):

Fluorescent Lamps 4 Foot or Less

Shatter-Shield

Fluorescent Lamps > 4 Foot

U Tube/Circular Lamps

Compact Fluorescent Lamps

Incandescent Lamps

HID (Sodium, Metal Halide &

Broken Lamps

Mercury Vapor)

Attach one label to the end of the box

Review The Director of the Office of Environmental Health and Safety will be responsible for the review of this policy every five years or whenever circumstances require.