

Northwestern

Universal Waste Guide

Environmental Health and Safety

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I. Purpose

This program establishes the process for Northwestern University to a) comply with all federal, state, and local regulations to minimize and dispose of universal waste; b) ensure the protection of human health and the environment; c) ensure safe use, minimization, storage, and disposal of universal waste generated on campus.

II. Scope

This program applies to all employees and contractors who handle universal wastes, such as batteries, lamps, and mercury at Northwestern University. As a large quantity universal waste generator, Northwestern University accumulates at least 11,000 pounds of universal waste at any time.

III. Definitions

- A. **“Battery”** means a device consisting of one or more cells, in which chemical energy is converted into electricity and used as a source of power that is designed to receive, store, and deliver electric energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed.

Battery Type	Common Use	Hazardous Component
Alkaline and Carbon zinc AAA, AA, C, D, 9 volt	Cameras, handheld electronics	Non-toxic, can leak with age
Lead-acid gel	Automotive, portable tools, outdoor power equipment	Lead, acid electrolyte
Lithium AAA, AA, 9 volt	Cameras, handheld electronics, tire-pressure sensors, alarms, memory backup, high-temperature applications,	Non-toxic, can overheat or explode if short-circuited
Li-ion	Cell phones, laptops, tablets, power tools, handheld electronics, digital cameras	Non-toxic
Mercury AA, 9 volt	Cameras, digital thermometers, calculators, medical devices	Mercury
Nickel-cadmium AAA, AA, C, D	Cell phones, laptops, tablets, power tools, handheld electronics	Cadmium
Nickel metal hydride AAA, AA, C, D, 9 volt, 12 volt	Cell phones, laptops, power tools, cameras, handheld electronics	Non-toxic
Silver oxide	Hearing aids, cameras	Non-toxic
Uninterruptible power supply (UPS)	Stationary power	Acid electrolyte
Zinc air 9 volt	Hearing aids	Non-toxic

- B. **“Battery waste”** becomes universal waste on the date that it is removed from service because it is no longer operable, or no longer wanted or needed.

- C. **“Generator”** means any person, or site, whose act or process produces universal waste.
- D. **“Lamp”** or **“universal waste lamp”** is defined as the bulb or tube portion of an electric lighting device. Common examples of universal waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Incandescent lamps (i.e., normal household lamps) are not considered to be universal waste and may be disposed of in the regular trash.
- E. **“Lamp waste”** or **“universal waste lamp waste”** becomes universal waste on the date that it is removed from service because it is no longer operable, or no longer wanted or needed.
- F. **“Mercury-containing equipment”** means a device or part of a device (including thermostats, thermometers, barometers, manometers, blood pressure cuffs, mercury switches, but excluding batteries and lamps) that contain elemental mercury integral to its function.
- G. **“Mercury-containing equipment waste”** becomes universal waste on the date that it is removed from service because it is no longer operable, or no longer wanted or needed.
- H. **“Thermostat”** means 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 the temperature control device in compliance with Section 733.113(c)(2) or 733.133(c)(2).
- I. **“Thermostat waste”** becomes universal waste on the date that it is removed from service because it is no longer operable, or no longer wanted or needed.
- J. **“Universal waste”** are hazardous wastes that are commonly generated in a wider variety of establishments. Recycling of universal waste is encouraged, unless broken or damaged. Damaged and broken universal waste materials must be treated as hazardous waste.
- K. **“Universal waste handler”** is: (1) a generator of universal waste, or (2) one who receives universal waste from other universal waste handlers, (3) or who accumulates universal waste, and sends universal waste to another waste handler.

IV. Responsibilities

- A. **Facilities Operations**
 - i. Properly handle all universal waste generated;
 - ii. Ensure that all universal wastes identified or generated through construction and renovation projects are properly handled and disposed.
- B. **Facilities Project Managers and Contractors**
 - i. Ensure that any demolition/renovation projects that may generate universal waste are conducted in accordance with this program;
 - ii. Ensure contractors hired to remove, store, and dispose of universal waste are handled in a manner consistent with this program.
- C. **Departments and Units (i.e., Residential Services, Athletics, and other departments)**
 - i. Properly handle all universal waste generated;
 - ii. Ensure handlers are properly trained.
- D. **Research Safety (ORS), Environmental Health and Safety (EHS), and sustainNU**
 - i. Periodically inspect accumulation areas to ensure containers are properly labeled, closed, and not leaking or damaged;
 - ii. Periodically update this program as needed;
 - iii. Facilitate or coordinate universal waste training for handlers of universal waste.

- iv. Maintain records associated with training for staff assigned to manage and handle universal waste.

E. Universal Waste Vendors

- i. Maintain all records, including waste manifests and shipment receipts, associated with battery, lamp, and mercury-containing equipment wastes;
- ii. Periodically inspect battery, lamp, and mercury-containing equipment accumulation areas to ensure containers are properly labeled, closed, and not leaking or damaged;
- iii. Respond to any releases.

V. Universal Waste Management Program

It is expected that universal waste will be generated while replacement of batteries, lamps, or mercury-containing equipment; and during construction and demolition or renovation projects in areas where battery, lamp, and mercury-containing equipment wastes exist and require disposal.

A. Universal Waste Accumulation Areas

Northwestern collects and stores universal wastes at the following locations:

- i. 2020 Ridge Ave (sustainNU), Universal Waste Central Accumulation Area: lamps
- ii. 2020 Ridge Ave (Auto Shop), Universal Waste Accumulation Area: vehicle lead acid batteries
- iii. 2145 Sheridan Rd, Universal Waste Central Accumulation Area: batteries
- iv. 910 University (Electric Shop), Universal Waste Central Accumulation Area: lamps, batteries
- v. Ward Building B-106 (ORS), Universal Waste Central Accumulation Area: batteries

B. Accumulation Time Limits

Universal waste may accumulate for no longer, than one year from the date the universal waste was generated. To demonstrate that universal waste is not onsite for longer than a year, the date must be logged on the universal waste container once the first item (battery, lamp, thermometer, etc.) is placed in a container.

C. Storage and Handling

- i. Do not place universal waste in the trash.
- ii. Do not treat any universal waste, except during a response to a release or spill.
- iii. All universal waste must be handled in a manner that prevents a release of any materials or components.
- iv. All universal waste containers must remain closed at all times except when adding or removing waste. The containers must be compatible with the universal waste contents and free of defects or damage that would cause leakage, spills, or other environmental releases.
- v. Universal waste stored outside must be covered, to prevent precipitation from contacting the waste.

D. Training

- i. All employees handling universal waste must be thoroughly familiar with proper universal waste handling, including [personal protective equipment](#), and emergency procedures.
- ii. Personnel must successfully complete training prior to beginning work, and attend annual refresher training.

VI. Universal Waste Management Procedures – Batteries

- A. A battery collection box can be picked up or batteries can be dropped off at ORS located in Technological Institute NG-71.
- B. Separate any batteries that show evidence of leakage, spillage or damage that could cause leakage in another container.
- C. Boxes include the start date, and will be returned to ORS within 9 months:
 - i. Evanston ORS drop-off: Technological Institute NG-71
 - ii. Chicago ORS drop-off: Ward Building B-106
- D. Employees handling batteries may conduct the following activities:
 - i. Sorting of batteries;
 - ii. Mixing batteries in one container.

VII. Universal Waste Management Procedures – Mercury-Containing Equipment

- A. Ensure containers and lids are closed except when mercury-containing equipment are added or removed;
- B. Containers must remain closed, be structurally sound, compatible with the mercury, and lack evidence of leakage, spillage or damage that could cause leakage under reasonable foreseeable conditions;
- C. Containers for mercury-containing equipment must be labeled or marked clearly as follows:
 - i. “Universal Waste – Mercury-Containing Equipment” or “Waste – Mercury-Containing Equipment”
 - ii. The original product label (if legible); or
 - iii. The chemical identity of the container; and
 - iv. The name of the person disposing the mercury-containing equipment; and
 - v. Contact information of the person disposing the mercury-containing equipment.
 - vi. The date of when the container becomes full.

VIII. Universal Waste Management Procedures – Lamps

- A. Ensure containers and lids are closed except when lamps are added or removed;
- B. Containers must remain closed, be structurally sound, compatible with lamps;
- C. Containers for lamps must be labeled or marked clearly as “Universal Waste – Lamps” or “Waste – Lamps,” and must include the date of when the container becomes full.
- D. Broken lamps are to be cleaned per the following:
 - i. Before cleanup:
 - a. Should a bulb break while hot, be sure to let cool and wait 30 minutes before handling.
 - b. Have people leave the room, air out the room for 5-10 minutes by opening a window or door.
 - c. Collect materials needed to clean up broken bulb:
 - d. stiff paper or cardboard;
 - e. sticky tape (sticky rollers are available in ORS);
 - f. damp paper towels or disposable wet wipes (for hard surfaces); and
 - g. a glass jar with a metal lid or a sealable plastic bag.

- ii. During cleanup:
 - a. Do not vacuum- vacuuming is not recommended unless broken glass remains after all other cleanup steps have been taken. Vacuuming could spread mercury-containing powder or mercury vapor.
 - b. Scoop up glass fragments and powder using stiff paper or cardboard. Use sticky tape to pick up any remaining small glass fragments and powder. Place the used tape in the glass jar or plastic bag.
- iii. After cleanup:
 - a. Promptly place all bulb debris and cleanup materials, including vacuum cleaner bags, in a labelled container that will prevent release of the pieces to the environment and store in designated accumulation area until disposal is scheduled.

IX. Response to Releases

- A. Trained and authorized personnel must immediately contain all spill releases of universal waste. Refer to the [Purple Guide](#) for more information.
- B. If there is a release, it must be determined whether any material resulting from a release is hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable requirements of [40 CFR parts 260 through 272](#). The handler is considered the generator of the material resulting from the release, and is subject to 40 CFR part 262.
- C. All release response handlers will be HAZWOPER trained; if the generator is not HAZWOPER trained, contact ORS.

X. Off-Site Shipment Procedures

Only certified Northwestern employees can re-locate universal waste to storage locations.

XI. Tracking Universal Waste Shipments

The hazardous waste manager retains records, including waste manifests, waste profiles, transportation vendor, disposal method, and inspection records for at least three years from the shipment date of universal waste.

XII. Regulatory Authority

Northwestern and contractors will comply with the Occupational Safety and Health Administration's (OSHA) standards and any other applicable codes and standards, including:

[Title 35, Illinois Administrative Code, Subtitle G, Part 733 – Standards for Universal Waste Management](#)

[Title 40 CFR 273 – US Environmental Protection Agency Standards for Universal Waste Management](#)

XIII. Contact

For questions, contact Environmental Health and Safety at ehs@northwestern.edu.