Universal Waste Policy

Scope and Purpose

The Universal Waste policy outlines the collection, storage, and disposal procedures for identified universal wastes generated on the Ursinus College campus including those generated by contractors and other third-party college partners. The Universal Waste Rule (40 CFR 273 and 25 Pa. Code Chapter 266b) permits businesses to recycle some types of hazardous waste including aerosols, batteries, lamps, pesticides mercury containing devices and thermostats, and aerosol cans. In Pennsylvania, oil-based finishes and photographic solutions are additional universal wastes. The rule encourages recycling, makes it less cumbersome for businesses to dispose of these hazardous items by not requiring a manifest, and permits storage of these items for a year.

Definitions (*40 CRF 273.9*)

Aerosol Can– A non-refillable receptacle containing gas compressed, liquified or dissolved under pressure and fitted with a self-closing release device allowing contents to be ejected by gas.

Battery)– a device consisting of one or more electrically connected electrochemical cells designed to receive, store and deliver electric energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed. Universal waste batteries include nickel-cadmium (Ni-Cd), sealed lead acid, lithium ion (Li-ion), and nickel metal hydride (Ni-MH) batteries. These types of batteries are commonly found in cellular and cordless phones, laptop computers, camcorders, 2-way radios, remote control toys, and cordless power tools.

Lamp or "universal waste lamp") – the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible and infra-red regions of the electromagnetic spectrum. Some examples of common universal waste electric lamps include fluorescent, high intensity discharge, neon, mercury vapor, high-pressure sodium, and metal-halide lamps.

Mercury-containing equipment – a device or part of device (including thermostats, but excluding batteries and lamps), that contain elemental mercury, that is necessary for operation of the device.

Oil-based Finishes (25 Pa. Code 266b.3) – Any paint or other finish that may exhibit, or is known to exhibit, a hazardous waste characteristic, or which contains a listed hazardous waste, and is in the original packaging, or otherwise appropriately contained and clearly labelled. Examples of oil-based finishes include but are not limited to, oil-based paints, lacquers, stains and aerosol paint cans.

Pesticide – any substance intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

Photographic Solutions (25 Pa. Code 266b.3) – Silver-bearing waste streams resulting from photographic processing solutions or rinse water.

Small Quantity Handler of Universal Waste (SQHUW) – a facility that accumulates a total of less than 5,000 kilograms of one or more types of universal waste at one time (40 CFR Part 273, Subpart B and 25 Pa. Code Chapter 266b, Subchapter B).

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 devices.

Universal Waste – types of waste that are designated as hazardous waste first, are widespread, commonly found in medium to large volumes, and exhibit only low-level hazards and/or can be easily managed.

Universal Waste Handler – a facility that generates universal waste, receives universal waste from other universal waste handlers, or sends universal waste to another handler, destination facility, or foreign destination.

Applicability

Universal Wastes are generated (become wastes) when they are discarded (i.e., sent for reclamation). Recalled pesticides become wastes when the generator agrees to participate in a recall and the person conducting the recall decides to discard the pesticide.

The college is classified as a Small Quantity Handler of Universal Waste (SQHUW) – accumulating no more than 5000 kg of Universal Waste at one time. As SQHUW, the following requirements must be met to satisfy the regulations:

1. Accumulation Time Limits

Universal waste may be accumulated for up to one year from the date the universal waste became a waste. To demonstrate how long, the universal waste has been accumulated, *one* of the following methods must be employed:

1. Mark the container of universal waste with the date the first piece of universal waste was placed in it, OR
2. Mark each item with the date it became a waste OR
3. Maintain an onsite inventory for each group of universal waste in an area documenting when the first universal waste was placed in a container OR
4. Place universal waste in a specific accumulation area and identify the earliest date any universal waste became waste.

Universal waste may be accumulated for more than one year in order to accumulate enough waste to facilitate proper recovery, treatment, or disposal so long as it can be demonstrated that such accumulation is necessary.

2. Labeling/Marking Requirements

Universal Waste must be labeled or marked to identify the type of waste. Use one of the following methods:

Universal Waste – “name of waste”	Universal Waste – Batteries
Waste – “name of waste”	Waste - Batteries
Used “name of waste”	Used Lamps

Maintaining Compliance

Always collect, store, and label identified universal waste in the designated areas. Disposal, dilution, or treatment of universal waste is prohibited except when responding to releases or spills. Dispose of personal household (non-college generated universal waste at local collection sites such as Best Buy, Home Depot, or Lowes. Check your county website for Household Hazardous Waste pickup dates or click on this link Montgomery County Waste Management Site.

College Procedures

Disposal of Universal Wastes generated at the college is managed by Environmental Health and Safety & Risk Management and Facilities who work with the college's hazardous waste vendor or other approved universal waste handler/transporter. Follow the steps below for collection, labeling, and disposal of universal wastes generated.

Aerosols

Universal waste aerosol cans must be managed in the following ways:

1. Use structurally sound containers, compatible with the contents of the aerosol cans prior to and during management activities.
2. Ensure containers lack evidence of leakage, spillage or damage that can cause leakage under reasonable conditions and protected from heat sources.
3. Pack leaking aerosol cans in a separate container, overpacked with absorbents.

For intact aerosol cans (40CFR 273.13(e)

1. Store by type,
2. Mix intact cans in one container, and
3. Remove actuators to prevent accidental releases.
4. Label each container of aerosol cans with any one of the following (40 CFR 273.14(f) labeling)
    - "Universal Waste-Aerosol Can(s)".
    - "Waste Aerosol Can(s)"; or
    - "Used Aerosol Cans(s)".

Note: The college does not permit aerosol cans to be punctured and drained. Additional requirements to comply with the regulation include use of a device specifically designed to puncture aerosol cans, containment of contents and emissions, and a written protocol. The number of aerosol cans collected for disposal in a year is minimal.

Batteries

A used battery becomes a waste on the date it is discarded. An unused battery becomes a waste on the date the handler decides to discard it. As a SQHUW, the College must manage waste batteries in a way that prevents release of any component of the battery to the environment. If a battery shows evidence of leakage or damage that could cause leakage, place the battery in a closed, structurally sound container and dispose of it as hazardous waste.

If the casing of an individual battery cell is not breached and remains intact and closed, the following activities are permitted

1. Sort the batteries by type,
2. Mix battery types in one container,
3. Discharge batteries to remove the electric charge,
4. Regenerate used batteries,
5. Disassemble batteries or battery packs into individual batteries or cells,
6. Remove batteries from consumer products, ***AND***
7. Remove the electrolyte from batteries (cells may be opened to remove the electrolyte but must be closed immediately after removal)

To recycle batteries:

1. Take the batteries to one of the following collection sites (Appendix A):
    a. Information Technology – Myrin Library @ the Learning Curve
    b. Facilities Office
2. To guard against possible short circuiting
    a. Tape the electrical terminals with non-conductive tape OR
    b. Place each battery in a sealed plastic bag.
        THEN
    c. Place the battery in the collection container.

Collection site containers must be labeled the date the first battery was added to the container and using any one of the following:

- "Universal Waste Battery(ies)"
- "Waste Battery(ies)", or
- "Used Battery(ies)".

When the collection box becomes full, contact the Facilities Office @ ext. 3598. The batteries will be transferred to another container for disposal by the college's hazardous waste vendor.

Lamps

A used lamp becomes a waste on the date it is discarded. An unused lamp becomes a waste on the date the handler decides to discard it.

As a SQHUW, the College must manage waste lamps in a way that prevents releases of any universal waste or component of universal waste to the environment. To manage universal waste lamps, the following requirements must be met:

1. Lamps must be contained in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps.
2. The containers and packages must remain closed and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. (40 CFR 273.13d)

To recycle any universal waste lamp:

1. Place the old lamp in the box/container/package of the new lamp, if available. Otherwise, use another appropriate box/container package as described in #1 above.
2. Label each container with any one of the following (40 CFR 273.14(f) labeling)
    - "Universal Waste – Lamps"
    - "Waste Lamps"
    - "Used Lamps"
3. Place the current date on the box.

4. Take the used lamp to the Facilities Building or contact Environmental Health and Safety & Risk Management.

Broken lamps

Any universal waste lamp that is broken or shows evidence of breakage, leakage, or damage that could cause the release of mercury must be immediately cleaned up and placed in a closed, structurally sound container and treated as a hazardous waste, and labeled as follows:

- Hazardous waste
- Date
- Broken lamps containing mercury (or other heavy metal)

Note: Use of Bulb Crushers Prohibited

1. Intentionally 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 and PA Code 260a.10. This treatment activity is prohibited by both the federal and Pennsylvania state universal waste regulations.
2. This activity is also not authorized under Pennsylvania's permit-by-rule regulation for generator treatment in accumulation containers, tanks and containment buildings, 25 Pa. Code 270a.60(b)(2) due to potential exposure to mercury above the OSHA standard. A full hazardous waste treatment permit is required to use drum top crushing devices.

Mercury Containing Devices and Thermostats

Any used or unused mercury containing device or thermostat becomes a waste on the date that it is no longer operable or on the date that the handler decides to discard it. To manage a mercury containing device or thermostat as a universal waste, the following requirements of 40 CFR 273.13 (c) and 40 CFR 273.33 (c) must be met:

1. Mercury containing devices or thermostats that show any sign of leakage, spillage, or damage that could cause spillage must be stored in a container that is closed, compatible with the type of waste, and free of defects that could cause a leakage.
2. Ampules containing mercury may be removed from a mercury containing device if:
    - The ampule is removed such that breakage of the ampule does not occur,
    - The ampule is only removed over a containment device,
    - A mercury clean-up system is readily available to transfer any spilled mercury to an appropriate container that meets the requirements of 40 CFR parts 260 through 272,
    - Any spilled mercury from a broken ampule is immediately transferred to an appropriate container that meets the requirements of 40 CFR parts 260 through 272,
    - The area where the ampule is removed is well ventilated and monitored to ensure compliance with applicable OSHA exposure levels for mercury, if applicable,
    - Employees removing ampules are familiar with proper waste mercury handling and emergency procedures, including transfer of mercury from containment devices to an appropriate container that meets the requirements of 40 CFR 262.12 and 262.17, ***AND***
    - Empty ampules are collected and stored in appropriate containers that meet the requirements of 40 CFR parts 260 through 272.
3. If any waste is generated from a mercury-containing device, thermostat breakage or emptying of ampules (i.e., ampules themselves, spill clean-up debris), the waste handler must determine if it

exhibits the characteristic of hazardous waste for mercury. If the waste does meet the characteristic, it must be managed as a hazardous waste.

- Mercury containing devices or mercury device storage areas must be labeled with the date that it was removed from service and one of the following:
  - "Universal Waste – Mercury Containing Device(s)"
  - "Waste Mercury-Containing Device(s)", or
  - "Used Mercury – Containing Device(s)".
- Universal waste thermostats or a container in which thermostats are contained, must be labeled or marked clearly with any one of the following phrases:
  - "Universal Waste – Mercury Thermostats",
  - "Waste Mercury Thermostats", or
  - "Used Mercury Thermostats".

To recycle a mercury containing thermostat:

1. If trained to remove the ampule, remove the ampule following the steps above including use of packing materials adequate to protect breakage during storage, handling, and transportation. Place the ampule in an appropriately labeled and dated container.
2. Take the container with the ampule to the Chemistry Department Prep room (Pfahler 314) or contact Environmental Health and Safety & Risk Management.

To recycle a piece of equipment, thermometers, or barometers containing mercury:

Contact Environmental Health and Safety & Risk Management or your department laboratory manager for guidance and assistance.

Pesticides

Universal waste regulations apply to persons managing pesticides that meet the following conditions:

1. Recalled stocks of suspended and canceled pesticides that are part of a voluntary or mandatory recall under Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 19(b), or a pesticide that is not in compliance with FIFRA, that are part of a voluntary recall by the registrant.
2. Stocks of other unused pesticide products collected and managed as part of a waste pesticide collection program.
3. Universal waste pesticides become waste:
   - On the date that the manufacturer of the recalled pesticide agrees to participate in the recall ***and*** the person conducting the recall decides to discard the pesticide, ***or***
   - When the handler decides to discard the unused pesticide.

As a SQHUW, the College must manage waste pesticides in a way that prevents releases of any universal waste or component of universal waste to the environment. Universal waste pesticides must be contained in one or more of the following ways:

1. A closed container that is structurally sound, compatible with the pesticide, and lacks evidence of leakage, spillage, or damage that could cause leakage in the future.
2. Overpacked in a container that meets the requirements in #1.

Universal Waste Pesticides must be labeled with the original label that accompanied the pesticide at the time of sale or distribution **and** the words "Universal Waste – Pesticide(s)" or "Waste – Pesticide(s)".

To recycle pesticides, contact Environmental Health and Safety & Risk Management or your department laboratory manager for guidance and assistance.

PA Specific Universal Wastes

Oil-Based Finishes

Universal waste oil-based finishes must be managed to prevent release of the waste to the environment.

1. Use the original container or other appropriate labeled container and packaging to prevent release to the environment.
2. Containers showing evidence of leakage or damage that could cause leakage must be placed in a closed structurally sound container compatible with oil-based finishes.
3. Label each container of oil-based finishes with one of the following (25 PA Code Chapter 266b.29(1) labeling):
   - "Universal Waste Oil-Based Finish" or
   - "Waste Oil-Based Finish."

Notes:

1. Solvents or any other waste, may not be added to universal waste oil-based finishes unless they are part of the normal formulation or application of the paint.
2. Discarding hazardous waste solvent or other wastes into universal waste oil-based finishes is strictly prohibited.

Photographic Solutions

Universal waste photographic solutions must be managed to prevent release of the waste to the environment. (25 PA Code Chapter 266.12)

1. Use the original container or other appropriate labeled container and packaging to prevent release to the environment.
2. Containers showing evidence of leakage or damage that could cause leakage, must be placed in a closed structurally sound container compatible with photographic solutions.
3. Label each container of photographic solutions with one of the following (25 PA Code Chapter 266b.29 labeling):
   - "Universal Waste Photographic Solutions" or
   - "Waste Photographic Solutions."

Note: Photographic solutions may not be processed including opening, blending, filtering, and the like.

Recordkeeping/Tracking

Inspections of the universal waste storage area in the Paisley Boiler room and the battery collection area in the Facilities Pole Barn are completed monthly via an electronic checklist.

Documentation of removal of universal wastes include a bill of lading, hazardous waste manifest, printed receipt from battery reclamation company (i.e., Interstate Batteries) or other applicable documents. Documentation is maintained for 3 years by Environmental Health and Safety & Risk Management or Facilities.

Employee Training

All employees who handle or are responsible for managing universal waste must be informed of the proper handling and emergency procedures appropriate to the types of universal waste managed at the facility through email, announcements through Ursinus News, and/or in-person meetings. Contact Environmental Health and Safety & Risk Management for assistance.

Spills/Releases

A Small Quantity Handler of universal waste must:

1. Immediately contain all releases of universal wastes and other residues from universal wastes.
2. Determine whether any material resulting from the release is hazardous waste, and if so, it must be managed as hazardous waste in compliance with all applicable requirements of 40 CFR parts 260-272, Management of Hazardous Waste.
3. Contact Environmental Health and Safety & Risk Management at ext. 3221 or Facilities at ext. 3598 for assistance.

References

Environmental Protection Agency, 40 CFR 273 – Universal Wastes
Department of Environmental Protection – Universal Wastes
Pennsylvania Regulations - 25 PA Code, Chapter 266b Universal Waste Management
Pennsylvania Hazardous Waste Regulation Compliance Guide: Requirements for Managing Universal Waste

APPENDIX A

COLLECTION SITES

TYPE OF WASTE	COLLECTION SITE	Contact Info
Batteries (rechargeable)	Information Technology Main Floor Myrin Library @ the Learning Curve	3789
	Facilities Office	3598
Batteries (lead acid)	Facilities Pole Barn	3598
Batteries (alkaline)	Dispose of in the regular trash.	N/A
Electronics	Information Technology Main Floor Myrin Library @ the Learning Curve	3789
Lamp Collection Sites	Facilities Office	3598
Mercury containing thermostats	Pfahler 314b – Chemistry Department Prep Room	3346
Scientific Equipment/Lamps containing mercury or other heavy metals	Pfahler 314b – Chemistry Department Prep Room	3346

*Collection sites are for college-owned and generated wastes.

APPENDIX B

URSINUS COLLEGE
UNIVERSAL WASTE INVENTORY SHEET

TYPE OF LAMP	# OF BOXES	# OF FIBER DRUMS (85 LAMPS)	# OF FIBER DRUMS (185 LAMPS)
2' Fluorescents			
4' Fluorescents			
8' Fluorescents			
Circular			
Compact			
HID			
Metal Halide			
ESTIMATED # OF PALLETS			

APPENDIX C – Universal Waste Fact Sheet

This fact sheet provides a quick guide for the proper disposal of *Ursinus College owned* universal waste and electronics. Always try to return any recyclable items to the vendor first. Most vendors who supply rechargeable batteries will take them back. Contact Environmental Health and Safety & Risk Management if further assistance is required.

RECHARGEABLE BATTERIES
(i.e., nickel cadmium (Ni-Cd), sealed lead acid, lithium ion (Li-ion), and nickel metal hydride (Ni-MH).
  
	• Take to one of the collection sites for disposal
	  ○ Myrin Library @ the Learning Curve
	  ○ Facilities Office
	• Tape the electrical terminals with non-conductive tape OR
	• Place each battery into a sealed plastic bag.
	• Place the battery in the properly labeled collection container.

ALKALINE BATTERIES 	Ursinus College is unable to recycle these types of batteries. Dispose of these in the regular trash.
LAMPS containing heavy metals (i.e., mercury fluorescent, high intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide)  	• Place spent lamp in the carton/container of the new lamp. • Date and label the carton/container with the words "Universal Waste – lamps". • Take scientific lamps to the Chemistry Stockroom, Pfahler 314b. All other lamps are disposed of through Facilities. **Note: Home Depot and Lowes recycle consumer compact fluorescent lamps (CFLs).*
MERCURY CONTAINING DEVICES (i.e., thermostats, manometers, and some laboratory equipment)  	• Place the mercury-containing ampule in a compatible, closed container, packed to prevent breakage. • Date and label the container with "Universal Waste – Mercury Containing Device". • Take the container with the ampule to the Pfahler 314b, Chemistry Prep Room *If you have equipment containing mercury, contact Environmental Health and Safety & Risk Management.*
PESTICIDES	Contact Environmental Health and Safety & Risk Management.
ELECTRONICS (i.e., **College owned** computer monitors, CPU units, printers, mice, keyboards, TVs, AV equipment, servers, laptops and more) 	Contact Information Technology at ext. 3789 or techsupport@ursinus.edu for assistance.

***Note:** For more information on disposal of personally owned electronics including TVs and computers, check the Montgomery County Recycling Site and Best Buy.

For aerosol cans, oil-based finishes and photographic solutions, contact Environmental Health and Safety & Risk Management.

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