Universal Waste Training

City of Bangor

Why are we here?

- Universal Waste Training Requirements:
  - Employers must train all employees that handle or manage universal waste.
    - Frequency of training is not specifically spelled out in the Universal Waste Regulations. The City will require employees to receive training as follows:
      - Initially
      - Every three years
  - Training records must be maintained for a minimum of three years.

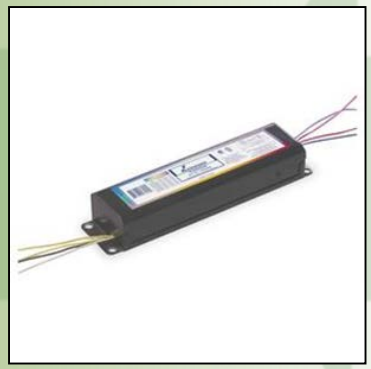
Training Objectives

During this training we will discuss:

1. How to identify universal & electronic (E) waste
2. Why universal waste is recycled
3. How to package, label, and store Universal Waste
4. How to inspect Universal Waste storage areas
5. How to maintain your Universal Waste inventory
6. How to manage broken fluorescent lamp(s)

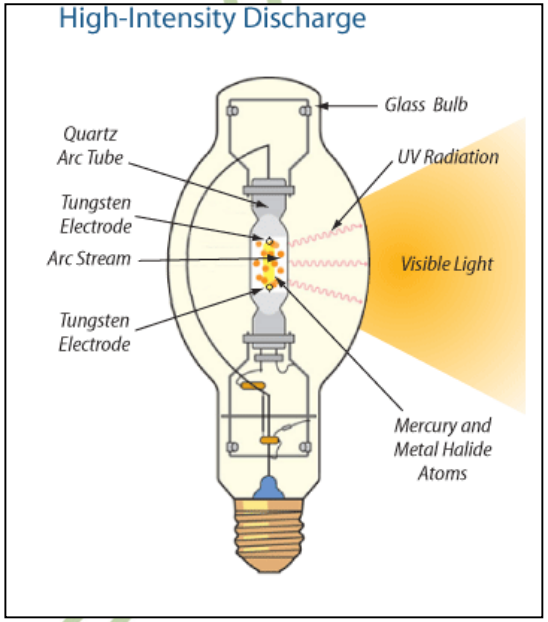
What are Universal Wastes?

- Universal wastes are common, everyday items used by most businesses, that could pose an environmental hazard if disposed of in a landfill or by incineration.
- The State of Maine Department of Environmental Protection (ME DEP) classifies the following as universal wastes:
  - Lamps or light bulbs that contain mercury and/or lead
  - Cathode Ray Tubes (CRTs)
  - Mercury containing devices & motor vehicle mercury switches
  - Totally enclosed, non-leaking polychlorinated biphenyl (PCB) ballasts
  - Rechargeable, specialized & small sealed lead acid batteries
  - Oil-based architectural paint



Universal Waste Lamps

- Universal waste lamps consist of:
  - Fluorescent lamps, including CFL's;
  - High intensity lamps (HID);
    - Mercury vapor
    - High pressure sodium
    - Metal halide
    - Xenon short-arc lamps
  - Neon lamps;
- Lamps that contain mercury and/or lead
- Incandescent bulbs are not U-Waste!



Compact Fluorescent (CFL)

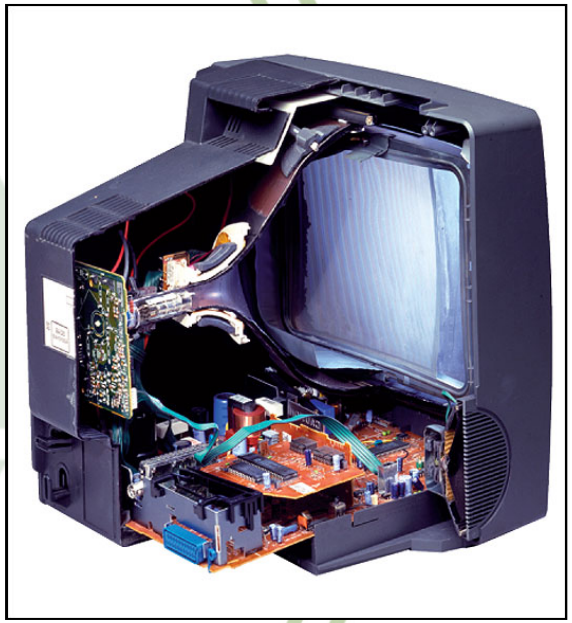
Incandescent Bulb

Metal Halide (HID)

Cathode Ray Tubes

- Include video display components of televisions, computer monitors, and other display devices
- Contain lead and various precious metals
- Flat Panel screens are not Universal Waste

Computer Monitor



Television

Mercury-Containing Devices

- Mercury-Containing Devices: A device or part of a device that contains elemental mercury essential to its function.
  - Thermostats & Thermometers
  - Barometers & Manometers
  - Temperature and Pressure gauges
  - Motor Vehicle Mercury Switches

- If you find any equipment leaking or suspected of leaking mercury notify your supervisor or Safety & Environmental Management
  - Must be disposed of as Hazardous Waste.

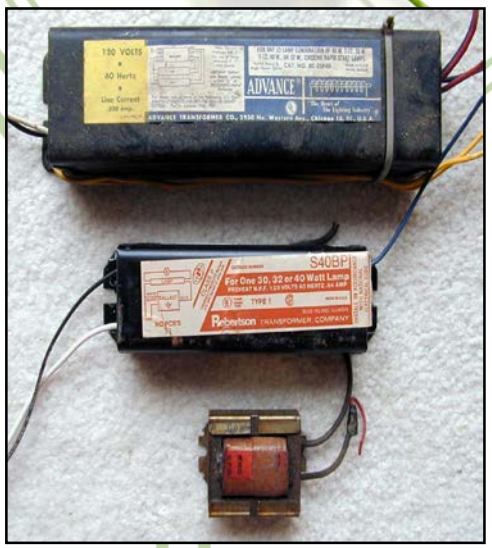
Barometer

Manometer

Broken Thermometer

PCB Ballasts

- A device that regulates voltage and current for fluorescent or HID lamps.
- Older ballasts may contain PCB's, a suspected carcinogen,
- Newer ballasts do not contain PCB's
- If PCB containing ballast is leaking, store in separate container & dispose of as Hazardous Waste.



Older Style Ballast – Not Labelled

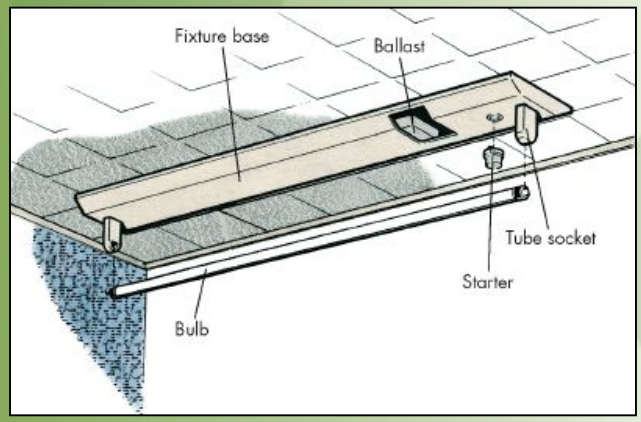
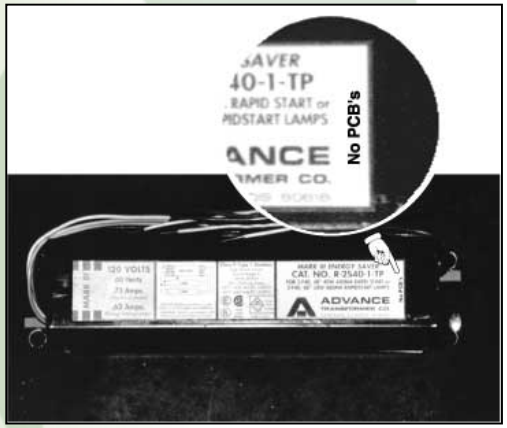


Diagram for a Fluorescent Lamp



Newer Style Ballast – No PCB's

Batteries

- Batteries containing heavy metals are considered universal wastes. This includes:
  - Nickel-Cadmium batteries
  - Metal hydride batteries
  - Lead-acid batteries
  - Silver oxide
  - Mercury oxide
  - Lithium / Lithium Ion
  - Button Batteries
- Tape battery terminals before placing them into the storage container.
  - Use clear tape.

Lithium Batteries

Custodial Floor Scrubber

Rechargeable Batteries

Why We Tape Battery Terminals

Batteries - Continued

- Motor Vehicle / Equipment Batteries
  - Businesses participating in exchange programs when replacing a battery
    - Core Charge
- Alkaline Batteries are not Universal Waste and can be disposed of in the trash.

Oil-based Architectural Paint

- Unused interior & exterior oil-based paints
- Sold in 5 gallons or less
- Intended for painting components of houses or other buildings

Recycling Paint in Maine

- PaintCare - https://www.paintcare.org/paintcare-states/maine/#/everyone
- PaintCare Program Fees
  - ½ pint – 1 gallon = $0.35
  - 1 gallon = $0.75
  - 1 gallon – 5 gallon = $1.60
- Drop-off Locations throughout Bangor

Electronic Waste

- The City of Bangor recycles used electronic equipment and various computer accessories including:
  - Printers / Fax Machines / Scanners – No Charge
  - Computer Mouse / Keyboard / two-way radios / desk phone - $0.14/lb
  - Cell Phones – No Charge
  - Flat-Screen Monitors or Televisions – No Charge
  - CPU's/Laptops/Hard Drives – Pay Departments $0.08/lb

Other Waste Items We Recycle

- Equipment with Freon: Refrigerators, Freezers, Air Conditioning Units, Dehumidifiers
- Smoke Detectors
- Non-PCB Ballast

Managing Universal Waste

- Packing
- Labeling
- Storing & Inventorying
- Inspecting

Packaging

- Separate universal waste into individual containers.
  - 8’ lamps
  - 4’ lamps
  - 2’ lamps
  - U-bend, Circle, CFL’s

Fluorescent Lamp Box

- Use packing materials adequate to prevent breakage during storage, handling and transportation.
  - Used sectional or egg carton type materials for fluorescent lamps

Lamps not stored in a container

- Keep containers closed, unless adding waste to the container.
  - Lids on buckets
  - Flaps closed on boxes

Packaging Cont.

- Universal Waste containers (i.e. boxes, buckets, etc…):
  - Must not show evidence of leakage, spillage, or damage
  - Must be free of defects
  - Must be structurally sound
  - Remain closed when not in use
  - Labeled
  - Number of items must be recorded

- Full boxes must be sealed with tape
  - “H” pattern
  - Any box opening
  - You will need packing tape!!!

Packaging
This vs. That

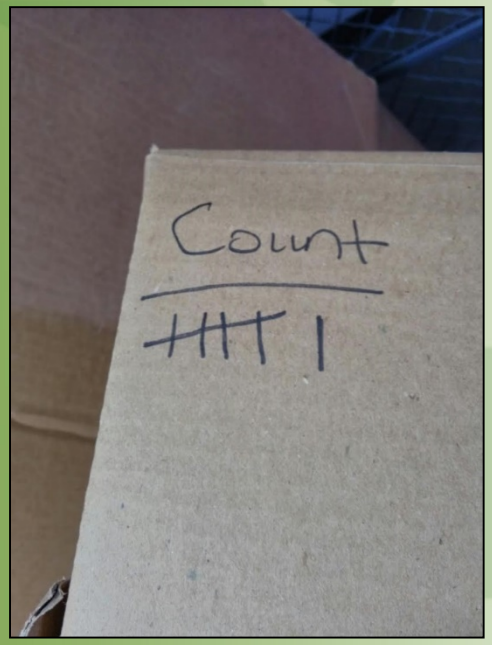
Labeling

- All UW containers must be labeled.
  - Sharpie Marker
- Each label must describe the following:

  1. Contents – (i.e., waste lamps, waste ballasts)
  2. Start Date – the date the first item was placed in the container or box
  3. Location – where the waste was accumulated.

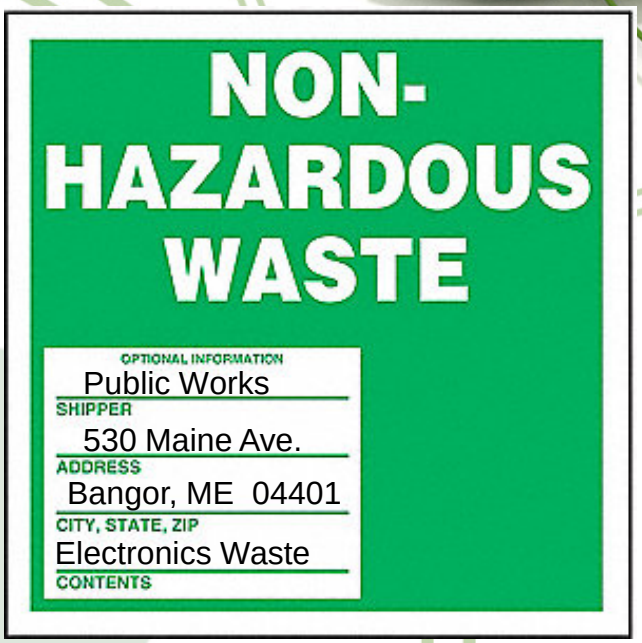
Labeling Cont.

- Maintain a running count of the side of the box until the container is full.
- Once the box is full seal it and complete the label:
  - End Date – the date the container became full.
  - Final Count



Electronic Waste Labels

- Printers / Fax Machines / Scanners
- Computer Mouse / Keyboard / two-way radios / desk phone
- Cell Phones
- Flat-Screen Monitors or Televisions
- CPU's/Laptops/Hard Drives



Other Labels

- Equipment with Freon: Refrigerators, Freezers, Air Conditioning Units, Dehumidifiers
- Smoke Detectors
- Non-PCB Ballast

Incidental Breakages

- Incidental breakage should be rare.
- If incidental breakage occurs inside the lamp box, close and seal the box. Put an end date and final count on the label (include the broken lamp in the final count)
  - Write on the side of the box, near the label, “Broken Lamp”
- If more than ten (10) lamps break in a single incident you must notify Safety and Environmental Management.
  - Regulations require that a report be filed with the MDEP if any incident exceeds 10 or more lamps

Universal Waste Lamps Cleanup Procedure

- If a lamp broke outside of the container...
- Do not use a vacuum cleaner.
  - It can spread Mercury vapor & dust.
- Keep people from walking through the area.
- Open windows to ventilate the area.
- Give it 10 – 15 minutes to let the mercury dust / vapor settle.
- Gather clean-up supplies

- Supplies:
  - Disposable gloves
  - Bucket with screw-top lid
  - Index cards or cardboard
  - Duct or packing tape
  - Damp paper towel or wipes

Universal Waste Lamps Cleanup Procedure, Cont…

- Put on gloves
- Carefully pick-up the larger lamp pieces and place them into the bucket.
- Using the index cards or cardboard, carefully scoop up the smaller pieces of broken lamp and place them into the bucket.
- Pat the area with the sticky side of the tape. Place it into the bucket.
- Wipe up the area with the damp paper towel or wipes. Place it into the bucket.
- Remove gloves and place them into the bucket.
- Secure the lid on the bucket.
- Label the bucket with a Universal Waste Lamp label and add the words “Broken Lamp”.

Universal Waste Storage Standards

- Universal waste must be stored in a secured area, which can be locked when not in use.

- Storage areas must be designated with a clearly marked sign

- Containers are stored indoors so they are not exposed to weather

Universal Waste Storage Standards

- Containers must be stacked less than 5’ high
  - Prevents crushing of items stored in boxes in the lower levels
  - Reduces number of accidental breakages

- Universal Waste must be stored in a way that facilitates inspection.
  - Must be able to determine the contents, accumulation start date, container end date, and the container’s condition.

- Storage locations must be inspected weekly

Universal Waste Inspection Checklist

CITY OF BANGOR

Employee's Name:_____ Date :_____

Department: _____ Location: _____

Weekly inspections are required for each universal waste storage location. For any "NO" answers, list the observation number, describe the problem, and list the corrective action(s) taken in the space provided below. At the end of each month, submit the inspection checklists to Safety and Environmental Management.

	Observation	Yes	No	N/A
1	Was the storage area locked when you arrived?	○	○	
2	Is the Universal Waste Storage Area labelled with a sign stating "Universal Waste Storage Area"?	○	○	
3	Are all Universal Waste items stored in a container (i.e. box, bucket, etc...)?	○	○	
4	Are all containers stored indoors in a dry location, away from contact with water?	○	○	
5	Are all containers of Universal Waste kept closed?	○	○	
6	Are all containers in good condition and intact? (i.e. No signs of damage, leakage or spillage?)	○	○	
7	Are the containers compatible and the correct size for the contents?	○	○	
8	Are all containers stacked less than 5 feet high?	○	○	
9	Are all waste containers labelled?	○	○	
10	Is each container labeled appropriately for the contents within (i.e. Waste Lamps, Waste PCB Ballast, etc...)?	○	○	
11	Is each container marked with an accumulation start date?	○	○	
12	Have all full containers been dated with the date they became full?	○	○	○
13	Are all full containers of Universal Waste closed and thoroughly sealed?	○	○	○
14	Do you have access to each container, allowing you to see labels and dates?	○	○	
15	Are all containers that have incidental breakage sealed and labelled with a full date?	○	○	○
16	Are all containers picked-up within 365 days of the accumulation start date or 90 days of the full date?	○	○	
17	Have the type and quantities of Universal Waste currently present in your Universal Waste Storage Area been recorded on the U-waste inventory form?	○	○	

Issue That Was Observed	Action Taken

Universal Waste Pick-ups

- All full waste containers are required to be recycled of within 90 days of the “full date”.
- All other waste containers must be recycled of within 365 days of the accumulation start date.
- No recycling deadline for E-waste, freon-containing equipment, non-PCB ballast, smoke detectors.
- Send an e-mail to Safety.environmental@bangormaine.gov to request a Universal Waste Pick-up
  - Attach Universal Waste Inventory Form
  - SEM will send e-mail to all Department to see if anyone else needs a U-waste pick-up
    - $55.00 transportation fee – divided amongst departments.

Universal Waste Inventory

CITY OF BANGOR

Department:_____ Date Of Last Universal Waste Pick-up: _____

Universal Waste - Lamps	Number of Items	Number of Full Containers
Compact Fluorescent Lamps (CFL's)		
U-shaped or Circle Fluorescent Lamps		
18" Lamps		
2' Lamps		
4' Lamps		
8' Lamps		
High Intensity Discharge (HID) / High-pressure Sodium / Mercury Vapor / Metal Halide		
Universal Waste - Batteries	**Number of Items**	**Number of Full Containers**
Lead Acid		
Nickel Cadmium		
Nickel Metal Hydride		
Lithium / Lithium-Ion		
Silver Oxide / Mercury / other Button Cell Batteries		
Universal Waster - Other	**Number of Items**	**Number of Full Containers**
PCB Ballasts		
Cathode Ray Tubes (CRT's) - Tube TV's / Tube Computer Monitors / Oscilloscopes		
Mercury Devices – Thermometers / Thermostats / Mercury Switches		
Electronic Devices	**Number of Items**	**Number of Full Containers**
Computers – CPU's / Laptops / Towers / Tablets		
Miscellaneous Electronics – Cell Phones / Desk Phone / Speakers / Microwaves / Fax Machines / Printers / Scanners / Projectors / Keyboards / Computer Mouse / etc…		
Non- PCB Ballasts		
Flat Panel Monitors		
Non-Regulated Items	**Number of Items**	**Number of Full Containers**
Alkaline Batteries		
Smoke Detectors		
Freon Units – Air Conditioners / Refrigerators / Dehumidifiers		

Notes/Other:

Transferring U-Waste

- If a location has a designated universal waste storage location, the u-waste generated at that location should be stored there.
- If you have a facility that generates a minimal amount of universal waste, you can take it to another location within your department as long as the receiving facility maintains Universal Waste Log.

Universal Waste Log

Universal Waste Log

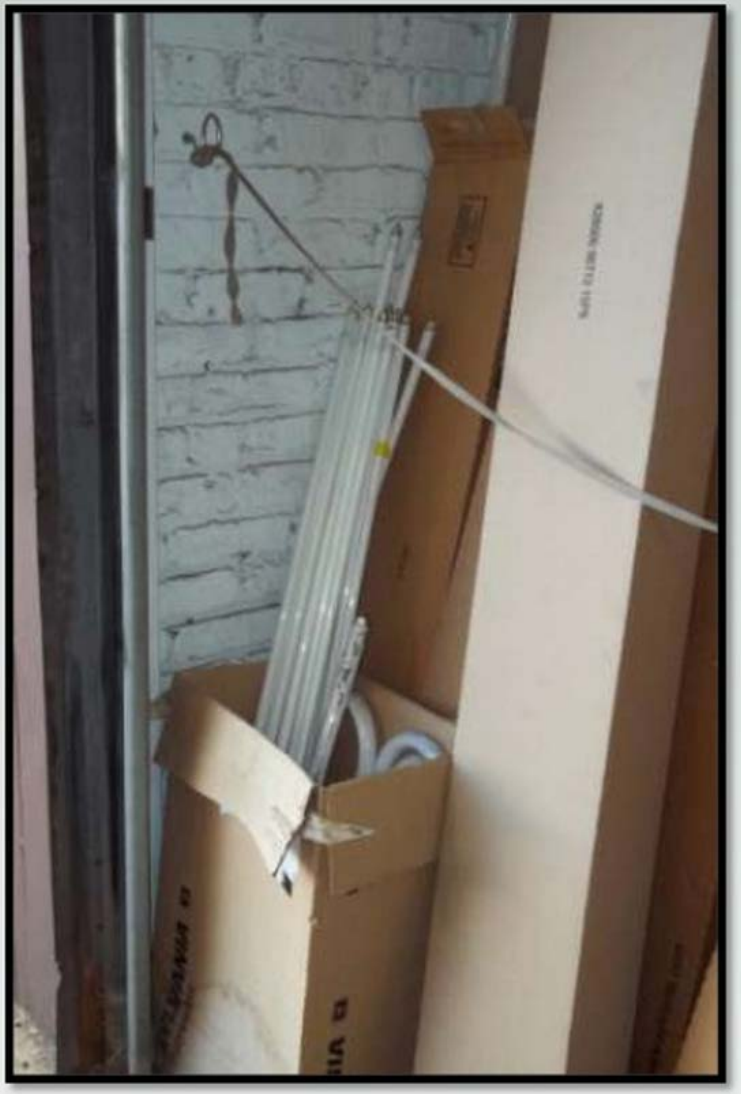
This form is to be used by City Departments that maintain a Universal Waste Central Accumulation Storage Facility accepting small amounts of Universal Waste from other locations within their department (i.e. Bangor High School accepting Universal Waste from the other Bangor Schools). All Universal Waste that is transferred from another facility, must be recorded on the log below. A copy of this form will be attached to the Manifest during shipment to the recycler.

Universal Waste Location (accepting the waste): Parks & Recreation

Name of Location (where the waste was generated)	Address	Date Recieved	Type of Universal Waste (Refer to U-Waste Inventory Form)	Number of Items
Sawyer Arena	107 13th St. Bangor, ME	10/08/20	4 foot fluorescent lamps	6
Pancoe Aquatic Center	175 13th St. Bangor, ME	10/14/20	Ni-Cad batteries	4
Union St. Complex	1355 Union St. Bangor, M	10/16/20	HID Lamps	7

Questions?

What’s Wrong With the Following?



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