

# 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



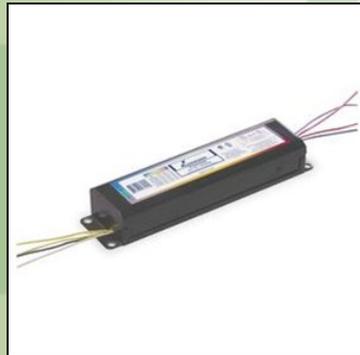
During this training we will discuss:

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



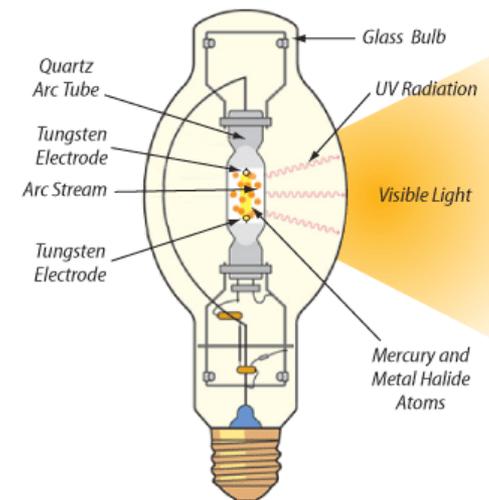
# Universal Waste Lamps



- 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!



High-Intensity Discharge



Compact Fluorescent (CFL)



Incandescent Bulb



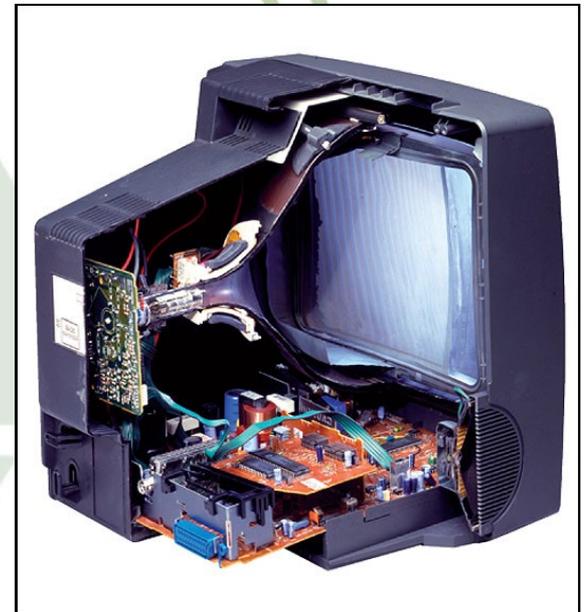
Metal Halide (HID)

# Cathode Ray Tubes

- Include video display components of televisions, computer monitors, and other display devices
- Contain lead and various precious metals



Computer Monitor



Television

# Mercury-Containing Devices



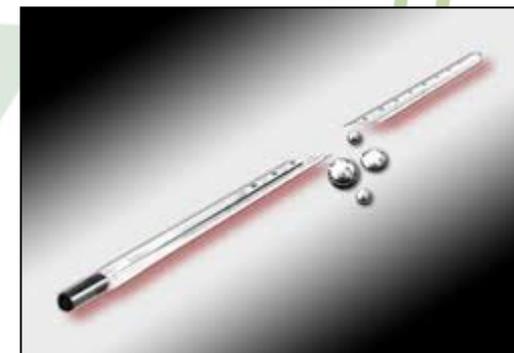
- Mercury-Containing Devices: A device or part of a device that contains elemental mercury essential to its function.
  - Thermostats & Thermometers
  - Barometers & Manometers
  - Temperature and Pressure gauges
  - Motor Vehicle Mercury Switches
- If you find any equipment leaking or suspected of leaking mercury notify your supervisor or Safety & Environmental Management
  - Must be disposed of as Hazardous Waste.



Barometer



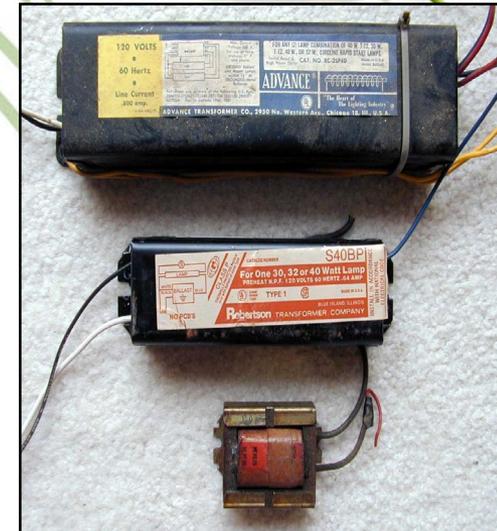
Manometer



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

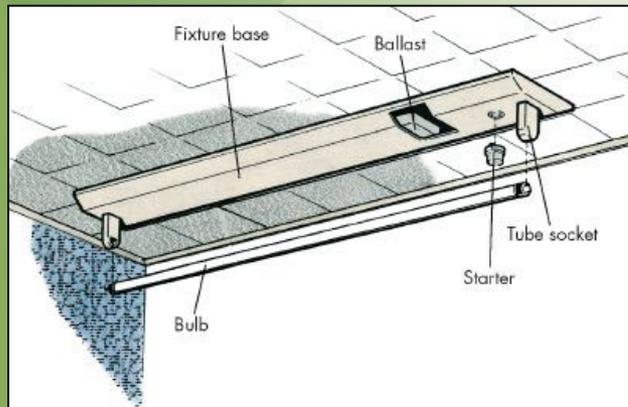
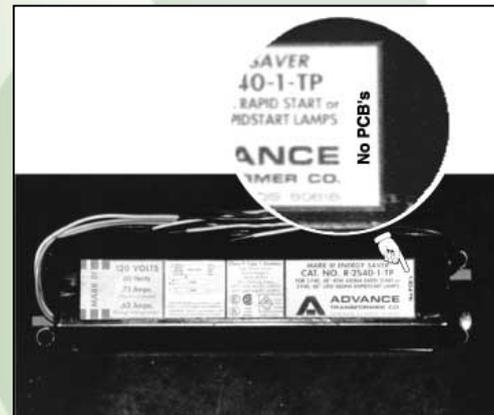


Diagram for a Fluorescent Lamp



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 lithium battery terminals before placing them into the storage container.



**Lithium Batteries**



**Custodial Floor Scrubber**



**Rechargeable Batteries**

# Why We Tape Lithium Battery Terminals



May 23, 2024 08:58 AM

**WABI5** Fire at Stacyville Fire Department ruled accidental

FIRE MARSHAL'S OFFICE Share

5:04 86°

**WABI5**

Watch on YouTube

# 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

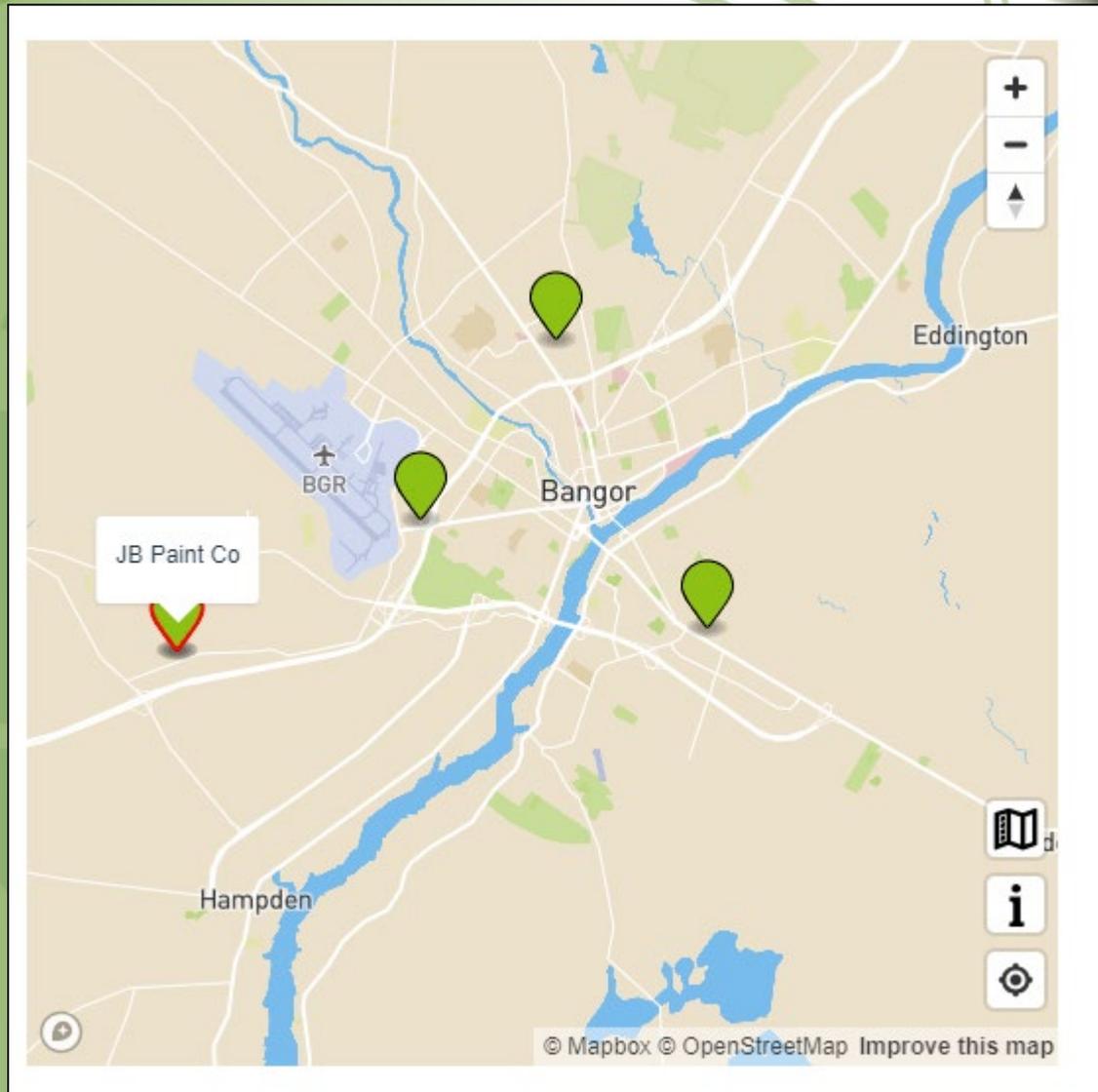


# Recycling Paint in Maine



- 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

# Recycling Paint in Maine



# Electronic Waste



- The City of Bangor recycles used electronic equipment and various computer accessories including:
  - Printers / Fax Machines / Scanners
  - Computer Mouse / Keyboard / two-way radios / desk phone
  - Cell Phones
  - Flat-Screen Monitors or Televisions
  - 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
- Use packing materials adequate to prevent breakage during storage, handling and transportation.
  - Used sectional or egg carton type materials for fluorescent lamps
- 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!!!



# Store Waste Separately

- Lamps – each type / size in separate boxes.
- Mercury Devices
- PCB Ballast vs. non-PCB Ballast
- Batteries – segregate by battery type
- Electronics:
  - Flat Panel Monitors
  - Computers, laptops, towers, tablets, & CPU's
  - Miscellaneous Electronics – cell phones, desk phone, speakers, keyboard, mouse, scanners, printers, projectors, copiers, etc...
- Smoke Detectors



# Labeling



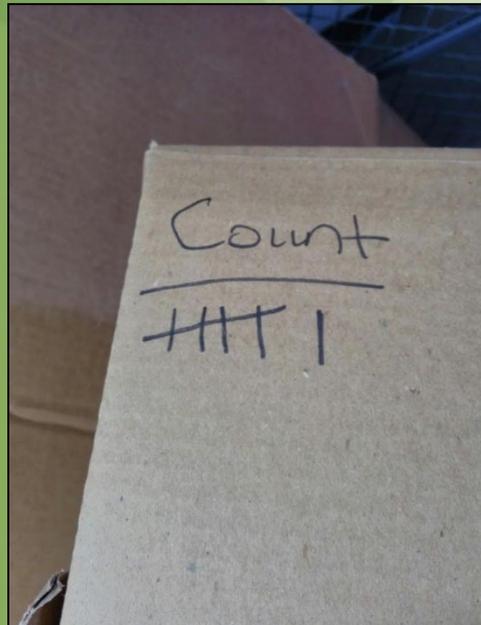
- All UW containers must be labeled.
  - Sharpie Marker
- Each label must describe the following:
  1. Contents – (i.e., waste lamps, waste ballasts)
  2. Start Date – the date the first item was placed in the container or box
  3. Location – where the waste was accumulated.

## Universal Waste Lamps

Start Date: 01/25/20  
End Date: \_\_\_\_\_  
Location: Airport  
Count: \_\_\_\_\_

# 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



## Universal Waste Lamps

Start Date: 01/25/20  
End Date: 05/30/20  
Location: Airport  
Count: 6

# When to Use a Non-Hazardous Waste Label



- Miscellaneous Electronics
- Flat Panel Monitors
- Computers/tablets/laptops
- Non-PCB Ballast
- Smoke Detectors
- Freon Containing Items

<b>NON- HAZARDOUS WASTE</b>
<small>OPTIONAL INFORMATION</small> Public Works
<small>SHIPPER</small> 530 Maine Ave.
<small>ADDRESS</small> Bangor, ME 04401
<small>CITY, STATE, ZIP</small> Electronics Waste
<small>CONTENTS</small>

# 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 Storage Locations

- 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



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

Issue That Was Observed	Action Taken

Department of Safety and Environmental Management  
 Created: 6/29/20  
 Revision: New



# Universal Waste Pick-ups



- A partially-filled Universal Waste container can be stored on site until it becomes full (full date). At that time, you have 90 days to recycle the container of U-Waste.
- No recycling deadline for E-waste, Freon-containing equipment, non-PCB ballast, smoke detectors.
- Send an e-mail to [Safety.environmental@bangormaine.gov](mailto:Safety.environmental@bangormaine.gov) to request a Universal Waste Pick-up
  - Attach Universal Waste Inventory Form
    - Indicate what containers / waste you would like picked-up.
  - SEM will send e-mail to all Departments to see if anyone else needs a U-waste pick-up

# Universal Waste Inventory



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
Smoke Detectors		
Freon Units - Air Conditioners / Refrigerators / Dehumidifiers		

Notes/Other:



# Transferring U-Waste



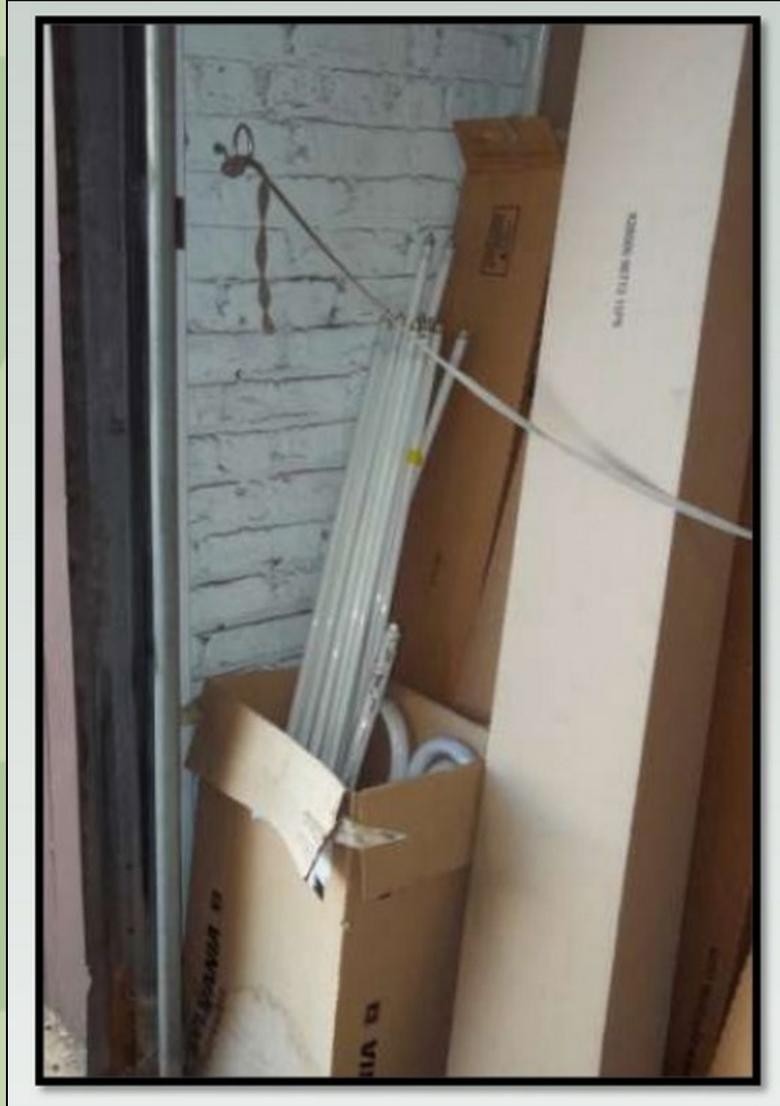
- If a location has a designated universal waste storage location, the u-waste generated at that location should be stored there.
- If you have a facility that generates a minimal amount of universal waste, you can take it to another location within your department as long as the receiving facility maintains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



# Questions?



# What's Wrong With the Following?



# What's Wrong With the Following?



# What's Wrong With the Following?



# What's Wrong With the Following?



# What's Wrong With the Following?

