Stony Brook University

Environmental Health & Safety

Policy & Procedure Manual

Title: **Universal Waste Management**

1. **Purpose**: To establish policies, work practices, and systematic procedures for the handling, packaging, collection, transportation and disposal of universal wastes that are regulated by law. Universal waste includes used, unbroken fluorescent light bulbs (lamps), unbroken mercury containing devices (e.g. thermostats, thermometers), certain battery types (see definition below) and used agricultural pesticides. The goal of this policy is to ensure the proper and safe management (generation, treatment, storage and disposal) of universal waste at Stony Brook University, while applying the U.S. Environmental Protection Agency (EPA)'s hierarchy of waste minimization: reduce, reuse, and recycle. In addition, the policy ensures compliance with federal, state and local regulations on proper handling of universal waste.

2. **Scope**: This policy applies to University employees, contractors and other designated personnel who generate and/or manage those who generate universal waste. Specific training requirements are outlined within this procedure in section 7.3.

3. **Policy**: All universal waste generated at this University shall be handled, packaged, collected, transported and disposed of in such a manner as to protect health and safety, assure compliance with environmental regulations and law, promote effective utilization of resources and contribute to and support the mission of the University. The University also supports and will strive to meet or exceed the waste minimization objectives stated in the Resource Conservation and Recovery Act and similar initiatives.

4. **Responsibilities**: The Department of Environmental Health and Safety (EH&S) shall assume overall responsibility for coordination of the universal waste management program and shall assume responsibility for providing technical assistance and support to universal waste generators regarding matters relating to universal waste management.

    4.1. A generator of universal waste is defined as any person or site whose processes and actions create universal waste. To assure the safety of all individuals who may come into contact with universal waste, the generator shall assume primary responsibility for properly identifying, segregating, handling, labeling, and storing universal waste prior to collection, transportation and/or disposal. It is the generator's responsibility to make certain that all universal waste packaging, handling and storage procedures ensure that the external surfaces of universal waste storage containers are free from contamination and physical hazards prior to removal from the work area. Any work that generates universal waste shall be performed in a safe manner and proper segregation of waste streams is necessary in order to allow safe and cost effective waste disposal.

5. **References**:

    EPA Regulations Governing Universal Wastes (40CFR Part 273)
    (http://www.epa.gov/epawaste/hazard/wastetypes/universal/lamps/frame.htm)

    EPA Information on Handling Mercury Containing Articles (http://www.epa.gov/hg/consumer.htm)

Mercury in the Environment (http://www.epa.gov/mercury/index.html)

NYSDEC Information on Mercury (http://www.dec.ny.gov/chemical/285.html)

6. **Definitions**:

6.1. Agricultural Pesticides: those pesticides that have been recalled or banned from use, are obsolete, have become damaged, or are no longer needed due to changes in cropping patterns or other factors.

6.2. Batteries: batteries such as nickel metal hydride (Ni-MH), nickel cadmium (Ni-Cd), lithium ion (Li-ion), and small sealed lead acid (Pb), which are found in many common items in the business and home setting, including electronic equipment, mobile telephones, portable computers, and emergency backup lighting.

6.3. Lamps: fluorescent lighting which typically contain mercury and sometimes lead, and are found in businesses and households. Examples of common types of lamps include fluorescent, high intensity discharge (HID), neon, mercury vapor, high pressure sodium, and metal halide lamps.

6.4. Thermostats: such devices contain as much as 3 grams of liquid mercury and are located in almost any building, including commercial, industrial, agricultural, community and household buildings. This category also includes other mercury containing equipment, such as thermometers and other mercury containing switches.

6.5. Universal Waste: is a low risk hazardous waste. Universal waste categories include: mercury containing equipment, batteries, industrial pesticides and lamps.

7. **Procedures**:

7.1. **Universal Waste Collection and Disposal**

7.1.1. Used Fluorescent Lamps are considered universal waste. High intensity discharge (HID) lamps including: mercury vapor, high pressure sodium, metal halide, UV lamps and neon tubes are considered universal wastes. Stony Brook University is permitted to accumulate used bulbs for up to one year from the date the first bulb is collected. Used lamps should be packed in their original box or in containers provided by Central Stores. Used lamp container(s) must stay closed at all times, except when adding bulbs. Central Stores collects the full boxes of used bulbs on a regular schedule (about once a month) and transports the containers to their stockroom. There the boxes are skidded, shrink-wrapped and are picked up by the recycler within one year. Central Stores can be contacted directly at 2-6375 to discuss the pickup schedule; otherwise, the Manager of Hazardous Waste can be contacted at 2-3739 to facilitate a pickup or to address larger “cleanouts”. If the used lamp container is approaching the one year deadline and there has not been a scheduled pickup, contact EH&S at 2-6410. For labeling information see Section 7.2.

7.1.2. Broken fluorescent light tubes must be handled as hazardous waste (refer to the Hazardous Waste Management Policy). Do not intentionally break lamps! Do not place broken lamps into boxes with unbroken lamps. Broken bulbs & clean-up residue must be placed into a bag and sealed in an outer container capable of being securely closed (such as a 5 gallon hazardous waste bucket located at many universal waste collection sites established around campus). Wear gloves when handling broken lamps. A dust mask* is also recommended to reduce the

risk of inhaling fine particles and debris resulting from broken bulbs. Contact EH&S at 632-6410 for the pick up and disposal of broken lamps. For labeling information, see Section 7.2.

**** Please note that a dust mask will not protect against harmful mercury vapors. Therefore, exposure should be limited and a dust mask should only be used if/when the risk of exposure to vapors has been controlled.***

7.1.3. Certain mercury containing equipment (MCE) is also considered universal waste. When replacing old thermostats, verify whether the thermostat contains a mercury switch. The mercury switch is a small self enclosed glass tube with visible liquid mercury. Mercury thermometers are also another common MCE that may be managed as universal waste. Waste MCE can be collected in a sealed container. When the container is full, please contact EH&S at 2-6410. For labeling requirements, see Section 7.2 of this policy. If a piece of MCE breaks, it must be managed as hazardous waste and handled as broken lamps outlined above.

7.1.4. Used Batteries are a concentrated source of various heavy metals. The main constituents of concern for human health and the environment include lead and mercury. Leaking batteries should be considered hazardous waste and placed in separate non-leaking, sealed containers and labeled with a hazardous waste label and managed in accordance with the Hazardous Waste Management Policy. The accumulation area for used batteries collected on the East Campus is Biomedical Engineering (BME), located in the HSC, Level 1. The used battery containers must be properly labeled. Used batteries are collected in various areas on West Campus. Used batteries are either picked up by EH&S or are brought to EH&S during a routine hazardous waste pickup and transported to the HMMF where they'll be palletize or containerized to await pickup by a local recycling facility (PK Metals) for recycling or disposed of through our hazardous waste contractor (depending on battery type, size, condition, etc.).

The following is a table of the most commonly used batteries that are managed as universal waste.

Type of Battery	**Common Uses**	**Hazardous Component**
Non-rechargeable	***Non-rechargeable***	***Non-rechargeable***
Carbon Zinc	Many uses	*
Mercuric Oxide	Medical equipment	Mercury
Silver Oxide (Button)	Calculators, watches, cameras	Silver
Zinc – air (Button)	Hearing aids, pagers, cameras	Mercury
Lithium	Computers, cameras	Lithium
Rechargeable	***Rechargeable***	***Rechargeable***
Small Sealed Lead Acid	Tools, camcorders ,small generators	Lead
Large Sealed Lead Acid	Large generators	Lead

Nickel-Cadmium	Smoke alarms, tools, small generators	Cadmium

7.1.5. Many of the batteries identified in the table above can be recycled through a new campus-wide battery collection and recycling program. Please see Attachment 1 for more details.

7.1.6. Used Agricultural Pesticides are not typically generated at Stony Brook University. Please contact the Manager of Environmental Protection at 2-6487 or the Department of EH&S at 632-6410 for further information.

7.2. **Labeling**

7.2.1. Used Fluorescent Lamps - Containers must have a label affixed with the words "Universal Waste-Used Lamps" and must have the date the first tube was placed in the container, marked on the label.

7.2.2. Broken Fluorescent Lamps - The 5 gallon hazardous waste buckets designated for broken bulbs must have a Hazardous Waste label affixed with the words "Hazardous Waste for Disposal". A new label must be affixed to the bucket each time the bucket is removed for disposal. Remove the old Hazardous Waste label first.

7.2.3. Used Mercury Containing Thermostats - Containers must have a label affixed with the words: "Universal Waste-Used Mercury-containing Thermostats" and must have the date the first thermostat was placed in the container, marked on the label.

7.2.4. Used Batteries – Containers must have a label affixed with the words: "Universal Waste-Used Batteries" and must have the date the first battery was placed in the container, marked on the label.

7.2.5. All labels are available from EH&S (2-6410).

7.3. **Training**

7.3.1. Only trained personnel may handle Universal Waste. Universal Waste Management Training is required if an employee, contractor or designated person:
- generates;
- packages;
- prepares for shipment;
- manages collection and storage activities; and/or,
- transports universal waste.

7.3.2. New employees may not manage or handle universal waste unless supervised. Employees will receive training in the management and handling of universal waste within six months of commencing work where their duties expose them to universal waste handling activities.

7.3.3. Universal waste management training is provided by EH&S. For more information, visit http://www.stonybrook.edu/ehs/training/

8. **Related attachments, forms or documents**:

Attachment 1: Battery Recycling Program Description

Attachment 2: English/Spanish “Handling of Used Fluorescents and HID Lamps” Guide ***for posting***
Attachment 3: “Handling of Used Fluorescents and HID Lamps” Guide ***for distribution***

Attachment 1

With its eye on the environment, Stony Brook University (SBU) has joined a national program called Call2Recycle to conveniently recycle used rechargeable batteries and old cell phones generated on Campus. This program will strengthen and enhance SBU's existing program by providing more convenient and safe disposal options to the Campus Community.

The program is to be administered by EH&S (at present, it is being coordinated by the Manager of Hazardous Waste). The program elements are as follows:

- Empty boxes will be provided by EH&S to pre-determined locations around Campus.
- Each box is labeled with a bar code and Site ID # which corresponds to a specific building on Campus (see site identification and location list attached).
- Prior to any box being distributed, each box should be properly "set up". This includes:
    1. Looking at the shipping label to determine which building the box belongs.
    2. Before the box is brought to that building, the plastic shrink wrap should be removed from the box.
    3. Remove the shipping label (same label noted above) from the box that identifies where the box is to be set up.
    4. Fill in the return/outbound shipping label either by affixing a pre-printed address label, use an address stamp or hand write the following address:

        Environmental Health & Safety
        110 Suffolk Hall
        Stony Brook University
        Stony Brook, NY 11794-6200

    5. Using a marker or bold pen/ink, "check off" or mark with an "X" the designated box to indicate the material is Universal Waste.
    6. Write the date* when the box is set up to the appropriate field.
    **Universal Waste rules dictate that the box MUST BE SHIPPED within one year of that date!*
    7. Fold cover in half and insert "lips" into slots in back/top of box to stand up.
    8. Place an instructional sign (attached) into a clear page protector and post sign directly above wherever the box is set up.
- Boxes should ONLY be set up in the building they are marked for – this allows for accurate tracking of box locations and waste (battery and cell phone) generation rates, per location.
- When the boxes filled, they are to be shipped via UPS to the recycling facility. There are three (3) options to ship the full boxes:
    1. If UPS generally makes pickups at the building where the box is located, it can be sealed up as per the instructions on the box and handed to the UPS driver (all boxes are pre-addressed and pre-paid);
    2. EH&S can be contacted and a request made to have someone from the department pick up the full box. Once the box is picked up, it will be brought back to Suffolk Hall where it will be prepped for shipment and left for UPS to pick up; or,
    3. Full boxes can be brought to Suffolk Hall and dropped off in room 110 where the box(es) will be prepped for shipment and left for UPS to pick up.
- Once the boxes are received at the recycling facility (INMETCO in Ellwood City, Pennsylvania), an automatic replenishment system will generate an order to ship a new box to Suffolk Hall, where EH&S personnel will inventory the box(es) and distribute to the building where the original box was

generated using the same steps listed above (it may take up to 3 weeks transit time for the return of the boxes to the recycling facility and the replenishment order delivered to Suffolk Hall).

Additional information can be found on our website:
http://www.stonybrook.edu/ehs/waste/recycling_program.shtml

Attachment 2

Handling of Used Fluorescent & HID* Lamps

1. All used lamps must be packaged in original shipping container or an appropriately sized cardboard box or drum. Remove cardboard spacers from shipping boxes or the lamps won't fit all the way into the boxes.

2. Any unbroken, used lamps should be labeled “Universal Waste – Used Fluorescent Lamps” with the date if placed in a box with new lamps.

3. Label outside of box as “Universal Waste – Used Fluorescent Lamps”. Put accumulation start date on label (labels available from EH&S).

4. Do not intentionally break lamps. Do not place broken lamps into boxes with unbroken lamps.

5. Broken bulbs & clean-up residue must be placed into a separate cardboard box (using an inner bag/liner, as necessary), can, pail, fiber or metal drum, labeled as ***hazardous waste*** and sealed. Wear gloves when handling debris (a dust mask is also recommended). Please contact EH&S at 2-6410 to pick-up containers of broken bulbs.

6. Completely fill box. Do not force lamps into boxes. Box ends must be cross-folded shut when in use and secured with 3-inch packing tape when full.

7. When a box is full, place them in the assigned location and Central Stores (2-6375) will pick them up on a regular basis.

8. Do not store boxes outside or exposed to weather.

*HID lamps include: arc lamps, germicidal lamps, high-pressure sodium lamps, mercury vapor lamps, metal halide lamps, neon lamps and ultra-violet lamps.

If you have any questions, contact EH&S at 632-6410

Thank you in advance for your cooperation

Manejo de Uso De Lamparas Fosforesente & HID*

1. Todas las lamparas usadas deben ser empacadas en sus cajas originales, o otra caja de carton de 4 piez de largo.

2. Cualquier lampara usada que no esta rota, debe ser sellada “NO BUENA” con fecha, si se va a colocar la dentro de una caja con lamparas buenas.

3. Senale la caja “Lamparas Fosforesente Universal Usadas Desechable’ (Used fluorescent lamps, Universal Waste). Poniendole la fecha en su sello. Sellos disponible en EH&S.

4. No rompar las lamparas intencionalment, no coloques lamparas rotas dentro de las cajas con lamparas buenas.

5. Bombillas rotas y residous deben ser colocados dentro de una lata de metal o conten de fibre. Usa quantes cuando este manejando particulares.

6. Llene las cajas competamente y no fuerza las lamparas dentro de las cajas. Debe sellar las cajascon cinta pegante de 3” pulgada cuando esten llenas.

7. Cuando las cajas esten llema Central Stores al telefono 632-6375 para reconjerla.

8. No juntas las cajas afuera para no exponerla al tiempo.

*Lamparas HID incluidas: lamparas arc, lamparas germicidas, lampara alta pression de sodios. Lamparas vapor de mercurio, lamparas de neon y lamparas ultra violeta.

Si tines alguna pregunta llame a EH&S 632-6410

Gracias por su coperacion

Attachment 3

Handling of Used Fluorescent Light Bulbs and HID* Lamps

1. All ***handlers*** of Universal Waste, which includes fluorescent light bulbs and HID lamps, must complete required training that ensures all employees are thoroughly familiar with proper waste handling and emergency procedures relative to their responsibilities during normal facility operations and emergencies. Handlers are people who generate or produce universal waste as well as people who receive universal waste from other generators or handlers and consolidate it before shipping to a disposal facility. For more information on training, please contact EH&S (2-6410) or visit http://www.stonybrook.edu/ehs/waste/training.shtml

2. All used/spent fluorescent light bulbs and HID lamps (used lamps) must be packaged in original shipping container or an appropriately sized cardboard box or drum immediately after they are removed from fixture. Place carefully to avoid breakage.

3. The outer box/drum holding unbroken, used lamps should be ***labeled*** "Universal Waste – Used Fluorescent Lamps" with the ***date*** the first bulb is placed there (labels available from EH&S). Used lamps must never be allowed to accumulate for more than one year of the accumulation start date, and must be disposed of for recycling through Stony Brook University's Universal Waste Program before one year is exceeded.

4. Do not intentionally break lamps! Do not place broken lamps into boxes with unbroken lamps.

5. Broken bulbs & clean-up residue must be placed into a separate cardboard box (using an inner bag/liner, as necessary), can, pail, fiber or metal drum, labeled as ***hazardous waste*** and with a properly fitting cover/lid. Wear gloves when handling debris (a dust mask is also recommended). Please contact EH&S at 2-6410 to arrange for proper disposal of broken bulbs (2-6410).

6. Completely fill box with spent bulbs without forcing into place – doing so will likely cause them to break. Box ends must be cross-folded shut when in use, taped shut with 3-inch packing tape or duct tape on the bottom before accumulation and taped shut on top when full.

7. When a box is full, place in the designated Universal Waste Storage Area for your building and Central Stores will pick them up on a regular basis (usually monthly). Contact Central Stores (2-6375) to ensure your area is on the schedule or for special pickup requests.

8. Do not store boxes outside or exposed to weather. Contact EH&S (2-6410) if you need to establish a proper Universal Waste Storage Area/Location.

**HID lamps include: arc lamps, germicidal lamps, high-pressure sodium lamps, mercury vapor lamps, metal halide lamps, neon lamps and ultra-violet lamps.*

For more information, contact EH&S at 632-6410 or visit our website at http://www.stonybrook.edu/ehs/waste/universal_waste.shtml

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