Creighton University
Comprehensive Universal Waste Program

PURPOSE
Creighton University establishes this policy to establish policies and procedures for the proper handling and disposal of Universal Waste.

SCOPE
This policy and procedure pertains to all students, staff, faculty and administration of the University.

POLICY
Creighton University is a Small Quantity Handler of Universal Waste, and as such must follow all provisions of Title 128, Chapter 25 of the Nebraska Department of Environmental Quality.

UNIVERSAL WASTE HANDLING
Universal waste is hazardous waste that is common among all industries. EPA considers batteries, pesticides, mercury-containing thermostats, and lamps as universal waste. However, NDEQ considers electronic items to be universal waste, in addition to EPA's list. NDEQ's regulations can be found in Title 128, Chapter 25.

LABELING
The universal waste or the container in which the universal waste is placed in must be labeled or marked clearly with words appropriate to the type of waste. These include "Universal Waste – (blank)" or "Waste (blank)" or "Used (blank)" where (blank) is Battery(ies), Mercury-containing Items, Lamps, Pesticides or Electronic Items. Note that used pesticides are not universal waste and therefore "used pesticides" would not be a proper label. Additionally, the name of the actual item may be substituted in the case of an electronic item, *e.g.* "Waste Monitor" or "Universal Waste – CPU".

ACCUMULATION TIME LIMITS
A small quantity handler of universal waste may accumulate universal waste for no longer than **one year** from the date the universal waste is generated, or received from another handler.

EMPLOYEE TRAINING
All employees who handle or have responsibility for managing waste will be informed of procedures for proper handling and emergency procedures appropriate to the types of universal waste handled at the facility. This especially pertains to Facilities Management employees.

SPILLS
The handler must immediately contain all releases of universal wastes and other residues from universal wastes. It must be determined whether any material resulting from the release is hazardous waste, and if so, it must manage the hazardous waste in compliance with the regular hazardous waste regulations.

TYPES OF UNIVERSAL WASTE

BATTERIES

- Batteries such as nickel-cadmium (Ni-Cd) and small sealed lead-acid batteries, which are found in many common items in the University setting, cannot be placed in the trash. Some examples of these items include electronic equipment, cellular telephones, tools, laptop computers, calculators, etc.
- A used battery becomes a waste on the date it is discarded (e.g. when sent for reclamation) and an unused battery becomes a waste on the date the handler decides to discard it.
- The battery must first be placed in a plastic bag and then put in the specially marked box.
- All Universal Waste batteries must be recycled through Environmental Health and Safety; EH&S maintains the only battery recycling container, due to increased regulations for packaging and shipping of these materials.
- Batteries must be disposed of in a way that prevents the release of any universal waste or component of a universal waste to the environment. Batteries that show evidence of leakage or damage must be stored in containers that are closed, structurally sound, and compatible with the contents of the battery.

MERCURY-CONTAINING ITEMS

A small quantity handler of universal waste must manage universal waste mercury-containing items in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

- Must contain any universal waste mercury-containing items that show evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container. The container must be closed, structurally sound, compatible with the contents, and must lack evidence of leakage, spillage, or damage that could cause leakage. It also must be labeled properly.
- It is not recommended that Creighton personnel remove mercury from these items themselves. The regulations require a containment device, a mercury clean-up system at the ready, an appropriate container for any spills, and proper ventilation and monitoring of the area where the removal will be performed. A determination must be made of whether the mercury is hazardous waste, and if so it must be handled as such. Similar regulations apply to draining mercury out of open-ended mercury-containing items.
- Mercury-containing items are disposed of via Creighton's authorized hazardous waste removal vendor.

LAMPS

A small quantity handler of universal waste must manage universal waste lamps in a way that prevents releases of universal waste or component of a universal waste to the environment.

- The lamps must be contained in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. The containers must stay closed and must lack evidence of leakage, spillage, or damage that could cause leakage.
- The container must be closed and labeled appropriately, and the number of bulbs counted to allow for proper billing by the disposal company.
- A Creighton-specific Lamp Procedure is attached and should be followed.

ELECTRONICS

Electronic waste is any item with a circuit board or other complex circuitry, including such items as unwanted computers, monitors, televisions, audio equipment, printers, and other electronic devices.

Discarded electronics contain hazardous or toxic substances. Some electronic products (notably those with cathode ray tubes or CRTs, circuit boards, batteries, and mercury switches) contain hazardous or toxic materials such as lead, mercury, cadmium, chromium, and some types of flame-retardants, and do so in amounts that may cause them to test hazardous under federal law.

Old computers and their parts cannot be held or accumulated. These items are considered universal waste in Nebraska and Creighton must follow strict regulations with regard to labeling and disposal of these items. Besides taking up space in empty cubicles and storerooms, end-of-life electronics pose several issues regarding proper disposal and potential environmental consequences.

Donations are not an alternative: Due to concerns about proper disposal of these items, as well as information security and site-licensing concerns, used/unwanted electronics can not be donated or otherwise given away. All Creighton owned computers must be handled by DoIT and EH&S to ensure that disposal is processed properly.

Procedure
Log in to myit.creighton.edu to submit a work request to have your electronics disposed of. DoIT will determine if the item can be reused or needs to be disposed of. The University has an agreement with a local electronic recycler to dispose of these items properly. There is a cost to the University for this service. More information can be found on DoIT's website.

PESTICIDES

- Pesticides are generally managed under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Waste pesticides are usually generated due to a federal recall or from citizens cleaning out the garage. Universal waste pesticides include both recalled pesticide stocks of a suspended and cancelled pesticide that are part of a voluntary or mandatory recall and unused pesticide products that are collected and managed as part of a waste pesticide collection program.
- Labeling – The container must be labeled with original label and the wording Universal Waste Pesticide(s). If the original label is not legible it must be labeled in accordance with either DOT requirements or have a label officially recognized by the state as part of a pesticide collection program.

AEROSOL CANS

It should be noted that aerosol cans are not Universal Waste, but they are collected and handled with the Universal Waste items.

Aerosol cans, even when empty, can be considered hazardous waste due to the reactivity of the can itself and not the characteristics of the substance the can once contained. The can is capable of detonation or explosive reaction if is subject to a strong initiation source or it is heated under confinement.

Therefore, ***all*** unwanted aerosol cans must be disposed via Facilities Management and ***must not*** be thrown in the garbage. This includes everything that comes in an aerosol can (*e.g.*, paints, hairspray, deodorizer, cleaners, *etc.*).

Procedures for users of aerosol cans:

- Do not discard aerosol cans in the garbage, even when they appear to be empty of propellant.
- If you use a lot of aerosol cans, contact Facilities Management so that you can be set up with a collection drum in your immediate work area.
- If you only use a few aerosol cans, you can place your unwanted aerosol cans in a common-use drum supplied for your building. If you do not know the specific location of the common-use drum for your building, contact Facilities Management.
- The aerosol collection container/drum will be labeled as "Aerosol Cans."
- Ensure that the lid on the collection drum remains closed at all times.
- Should your container/drum become full contact Facilities Management immediately so it can be picked up.
- Whenever possible, avoid using products that come in aerosol cans. If you can avoid the use of aerosol cans, the University can avoid some costly regulatory requirements.

Facilities Management Disposal Procedures

- Facilities Management collects aerosol cans and punctures them in a can-puncturing apparatus; this renders the cans as non-hazardous as described in the NDEQ Guidance Document "05-181 Aerosol Can Waste"
- The punctured and emptied cans are disposed of as scrap metal. Therefore, these cans are excluded from being hazardous waste. This does not include cans that contained P-listed chemicals or pesticides; these sorts of cans must still be handled as hazardous waste.

A separate Aerosol Can Policy lists further responsibilities that are Creighton-specific.

DEFINITIONS

A. ***Battery*** means a device consisting of one or more electrically connected electrochemical cells, which is designed to receive, store and deliver electric energy. An electrochemical cell is a system consisting of an anode, cathode, and an electrolyte, plus such connections (electrical and mechanical) as may be needed to allow the cell to deliver or receive electrical energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed. It does not include electrical generators but only includes devices that can store electrical power.

B. ***Code of Federal Regulations*** **(CFR)**

C. ***Electronic Item*** means electronic equipment that contains one or more electronic circuit boards or other complex circuitry, including but not limited to computer monitors, televisions, central processing units (CPUs), laptop computers, printers, terminals, keyboards, mainframes, stereo

equipment, telephones, and recording/playback devices. "Electronic item" does not include discarded household appliances.

D. ***Environmental Protection Agency*** **(EPA)**
E. ***Generator*** means any person, by site; whose act or process procedure hazardous waste or whose act first causes a hazardous waste to become subject to regulation.
F. ***Lamp*** (also referred to as "universal waste lamp") means 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 infrared regions of the electromagnetic spectrum. Examples of common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps.
G. ***Mercury-containing item*** means any electrical, mechanical, or medical product or component (excluding batteries and lamps) which contains elemental mercury and the elemental mercury is necessary for its operation where the mercury acts as a conductor of temperature, pressure, or electricity, or acts as a weight damper. The mercury must be housed within an outer metal, glass or plastic casing. Mercury-containing devices include but are not limited to: barometers, sphygmomanometers, electrical switches and relays, gauges and flow regulators, manometers, bow stabilizers, thermometers, thermocouples, and mercury-filled pumps.
H. ***Nebraska Department of Environmental Quality (NDEQ)***
I. ***Pesticide*** means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant. It does not include new animal drugs or feeds that contain animal drugs.
J. ***Recycled*** means a material is used, reused, or reclaimed.
K. ***RCRA Empty –*** while the aerosol can may have all its contents removed using practices commonly employed to remove materials from that type of container, the generator must demonstrate that the aerosol can also have no more than one inch of residue or no more than 3% by weight of the total capacity remaining.
L. ***Resource Conservation and Recovery Act (RCRA)***
M. ***Small Quantity Handler of Universal Waste*** means a universal waste handler who does not accumulate more than 5,000 kilograms total of universal waste, on the contiguous property of the facility, at any time.
N. ***Universal Waste –*** in April of 1995, the first "Universal Waste" rule was issued by the EPA and codified in 40 CFR part 273. The rule currently applies to batteries, pesticides, thermostats, and fluorescent lamps. The main focus of the rule is to provide generators of these hazardous wastes more freedom in transporting, collecting, and handling wastes. The Universal Waste Rule encourages recycling by streamlining the requirements related to notification, labeling, marking, prohibitions, accumulation time limits, employee training, responses to releases, offsite shipments, tracking, exports, and transportation.
O. ***Universal Waste Handler*** means the owner or operator of a facility that generates or receives universal waste from other universal waste handlers, accumulates universal waste, and sends universal waste to another universal waste handler, to a destination facility, or to a foreign destination. It does not include the treatment, disposal, recycling or transportation of universal waste.

Universal Waste Procedure
Light Tubes

Purpose:

To manage control, recycle, and document the disposal of universal waste lighting tubes, in accordance with state and federal regulations and to document a procedure for management of waste lamps, light bulbs and ballasts.

Instructions:

- Carefully package waste lamps and bulb to prevent breakage.
- Store waste lamps and bulbs in secure area.
- Use only the proper container (cylindrical cardboard container with proper top).
- The lid must be on the container unless the bin is being filled; this is mandated by law.
- Label container as "Universal Waste—Lamps" and annotate start date when first bulb is contained.
- Container can only stay in place for one year from start date.
- Do not break or reduce the size of the tube container (cardboard). Do not use metal container, since metal may absorb mercury.
- Call EH&S Chemical Coordinator when barrel is full. The removal of the barrel will then be coordinated with University Moving Services.
- Maintain a running total of the number of bulbs in the bin for billing purposes. It is not safe or efficient to count bulbs after the bin is full.

Lamps and bulbs that are regulated consist of:

- Fluorescent lamps. Note that the Nebraska Department of Environmental Quality (NDEQ) accepts the manufacturers' claims that the following bulbs are not hazardous waste and therefore can be thrown away: "Philips ALTO", Sylvania Ecologic, or GE Ecolux. Bulbs that are not clearly marked as being "Low Mercury" or "TCLP compliant" must still be handled as Universal Waste.
- Sodium vapor lamps
- High and low pressure mercury vapor lamps
- High intensity discharge (HID lamps)
- Metal Halide lamps
- Neon lamps and signs
- Red LEDs
- Incandescent light bulbs are *not* Universal Waste and can be thrown in the trash.

Lamp/ballast replacement:

- Lamps are to be changed out by facilities management personnel who have been trained in proper handling and management procedure by supervisory personnel.
- Lamps and ballasts are frequently replaced. Ballast manufactured before 1979 may contain polychlorinated biphenyls (PCBs); these are toxic and pose a health risk to humans and wildlife. NOTE—if ballast is marked "no PCB" assume it doesn't contain PCB. If the ballast isn't marked, assume it does contain PCBs.
- Ballasts are collected near the bulb bin in the Facilities Management Building.

More information can be found on the NDEQ Environmental Guidance Document 10-029.

Universal Waste Battery Procedure

Introduction:

A battery is considered to be a universal waste if, when discarded, it meets the criteria established for hazardous waste. This includes batteries such as nickel-cadmium (Ni-Cad), mercuric-oxide, and certain lithium batteries, found in many items common to small businesses and households These batteries are from such items as electronic equipment, cellular telephones, portable computers, and emergency generator backup lighting.

The criteria that commonly apply to batteries are the toxic materials included, such as heavy metals, as well as the corrosive properties of the batteries. Batteries must be disposed of in a way that prevents release any Universal Waste or components of Universal Waste to the environment. This means either disposal as hazardous waste or recycling.

Collection information and sites:
Rechargeable batteries must be recycled. The battery must first be placed in a plastic bag and then put in the specially marked box. Environmental Health and Safety maintains the only battery recycling container, due to increased regulations for packaging and shipping of these materials.

Faculty, staff, and students must Facilities Management and/or Environmental Health and Safety for disposal of batteries.

Batteries by type and category:

Ni-Cad – Nickel-Cadmium
Small sealed lead-acid batteries which are found in many common items in the business and home settings, including electronic equipment, cell phones, portable computers and emergency backup lighting. Some rechargeable batteries are lead-gel batteries, which will be handled the same way as Ni-Cad batteries.

Alkaline
Are commonly referred to as disposable or non-rechargeable and are often used in toys, flashlights, and some electronic equipment. These are not universal waste and can be thrown in the regular trash.

Button
These are found in watches, calculators, hearing aids, and other small electronic devices. These batteries often contain mercury, silver or lithium.

Lead-Acid
Lead-Acid batteries include most Automotive batteries. These batteries contain regulated amounts of lead and must be recycled.

Lithium ion (Li-ion)

Lithium ion batteries are commonly found in portable electronics with rechargeable batteries, such as cellular phones and notebook computers.

Uninterruptible Power Supply (UPS)
A device which maintains a continuous supply of electric power to connected equipment by supplying power from a separate source when utility power is not available. These are frequently attached to computer systems or telecommunications systems and contain lead-acid batteries (see above).

Battery containment:
Batteries that show evidence of leakage or damage must be stored in a container that is closed, structurally sound, and compatible with the contact of the battery.

Summary: Used rechargeable batteries generated at Creighton University fall under the domain of Universal Waste, are hazardous and are collected by Universal Waste personnel for recycling or disposal as hazardous waste.

More information can be found on the NDEQ Environmental Guidance Document 08-019.