

TEMPLE UNIVERSITY

ENVIRONMENTAL HEALTH AND RADIATION SAFETY

NO. 2.1

TITLE: Classification of Wastes

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REVISED: 12/03

Wastes generated at Temple University must be collected, stored, transported and disposed safely, economically and in compliance with relevant federal and Pennsylvania regulations. For the purpose of this policy, a distinction is made among regulated Temple University controlled and managed wastes. Accordingly, the following classes of waste are identified:

- **Radioactive Waste:** Waste containing radioactive materials generated at Temple University are regulated as class of low-level radioactive waste. This waste includes source materials, special nuclear materials, and by-product materials as defined by the Atomic Energy Act. Furthermore, in Pennsylvania, naturally occurring and accelerator-produced radioactive materials are regulated in the same manner as other classes of radioactive materials.
- **Infectious and Biological Hazard Waste:** Infectious waste consisting of human or animal body parts, human blood or body fluids, animal waste, or other material that can be infectious is typically packaged in and identified by red or orange bags at Temple.
- **Chemotherapeutic Waste:** Chemotherapeutic waste resulting from the production or use of chemical agents, used for cancer treatment, are typically packaged in and identified by yellow bags at Temple.
- **Sharps Waste:** Sharps are items like syringes, pipettes, surgical instruments, or other objects that may puncture a waste container. For this reason, sharps must be disposed of in puncture-resistant containers. Sharps can be contaminated with infectious, radioactive, chemotherapeutic or any other hazardous material. Each sharps container must be properly labeled appropriately to identify the type of hazard.
- ∃ **Hazardous Waste:** EPA defines a hazardous waste as any waste or combination of wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may cause or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of or otherwise managed. A waste, discarded or unwanted chemical or chemical mixture must be managed as a hazardous waste if it exhibits hazardous characteristics or is specifically listed in federal (Environmental Protection Agency) or state regulations (Department Of Environmental Protection). A complete definition of hazardous waste is located in [40 CFR 261 Identification and Listing of Hazardous Waste](#). A waste is considered a AHazardous Waste if it meets any of the following criteria:
 1. *Ignitability ([40 CFR 261.21](#))*
 - *Liquids other than aqueous solutions containing less than 24% alcohol by volume, that have a flash point below 60° C (140° F).*
 - *Non-liquids that are capable of causing fire by friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burn vigorously and persistently to create a hazard.*
 - *Flammable(Ignitable) compressed gases as defined in 49 CFR 173.300 or 40 CFR 260.20 and 260.21..*
 - *Oxidizers such as chlorates, permanganates, inorganic peroxides, or nitrates that yield oxygen*

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readily to stimulate the combustion of organic matter as defined in 49 CFR 173.151

2. *Corrosivity* ([40 CFR 261.22](#))

- *Aqueous solutions that have a pH equal to or less than 2 or equal to or greater than 12.5. However, wastes with pH ranges 2-6 and 11-12.5 are also managed as hazardous waste because of sewer discharge regulations and SARA Title III requirements.*
- *Liquids capable of corroding SAE 1020 steel at a rate greater than 6.35 mm/year at 55° C.*

3. *Reactivity* ([40 CFR 261.23](#))

- *Substances that react with water violently or produce toxic gases or explosive mixtures*
- *Substances that are unstable.*
- *Explosives*
- *Substances that contain cyanide or sulfide that generate toxic gases when exposed to a pH in the range between 2 and 12.5.*

4. *Toxicity* ([40 CFR 261.24](#))

The Toxicity Characteristic Leaching Procedure (TCLP) is a standardized test which mimics rainwater leaching through solid waste and compares the amount of toxic constituents released by the leaching action to federally established standards. If the standard is exceeded, the waste is hazardous. Liquids are analyzed directly without adding the leachate material. See 40 CFR 261.24, Table 1 for a list of these chemicals.

5. *Listed Hazardous Waste* ([40 CFR 261-Subpart D](#))

- *EPA regulations list approximately 450 commercial or off-specification chemicals, waste streams, or their spill residues which must be handled as hazardous wastes due to their acute or chronic toxicity. These specifically listed waste are designated as F, K, P, or U lists and are located in [40 CFR 261.31](#), [32](#) and [33](#) respectively; (Acutely hazardous wastes are designated by an H listed hazard code & all P listed waste.)*
- *The above listed waste include waste that are either a process waste or a discarded commercial product. A process waste is any waste that, by virtue of some use, process or procedure, no longer meets the manufacturers original product specifications. A discarded commercial chemical product is the original(virgin) material in the original container that is unwanted, unused or outdated.*

6. *Others*

- *Chemicals with sufficient mutagenic, teratogenic, carcinogenic, or reproductive hazards may warrant special handling (e.g., ethidium bromide). In general, waste streams containing greater than 1 ppm of these wastes should either be deactivated in the laboratory or sent through the Chemical Waste Program.*

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- Mixed Waste: Generation of mixed hazardous and radioactive wastes are not permitted at Temple University without prior approval from the Environmental Health and Safety Department (EHS). Regulations for mixed wastes are based on several criteria and are administered by multiple agencies (NRC, EPA, PaDEP). Therefore, disposal of mixed radioactive and hazardous waste poses specific problems and EHS must be notified prior to generation of mixed wastes.
- Municipal Waste: The municipal or household waste is managed by Facilities Management and/or Environmental Services and is often disposed of in sanitary landfills. Regulated or controlled wastes cannot be mixed with municipal waste.

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NO. 2.2

TITLE: Generic Waste Policy

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The waste generator and the Environmental Health and Radiation Safety Department (EHRS) are responsible for the proper management of waste. It is the responsibility of generators to identify, treat, package and handle any type of waste generated within their facilities. The EHRS department is responsible for collection and disposal of chemical and radiological waste. EHRS can provide guidance for proper waste management and disposal.

Definition of Waste Generator: Waste generators are those who have the authority to obtain, use, handle and store hazardous material. The authorized user, principal investigator, or the supervisor is the waste generator for their area.

Responsibilities of Waste Generator: The generator is responsible for the labeling, packaging, handling, and storing of waste materials. Appropriate documentation must accompany waste for EHS pick-up. The generator is responsible for the safe storage of waste in their possession. The generator is also responsible for providing training to their workers and students on proper waste management.

Responsibilities of EHRS: The EHRS provides policies and guides for definition, classification, treatment, storage and disposal of various wastes. The EHRS will assist and advise waste generators in the selection of procedures and methodologies to be used for treatment, segregation, handling and disposal of waste materials for disposal. All waste must be disposed in accordance to appropriate regulations. The EHRS will dispose of waste materials in accordance with appropriate regulations, accepted prudent practices, and Temple University policies.

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NO. 2.3

TITLE: Infectious or Biological Waste Policy

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Collection and disposal of infectious or biological waste generated because of research, teaching, and patient care must be conducted safely and consistent with regulations of the U.S. Environmental Protection Agency (EPA) and Pennsylvania Department of Environmental Protection (PaDEP). In Pennsylvania, the PaDEP regulates infectious or biomedical waste. This policy is based on PaDEP regulations.

Infectious Waste is defined as follows:

Cultures and stocks of infectious agents and associated biologicals, including the following:

- Cultures from medical and pathological laboratories
- Cultures and stocks of infectious agents from research and industrial laboratories
- Wastes from the production of biologicals
- Discarded live and attenuated vaccines except for residue in empty containers
- Culture dishes, assemblies and devices used to conduct diagnostic tests or to transfer, inoculate and mix cultures

Pathological waste: human pathological wastes, including: tissues, organs and body parts and body fluids that are removed during surgery, autopsy, other medical procedures, or laboratory procedures. Hair, nails, and extracted teeth are excluded. Embalmed body parts are also excluded.

Human blood, blood products and body fluid waste:

- Liquid waste human blood
- Human blood products
- Items saturated or dripping with human blood
- Items that are caked with dried human blood, including serum, plasma, and other blood components, which were used or intended for use in patient care, specimen testing or the pharmaceuticals
- Intravenous bags that have been used for blood transfusions
- Items, including dialysate, that have been in contact with the blood of patients undergoing hemodialysis at hospitals or independent treatment centers
- Items contaminated by body fluids from persons during surgery, autopsy, other medical or laboratory procedures
- Specimens of blood products or body fluids, and their containers
- Isolation Wastes: Biological wastes or wastes contaminated with blood, excretion, exudates or secretions from humans who are isolated to protect others from highly virulent diseases.

Animal wastes:

- Contaminated animal carcasses, body parts, blood, blood products, secretions, excretions and bedding of animals that were known to have been exposed to zoonotic infectious agents or non-zoonotic human pathogens during research which includes veterinary schools and hospitals, production of biologicals or testing of pharmaceuticals.
- Animal wastes or wastes contaminated with blood, excretion, exudates or secretions from isolated animals known or suspected to be infected with highly virulent diseases.

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Used sharps: sharps, including hypodermic needles, syringes with or without the attached needle, Pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, culture dishes, suture needles, slides, cover slips and other broken glass or plasticware that have been in contact with infectious agents or that have been used in animal or human patient care or treatment, at medical, research, or industrial laboratories.

Chemotherapeutic waste is defined as waste resulting from the production or use of antineoplastic agents used for the purpose of stopping or reversing the growth of malignant cells unless it is defined as a hazardous waste under federal and state law.

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NO. 2.4

TITLE: Management of Infectious or Biological Waste

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Infectious or Biological Waste, as defined in [Policy 2.3](#), must be managed according to this policy. The Temple University policy on management of infectious or biological waste is based on safe and economical disposal, in compliance with applicable regulations.

Handling: Proper personal protective equipment (PPE) must be worn when handling these wastes. All infectious or biological waste must be autoclaved by the generator prior to disposal in an appropriate infectious or biological waste container. Otherwise, the waste must be transported by an approved hauler to an approved treatment, storage and disposal facility.

Efficacy of Autoclave Treatment of Waste: autoclaving of infectious waste must be monitored to assure the efficacy of the treatment method ([See Policy No. 6.9](#)). A log noting the date, test conditions and the results of each test of the autoclave must be kept and must be available for periodic audit.

Collection:

- Sharps must be collected in a sturdy, puncture-proof, leak-proof, container with the universal biohazard symbol.
- Solid infectious or biological waste must be placed in a closed container. The container must be lined with a plastic bag with sufficient integrity to contain the waste. Boxes or bags must be incinerable, and should not be made of PVC or other halogenated materials.
- Liquid infectious or biological wastes may be disinfected using a 10% bleach solution. The liquid wastes must have been treated with the bleach solution for at least 15-minutes prior to drain disposal.
- Boxed sharps and bagged infectious or biological wastes are then placed in a designated area of the building for pick-up by Environmental Services, by Facilities Housekeeping, or directly by the biological or infectious waste hauler.

Manifesting: See [Policy 2.11](#) for details on managing manifests.

Storage:

- Generators of waste should not let the waste containers fill before requesting removal, to prevent the potential for waste spillage, which may cause a potential for worker exposure.
- Infectious or biological wastes must be stored in closed, leak-proof containers. The outer container must be either disposable or capable of being disinfected for reuse. The inner container, usually the red bag, must be disposable.
- If a disinfectant is used it must be appropriate to the type of hazard likely to be present. For instance, glutaraldehyde is one of the few materials effective against Mycobacterium tuberculosis, so it would be appropriate in a laboratory where the tuberculosis bacterium is used.
- Used sharps containers may be stored by the waste generator until 3/4 full, as long as waste is in a nonputrescent state. (Consult Environmental Services in TUH for alternate procedures in hospital specific policies).
- Once picked up, filled waste containers may be held at room temperature for up to 30 days; frozen wastes may be stored for up to 90 days..

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Disposal:

- Liquid infectious or biological waste may be chemically disinfected and then disposed of into the sewer system. An acceptable chemical disinfectant is 10% sodium hypochlorite (commercial bleach).
- Sharps, once placed in puncture resistant containers, will be transported to an outside facility
- Solid infectious or biological wastes will be transported to an outside facility. (Consult Environmental Services in TUH for alternate procedures in hospital specific policies.)

Transport: Only approved infectious or biomedical waste haulers shall be allowed to remove infectious or biological waste from Temple University or its associated hospitals.

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TITLE: Management of Chemotherapeutic Waste

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Chemotherapeutic waste is defined in [Policy No. 2.3](#). At Temple University, chemotherapeutic waste is classified as Chemotherapeutic Waste. This class of waste does not include waste that contains antineoplastic agents.

Handling: Handling: Proper personal protective equipment (PPE) must be worn when handling these wastes. Care must be taken not to cause aerosolization of the chemotherapeutic agents. The waste must be transported by an approved hauler to an approved treatment, storage and disposal facility.

Collection:

- Sharps must be collected in a sturdy, puncture-proof, leak-proof, container with the universal biohazard symbol.
- Solid chemotherapeutic waste must be placed in a closed container. The container must be lined with a plastic bag with sufficient integrity to contain the waste. Boxes or bags must be incinerable.
- Boxed sharps and bagged chemotherapeutic wastes are then placed in a designated area of the building for pick-up by Environmental Services, by Facilities Housekeeping, or directly by the biological or infectious waste hauler.

Manifesting: See [Policy 2.11](#) for details on managing manifests

Storage:

- Generators of waste should not let the waste containers fill before requesting removal, to prevent the potential for waste spillage, which may cause a potential for worker exposure.
- Chemotherapeutic wastes must be stored in closed, leak-proof containers. The outer container must be either disposable or capable of being decontaminated for reuse. The inner container, usually the yellow bag, must be disposable.
- Used sharps containers may be stored by the waste generator until 3/4 full, as long as waste is in a nonputrescent state. (Consult Environmental Services in TUH for alternate procedures in hospital specific policies).
- Once picked up, filled waste containers may be held at room temperature for up to 30 days; frozen wastes may be stored for up to 90 days.

Disposal:

- Chemotherapeutic-contaminated sharps, once placed in puncture resistant containers, will be transported to an outside facility
- Solid chemotherapeutic wastes will be transported to an outside facility. (Consult Environmental Services in TUH for alternate procedures in hospital specific policies.)

Transport: Only an approved chemotherapeutic waste haulers shall be allowed to remove chemotherapeutic waste from Temple University or its associated hospitals.

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This category consists of garments, gloves, drapes, unused sharps, broken glassware and other non-regulated waste materials that have no possibility of contamination.

Sharps, broken glassware and rigid plastic pipettes that are not contaminated with hazardous material must be placed into a broken glass container. This category consists of garments, gloves, drapes, unused sharps, broken glassware and other non-regulated waste materials that have no possibility. This waste is disposed of in a socially and environmentally acceptable manner, preferably by incineration.

Any materials that are not previously identified as or contaminated with hazardous waste may be disposed of as municipal waste. Please contact Facilities Management or Environmental Services for proper handling of municipal waste.

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NO. 2.7

TITLE: Management of Spent Gas Cylinders

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It is Temple University Policy to eliminate the land disposal of spent gas cylinders. The principal investigator or supervisor must make prior arrangements with the supplier or manufacturer to recharge or recycle all gas cylinders including lecture cylinders.

Please contact EHRS for additional guidance.

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TITLE: Management of Chemical Waste

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Hazardous waste as defined in section 2.1 may be generated from laboratory operations, facilities operations and maintenance, construction and renovation activities, photo processing, and a variety of other activities. Hazardous waste, as defined by EPA, is a particular class of "solid" waste (which includes solid, liquid, or gaseous material) which, if improperly managed, poses a substantial threat or potential hazard to human health and the environment.

Hazardous waste is regulated by the Environmental Protection Agency (EPA) and The Pennsylvania Department of Environmental Protection (PADEP). These regulations ensure that uniform and consistent waste identification, storage and disposal procedures are followed by persons trained in the proper management of these waste substances. All generators of hazardous waste have a "cradle to grave" responsibility for the proper management of these substances after the point of generation.

The scope and complexity of regulatory requirements which generators are subject to are directly related to a generator's "status". A generator's status is based on the quantity of hazardous waste generated per site on a monthly basis. EPA assigns a unique ID number to different sites. (Each site falls into one of three categories as defined by EPA: Large Quantity Generator (LQG), Small Quantity Generator (SQG) or Conditionally Exempt Small Quantity Generator (CESQG).) Each campus has its own unique EPA identification number.

Environmental Health and Radiation Safety (EHRS) assists with hazardous waste management procedures including waste identification, storage, packaging, manifesting, shipping, disposal, reporting, records keeping and personnel training. The Hazardous Waste Management Guide has been developed to ensure compliance.

Waste Identification:

- Hazardous waste includes substances that are solids, liquids and gases.
- It is the responsibility of generators to determine if a waste is hazardous.
- This determination must be made at the time a chemical is declared a waste.

Handling:

- Proper personal protective equipment (PPE) must be worn when handling these wastes.

Labeling:

- Containers which store hazardous waste must be properly and clearly labeled.

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- Labels must include:
 - the words "Hazardous Waste" (**no abbreviations**),
 - the container contents in words (e.g., "WASTE OIL"),
 - the hazards associated with the waste in words (e.g., "TOXIC"), and
 - the accumulation start date.

Accumulation and Storage: Hazardous waste regulations established a two- tiered waste accumulation and storage system: satellite accumulation area and central accumulation area.

- ***Satellite Accumulation Area (SAA):***
 - Hazardous waste is accumulated and stored under the control of the PI/supervisor at the point of generation (e.g. lab)
 - No more than 55 gallons of hazardous waste or 1 quart of acutely hazardous waste may be stored in a satellite accumulation area at any given time.
 - Waste must be stored in the same area that it is generated.
 - Satellite accumulation containers must be closed unless waste is being added or removed from the container.
 - Once container is full, it cannot remain at SAA for more than 3 days.
 - Hazardous waste must be stored in secondary containment to prevent potential leaks.
 - Hazardous waste must be stored compatibly.
- ***Central Accumulation Area (CAA):***
 - Is the storages area where EHRS stores and consolidates waste until it is transported to an approved Treatment Storage Disposal Facility (TSDF).
 - EHRS has several CAA sites.
 - CAA is subject to strict storage time limitations.
 - For LQG sites, waste is allowed to be stored a maximum of 87 days. For SQG sites, waste is allowed to be stored for 177 days.

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Manifesting: Hazardous waste must be shipped with a special shipping paper called a hazardous waste manifest. Each location has a unique EPA Generator ID number that must appear on the manifest.

Transportation and Disposal: Hazardous waste may be transported only by an approved licensed hazardous waste transporter and may be sent only to an approved licensed TSDF.

Emergency Preparedness and Prevention: In accordance with regulatory requirements, an Emergency Response Plan available for each site. This Plan is designed to prevent and minimize hazards to the public and/or to the environment from fires, explosions, spills or other unplanned releases of hazardous waste. The plan includes a testing and maintenance program for various emergency equipment (e.g., fire and spill equipment, emergency alarms and communication systems). Arrangements have been made with local emergency agencies such as the fire department, police department, spill response contractors and State and local emergency planning committees. All laboratories and SAA should have quick access to a Chemical Spill Kit for response to small, incidental spills.

Waste Minimization: Generators of hazardous waste are required by the EPA to minimize the volume and toxicity of the hazardous waste they generate. The elements of a hazardous waste minimization plan may be found in Section 2.9 of this handbook (Chemical Waste Minimization and Recycling.)

Required Training

All laboratory workers must be trained within 6 months of hire and annually thereafter on proper handling of hazardous waste..

Reporting

EHRM will provide the following reports:

- Large Quantity Generators (LQG) are required to submit a biannual hazardous waste report which summarizes hazardous waste generation and management activity for the previous year.
- If required, manifests will be submitted to the appropriate agency of the state where waste was handled (TSDF).
- Any change in generation status or types of hazardous waste generated requires prompt notification to PADEP and EPA.

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Inspections

EHRS inspects all CAA weekly. PI/supervisors are required to inspect their SAA .

Recordkeeping

EHRS maintains the following records for a minimum of three years:

- records of waste ID and hazard classification
- manifests
- biannual reports
- exception reports.

Land disposal restriction (LDR) notifications/certifications, which typically accompany hazardous waste manifests, are maintained for at least 5 years.

Manifest and LDR notifications/certifications copies are maintained by EHRS for retention and compilation into an EPA-required biennial report of University waste activities. Exception reports are required to be filed with EPA if and when certain copies of hazardous waste manifests are not received by specified time limits.

EHRS maintains land disposal restriction/certifications for at least five years. EHRS uses information from manifests and LDR notifications/certifications

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Hazardous Waste Minimization

Federal and State regulations require that all generators who create hazardous waste to adopt a plan to reduce both the volume and toxicity of hazardous wastes. The Environmental Health and Radiation Safety department (EHRS) assists the waste generators in proper method and procedure in minimizing the generation of hazardous waste.

Methods for Hazardous waste minimization:

1. Substitution - replacing toxic or other hazardous materials used in processes with less or non-hazardous substances. This is the best way to minimize your hazardous waste responsibilities. Example: using Alconox instead of sulfuric/chromic acid glass cleaners.
2. Microchemistry - using minute quantities and small-scale chemistry instead of large amounts of chemicals in laboratory experiments.
3. Distilling - reclaiming solvents for reuse by a distilling process in the laboratory. This method decreases the costs by reducing the need for purchasing more solvents.
4. Recycling/Redistribution - chemicals that are unused or unopened can often be redistributed to other labs or work areas for reuse saving both disposal costs and new product costs for other researchers.

Laboratory Destruction:

Some chemicals can be neutralized or made exempt from hazardous waste regulations by treatment or alteration in the laboratory. This must be done as part of the experiment, and according to published and recognized methods. The procedure for lab destruction must be approved by EHRS prior to initiation... An example of laboratory destruction is the neutralization of strong acids or strong bases with a buffering solution that was part of an experiment that required or created such materials.

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TITLE: Management of Radioactive Waste

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REVISED: 12/03

Radioactive waste is managed at Temple University and affiliated institutions in compliance with appropriate federal and Pennsylvania regulations and according to institutional licence(s). Furthermore, all policies related to the safe handling, storage, or use of radioactive material must adhere to the radioactive waste management operation.

The Environmental Health and Radiation Safety Department (EHRS) periodically picks up radioactive waste as requested after notification by the waste generator. Due to the specific requirements of storage and disposal, various radionuclides and waste forms must be segregated as described in the Radiation Safety Guide.

There are four methods of radioactive waste disposal utilized by Temple University as follows:

Decay in Storage: Disposal by storage for decay is the method of choice for short-lived radionuclides. This method relies on the exponential physical decay of radioactive material. Radionuclides with a half-life up to 120 days and certain specific radionuclides with a half-life greater than 120 days may be disposed by storage for decay. The EHS will collect waste for disposal by storage for decay, store the waste for the appropriate length of time, and dispose of the material in accordance with the EHS hazardous waste policies.

Incineration: Waste containing certain radionuclides may be incinerated and disposed only by a licensed facility.

Sewer Disposal: Unless specifically authorized by the Radiation Safety Officer, radioactive waste may not be disposed into the sanitary sewer. Special waste containers provided by the EHS are to be used for the disposal of liquid radioactive waste. The EHS will collect full liquid waste containers upon request. All pertinent information requested on the waste tag must be completed for the waste to be removed. The EHS may dispose of the waste by sewer disposal, solidification and transfer to a disposal site, or by decay.

Burial: Waste containing certain radionuclides may be disposed only in a licensed disposal facility. Because there are no licensed disposal sites in Pennsylvania, this waste is shipped to a licensed facility out of state.

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NO. 2.11

TITLE: Manifesting Infectious and Chemotherapeutic Waste

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REVISED: 12/03

Manifests for all biological, chemical, radioactive, infectious and chemotherapeutic, and any other waste will be generated by the hauler and signed by the University contract representative. The University contract representative must ensure that the manifest is completely and accurately filled out before signing. The University contract representative will retain Copy 4 of the 4-part manifest.

Once the waste is received by the processing or disposal facility, the owner or operator of the processing or disposal facility will send Copy 1 of the manifest to the contract representative.

Copies of both parts of the manifest will be maintained by the contract representative for at least 5 years and shall be furnished to the Environmental Health and Safety Department (EHRS) or PA Department of Health (PaDEP) representatives upon request.

If the processing or disposal facility does not send the contract representative a completed Copy 1 within 15 days of the date the waste was accepted by the initial transporter, the contract representative will *immediately* contact EHRS in order to track down the waste. The contract representative will furnish the EHS with a legible copy of Copy 4 of the manifest in question. EHRS will notify PaDEP's regional office within 1 business day by telephone regarding the status of the shipment.

If the waste can not be located within 35 days of the date that the initial transporter accepted the waste, EHRS will contact the PaDEP regional office by telephone. EHRS will submit an Exception Report to the PaDEP Central Office if a completed Copy 1 has not been received. The Exception Report will include a legible copy of the manifest (Copy 4) and a cover letter signed by the Director of EHRS explaining the efforts taken to locate the waste shipment and the results of those efforts. Copies of the Exception Report will be maintained at EHRS for 5 years.

EHRS will audit manifest records and exception reports on a periodic basis.

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TITLE: Management of Universal Waste

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Fluorescent, high intensity discharge (HID), coated, shatter shielded dipped lamps, neon, mercury vapor, high pressure sodium, metal halide and UV germicidal lamps are considered a hazardous waste and must be collected intact for proper disposal or recycling. Temple University recycles these lamps to provide raw materials for new products and, most importantly, to prevent mercury or other harmful material from contaminating the environment.

Hazardous waste lamps cannot be discarded in the municipal trash. Hazardous waste lamps are categorized into the following:

I. Lamps

- A.) Straight Fluorescent
- B.) U-tubes Fluorescent
- C.) Circular Fluorescent
- D.) High intensity discharge (HID)
- E.) Neon Lamps
- F.) Mercury Vapor
- G.) High Pressure Sodium
- H.) Metal Halide
- I.) UV germicidal lamps

Only those lamps that are EPA approved can be discarded in municipal trash. All other lamps must be handled as follows:

- All lamps must be segregated and packaged by category.
- All lamps must be packaged in containers that protect the lamps during collection and transportation. Packaging must be done to prevent breakage.
- Sleeves and tape must be removed from spent lamps for packing the waste.
- All boxes must be taped closed on both ends.
- The package must be properly labeled with "Universal Waste-_____" (ex. Universal Waste-Fluorescent Lamps), start date, number and size of lamps on each box.
- The broken lamps (glass, metal or plastic) must be collected and packaged in a container. The container must be properly labeled with the words "Hazardous waste," the contents listed as "broken Type lamps" with the start date of accumulation..
- When fluorescent lamps, mercury vapor and HIDs are broken, mercury is released to the environment, but some mercury still remains on the surfaces of the glass, phosphor and the metal or plastic. The debris must be collected in sealed container. The container must be properly labeled with the words "Hazardous waste," the contents listed as "broken Type lamps" with the start date of accumulation.
- Containers or boxes must be stored in a secure location.
- The Environmental Health and Radiation Safety Department (EHRS) Hazardous/Chemical Waste Removal Form must be completed and submitted to EHRS once the container or box is full.
- All packages must be properly packed and sealed for EHRS to pick up.