University of Maryland Eastern Shore
Environmental Health and Safety

Hazardous And Regulated Waste Management Manual

2009

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PART VII. EPA HAZARDOUS WASTE CODES

EMERGENCY TELEPHONE NUMBERS

CALL IMMEDIATELY FOR ANY EMERGENCY INCLUDING INJURED OR SICK PERSON, CHEMICAL SPILL OR FIRE

Emergency (FIRE - POLICE - RESCUE) - 24 hour #	**911**
UMES Campus Police Department	3300
Maryland Poison Control Center	***1-800-222-1222***
Environmental Health and Safety	
Preston Cottman, Manager	(410) 651-6652
Danna Maloney, Assistant Manager	(410) 621-3040
Human Resources	
Lisa Johnson	(410) 651-7848
Physical Plant Operations and Maintenance	
Work Control Office	(410) 651-7752

PART I. GENERAL INFORMATION

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has established the definition of what constitutes a hazardous waste. This agency also strictly regulates and enforces the storage, handling, and disposal of these materials. Under these regulations, generators of hazardous waste are perpetually responsible for any and all damages to human health, personal property, or the environment. In many instances, activities (e.g. maintenance and operations, teaching and research, and health services) of the university produce hazardous waste, and the University Of Maryland Eastern Shore (UMES) is therefore classified as a generator of hazardous waste.

PURPOSE

The purpose of this manual is provide the University of Maryland Eastern Shore community with information to guide department chairs/directors, faculty, and staff in compliance with federal, State, local and University requirements for managing hazardous and other regulated wastes (controlled waste), and to provide for the effective and efficient safe handling, storage, and disposal of controlled waste generated by UMES. This manual provides procedures to assist campus waste generators in the handling and disposal of controlled wastes in accordance with existing regulations.

REGULATORY REQUIREMENTS

The following is a list of the regulatory authorities, and a brief description of their regulations, acts, and programs that may have a direct impact on hazardous waste generators.

Environmental Protection Agency

EPA regulates controlled waste through six major regulatory programs: RCRA, CERCLA, TSCA, FIFRA, CWA, and CAA.

RCRA (1976) Resource Conservation and Recovery Act. Defined and regulated solid and hazardous wastes. (Regulations directly impact the hazardous waste generator.)

HSWA (1984) Hazardous and Solid Waste Amendments. Made RCRA more stringent. (Regulations directly impact the hazardous waste generator.)

CERCLA (1980) Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Provides mechanisms to assign liability to corporations and individuals. (May impact the hazardous waste generator).

SARA (1988) Superfund Amendments and Reauthorization Act. Created Community Right-To-Know for hazardous and toxic chemical reporting.

TSCA (1976) Toxic Substances Control Act. Regulates chemical usage, including PCB usage, storage, and disposal.

FIFRA (1988) Federal Insecticide, Fungicide, and Rodenticide Act. Controls the manufacture and use of pesticides intended to kill, repel, or control living organisms.

CAA (1963) Clean Air Act. Regulates discharges to air. (Regulations directly impact the hazardous waste generator.)

CAAA (1990) Clean Air Act Amendments.

CWA (1977) Clean Water Act. Regulates discharges to water. (Regulations directly impact the hazardous waste generator.)

Department of Transportation

The Department of Transportation (DOT) regulates the transportation of Hazardous Materials and Hazardous Substances.

HMTA (1991) Hazardous Materials Transportation Act. Regulates packaging and transport of hazardous materials.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) develops and enforces safety standards for response to hazardous chemical emergencies, employee awareness and right-to-know chemical information, as well as laboratory safety standards. These standards have been adopted and are enforced by Maryland Occupational Safety and Health (MOSH).

HAZWOPER (1989) Hazardous Waste Operations and Emergency Response. Sets standards for employee safety. At UMES, only Emergency Response Teams must train beyond the awareness level.

HAZCOM (1983) Hazard Communication (Right-To-Know). Employers must inform employees of chemical hazards. (Regulations directly impact the hazardous waste generator.)

LSS (1991) Laboratory Safety Standard (Occupational Exposure to Hazardous Chemicals in Laboratories). Laboratories must develop Chemical

Hygiene Plans, etc. (Regulations directly impact the hazardous waste generator.)

Maryland Department of the Environment

Under EPA authority, the State of Maryland Department of the Environment (MDE) regulates the management of controlled wastes within the State of Maryland.

MDE dictates what can be discharged into the atmosphere, water, and land. MDE is the prime regulator of the University's hazardous, radioactive, biological, pathological, and medical wastes.

RESPONSIBILITY AND LIABILITY

A. Environmental Health and Safety (EHS) is the University's liaison to the regulatory agencies. Its mission, in part, is to assist University departments with compliance in regulations.

B. All University personnel generating or disposing of controlled wastes are responsible for compliance with federal, State, and local laws and regulations, as well as with University policies and procedures. Each department, individual, laboratory, research center, maintenance facility, etc., that generates or disposes of materials regulated as controlled waste is considered a generator. Each generator is required to comply with applicable regulatory standards and may be liable for civil or criminal penalties for regulatory infractions.

C. Department chairs/directors, faculty, managers, supervisors, and staff have the following responsibilities regarding safe waste management:

1. Become familiar with chemical selection and usage by peers and subordinates;
2. Identify, segregate, collect, and properly store controlled wastes;
3. Develop and implement an active waste minimization program by investigating material substitution, scale reduction, chemical exchange, and purchase control within each department;
4. Encourage personnel to seek waste handling guidance from EHS;
5. Accurately identify and properly label all waste material;
6. Ensure that no chemicals are abandoned in place due to personnel retirement, termination of employment, graduation, etc.; and,
7. Provide staff and student training and information as required by regulation and University policy.

REQUIREMENTS FOR LABORATORY PERSONNEL LEAVING THE UNIVERSITY

Abandoning regulated wastes without proper disposal or identification is a regulatory violation and also creates both a dangerous storage situation and an expensive disposal problem. University policy requires that all hazardous materials (biological, chemical, radiological) are removed from laboratory spaces that are vacated temporarily (e.g. for renovation or reconstruction) or permanently. These spaces must also be decontaminated and cleaned. All researchers planning to leave campus must properly identify all waste material and arrange for their disposal before departing the University. The laboratory custodian must provide EHS with a completed "Certification of Vacancy" form before outside personnel can enter the laboratory.

PART II HAZARDOUS CHEMICAL WASTE MANAGEMENT

PURPOSE

EHS maintains a Hazardous Waste Management System for the proper handling, storage, recycling, and disposal of toxic or hazardous materials subject to regulations as hazardous waste. This system complies with the RCRA Act of 1976, Hazardous Solid Waste Amendments of 1984, U.S. EPA regulations, and regulations established by MDE.

UMES faculty, staff, and students generate hazardous waste through teaching, research, and support activities. EHS operates a chemical storage facility (CSF) that allows for the consolidation of hazardous wastes prior to off-site shipment. These procedures are to be used by University personnel in the identification, short-term storage, and removal of hazardous waste.

REGULATORY AUTHORITY

COMAR 26.13.01-.10, Hazardous Waste
40 CFR PARTS 260-273, Hazardous Waste

DEFINITIONS

A. **Hazardous Waste -** Any solid or liquid waste that is specifically listed by EPA or MDE as a hazardous waste, or meets one or more of the hazardous waste characteristics, or is a regulated mixture of hazardous and non-hazardous waste.

B. **Acute Hazardous Waste -** Hazardous wastes that are considered exceptionally toxic as listed under 40 CFR Part 261.33 (listed wastes having codes beginning with "P").

C. **Corrosivity -** An aqueous waste having a pH less than or equal to 2, or greater than or equal to 12.5; or a liquid that corrodes steel as described under 40 CFR Part 261.22.

D. **Flammability -** A liquid (other than an aqueous solution containing less than 24 percent alcohol by volume) with a flashpoint of less than 60oC (140o F) as determined by a Pensky-Martens closed cup tester using ASTM method D-93-70 or D-93-80; or it is not a liquid and is capable under standard temperature and pressure of causing a fire; or it is an ignitable compressed gas; or is an oxidizer.

E. **Reactivity -** A waste that is normally unstable and readily undergoes violent change without detonating; or reacts violently with water; or forms potentially explosive mixtures with water; or when mixed with water generates toxic gases, vapors, or fumes; or a cyanide or sulfide bearing waste that generates toxic gases, vapors, or fumes when exposed to pH conditions between 2 and 12.5; or is capable of detonation or explosive reaction.

F. **Toxicity -** A waste whose extract under the test procedure specified under 40 CFR Part 261.24 contains one or more constituents at concentrations greater than those specified in Table I of the above referenced part.

G. **Hazardous Waste Label -** A specified label that must be attached to each container of chemical waste. The label has the words "Hazardous Waste" displayed and requires the name of the waste components in standard English nomenclature.

H. **Satellite Accumulation Area (SAA)-** An area where a generator may accumulate up to 55 gallons of non-acutely hazardous waste or one quart of acutely hazardous waste in containers at or near any point of generation where wastes initially accumulate that is under the control of the generator.

PROCEDURE FOR HAZARDOUS CHEMICAL WASTE DISPOSAL

All generators of hazardous waste whether they are a SAA or not, must properly manage containers and segregate waste based on chemical compatibility. The following practices must be used at all times:

A. Management of Waste Steams

1. Waste streams must be separated as follows:

    a. Organic-, Non-Halogenated-, non-Metal-Waste
    b. Organic-, Halogenated-, non-Metal Waste
    c. Organic-, Halogenated, Metal Waste
    d. Organic-, Non-Halogenated, Metal Waste
    e. Metal Salts Waste

2. Do not mix solid and liquid waste. Liquids should be strained of all solids.

3. Heavy metal solutions must not be mixed with any organic solvent or solution.

4. Halogenated and non-halogenated organic solvents should be segregated into separate containers.

5. Store incompatible chemical waste away from each other and use secondary containment in case of spillage.

6. Do not mix chemicals into one container. The chemicals may be chemically compatible, but the mixture could result in a higher disposal cost.

B. Container Management

1. All containers must be compatible with the waste stored in them.

2. The container must be in good condition. If the container is leaking or damaged, transfer the waste to a compatible container in good condition.

3. All containers must be kept closed at all times except when adding waste to the container. Leaving a funnel in a container is not acceptable.

4. Large volumes of liquid waste should be accumulated in a 5 gallon carboy.

5. Do not fill liquid containers to the top. Leave space in the container to allow for the expansion of the liquid.

6. Items with sharp edges (syringes, razor blades) must be put in a puncture-proof container; placing these items in a cardboard box or plastic bag is unacceptable. Broken glass must be disposed of in a lined and labeled box.

7. All wastes must be labeled. The label must identify the disposal stream, the source, the person producing the waste, the collector, the date of collection, and the composition of the waste in percents. The label must be attached to the container and must have chemical names (written in English) with the percentage of each chemical listed. Trade names, abbreviations, and chemical formulas are not acceptable.

8. If a manufacturer's container is used to accumulate hazardous waste, deface the original label and attach a specified hazardous waste label. (**Waste will not be removed from the laboratory or workspace unless it has a specified hazardous waste label**.)

PROCEDURE FOR HAZARDOUS CHEMICAL WASTE REMOVAL

The following procedures have been developed to meet all federal and state regulations. Any questions concerning these procedures should be directed to Environmental Health and Safety at (410) 651-6652.

A. Accurately complete the "Hazardous Waste Removal Request Form." This is a legally binding document. Providing false information is punishable by federal, state, and local laws. It is the University's policy that the person submitting the waste will be held accountable in the event of a misrepresentation and that acceptance of this waste by department and University staff does not in any way warrant their involvement in misrepresentation of department waste.

B. Attach all corresponding Material Safety Data Sheets (MSDS) to the Hazardous Waste Removal Request Form. Submit this information to EHS or the Department Waste Coordinator.

C. Waste should be removed from laboratories to a central waste storage area at least once per week and from the central waste storage area at regular intervals.

MATERIALS WITH SPECIAL REQUIREMENTS

The following categories of wastes require special containment or handling by the generator before EHS personnel can remove the material. Unless otherwise noted, containers of the following wastes should be managed as described under sections IV and V.

A. **Asbestos** - Asbestos is not considered a hazardous waste but it still must be managed as a hazardous material. Double bag and seal all asbestos containing material for disposal, including a chemical compound known as "Ascarite." Mark the container with the words "Asbestos Waste" and "University of Maryland Eastern Shore."

B. **Batteries** - Spent batteries may be considered a hazardous material. Separate lead acid, nickel cadmium, alkaline, and any other batteries into separate containers. Lead acid batteries should be kept indoors or in a container. Departments are encouraged to make arrangements for recycling batteries, but EHS will dispose of them if requested.

C. **Gas Cylinders** - Gas cylinders have a high disposal cost. EHS recommends that cylinders not be used when possible. Cylinders should be purchased from manufacturers who will accept them back after use.

D. **Aerosol Cans** - EHS can dispose of aerosol cans. Review the label to determine if the aerosol can contains chlorofluorocarbons (CFCs), flammable material, pesticides, or is an inert material. If the aerosol can does not contain CFCs, a flammable warning, or a listing of pesticides, the aerosol can is considered inert.

E. **Empty Containers/Glassware** - After removing or defacing labels, empty containers and glassware should be placed in the trash. Empty containers that held acute hazardous waste (P-listed) must be triple rinsed before discarding into the trash. The rinsate will then be handled as a hazardous waste.

F. **Mercury Compounds** - Mercury compounds and mercury solutions will be disposed of by EHS as a hazardous waste. Do not mix mercury with other types of waste.

G. **Elemental Mercury** - Elemental mercury will be recycled when possible. Place the elemental mercury in a sturdy leak-proof container that has a screw-on cap.

H. **Mercury Thermometers and Mercury Containing Devices** - Broken mercury thermometers or mercury-containing devices should be placed in a leak-proof container. Broken glass from the mercury thermometer or mercury containing devices should be placed in the same container. EHS encourages all university personnel using mercury containing devices, including but not limited to thermometers and manometers, to switch to a non-mercury device when possible.

I. **Polychlorinated Biphenyls (PCB) Waste** - PCB waste should not be mixed with other waste. Separate the PCB waste into a container. PCB-contaminated trash should be placed in a separate container as well. Indicate the type of PCB and concentration of the PCBs.

J. **Osmium Waste** - Osmium waste is highly toxic. All liquid waste must be in a container with a screw-on cap. All solid waste must be double-bagged.

K. **Ethidium Bromide Waste** - Ethidium bromide is not considered a hazardous waste, but still must be managed as a hazardous material. Ethidium bromide solutions must be in a container with a screw-on cap. All solid waste, including ethidium bromide gels, must be double-bagged. Do not place Ethidium bromide gels or ethidium bromide debris in a "biohazardous bag" for disposal; place the Ethidium bromide and debris in a 6 mil plastic bag.

L. **Fluorescent Light Tubes** - The fluorescent light tubes that provide light to your workspace may be hazardous waste. DO NOT THROW THE FLUORESCENT LIGHT TUBES INTO THE TRASH. Place the used fluorescent light tube in its original box for proper disposal. The boxes should be sealed, marked with the words "Used Lamps" and the number of tubes marked on the top of the box.

M. **Picric Acid** - Picric acid with water is a mixture that requires no special handling. However, when picric acid is dry, it may be HIGHLY EXPLOSIVE. EHS should be notified immediately whenever dry picric acid is in a lab or workspace. EHS will examine the picric acid and determine if it poses a threat to human health, university property, or the environment.

N. **Benzoyl Peroxide** - Benzoyl peroxide can be an unstable material in a dry state. Benzoyl peroxide is usually in a non-metallic container to prevent static electricity that could cause ignition.

O. **Ethers** - Ethers, especially diethyl ether, form peroxides in the presence of light and oxygen. Special care will need to be taken for ethers that are more than one year old. EHS will examine the ether container and determine if it poses a threat to human health, university property, or the environment.

UNKNOWN WASTES

The generation and accumulation of unknown waste poses a health, safety, and environmental risk to faculty, staff, students, and property at UMES. The accumulation of such waste is a violation of federal and State regulations. It is the responsibility of each individual generator and department to properly label hazardous materials and identify containers of hazardous waste at the time accumulation begins.

EHS will identify, remove, and dispose of unknown wastes for on-campus waste generators. EHS will also arrange for a contractor to sample, analyze, and dispose of any unknowns. However, the generator or generating department will incur the associated disposal costs for all solid and liquid unknown wastes.

PART III. BIOLOGICAL, PATHOLOGICAL OR MEDICAL WASTE (BPMW) MANAGEMENT, INCLUDING SHARPS AND CONTAMINATED GLASSWARE

PURPOSE

UMES faculty, staff and students may sometimes be at risk from exposure to materials that could be infectious to humans. Agents of disease (viruses, bacteria, etc.) may be utilized for certain research, cultured during medical diagnostic activities, or may be present in blood and certain other body fluids. This Standard Procedure is established to ensure compliance with federal and State regulations governing the handling, treatment and disposal of potentially-infectious materials, and to protect the health and safety of the campus community by keeping these risks as low as reasonably achievable.

REGULATORY AUTHORITY

COMAR 26.13.11, Special Medical Wastes
COMAR 26.13.12, Standards Applicable to Generators of Special Medical Wastes
29 CFR 1910.1030, Occupational Exposure to Bloodborne Pathogens

DEFINITIONS

A. Biological, Pathological and Medical Waste (BPMW) includes, but is not limited to the following materials:

1. **Infectious Waste -** Cultures and stocks of infectious agents and associated biologicals from medical, pathological, research and teaching laboratories; wastes from the production of biologicals; discarded live and attenuated vaccines; isolation wastes; and contaminated culture dishes and devices used to transfer, inoculate and mix cultures.

2. **Pathological Waste** - Human or animal tissues, organs, body parts or fluids that are removed during surgery, autopsy or other teaching or research procedures including specimens and their containers.

3. **Sharps** - Any of the following used or unused, contaminated or uncontaminated items: hypodermic syringes with needles, syringe needles, pasteur pipettes, transfer pipette tips, dental wire, scalpel blades, razor blades, suture needles, or needles with attached tubing. Sharps also include broken or unbroken glassware and culture dishes that are contaminated with blood, body fluids or infectious materials. Any object that is so contaminated, and is capable of penetrating the skin shall be considered a sharp.

4. **Animal Wastes** - Bedding of animals known to have been exposed to

infectious agents during research or teaching activities; or contaminated or uncontaminated animal carcasses, tissues, or body parts.

5. **Blood and Body Fluid Wastes** - Any blood, blood product or body fluid from a human or animal not known to be infectious. Any material contaminated with these materials shall also be considered a BPMW.

B. **Biologicals** mean preparations made from living organisms and their products including but not limited to vaccines, cultures, etc.

C. **Blood products** mean any product derived from human or animal blood, including but not limited to whole blood, blood plasma, platelets, red or white blood corpuscles, and other derived licensed products, such as interferon, etc.

D. **Bloodborne pathogen** means any human pathogenic microorganism that may be present in human or animal blood (or body fluids) and can infect and cause disease in humans who are exposed to blood or body fluids containing the pathogen.

E. **Body Fluids** mean liquid or solids emanating or derived from humans or animals including but not limited to blood, semen, vaginal secretions, dialysate, amniotic, pleural, peritoneal, cerebrospinal, synovial and pericardial fluids.

F. **Chemical** means any chemical substance used by the generator that is considered by any regulatory authority or advisory group to be hazardous, toxic, mutagenic, teratogenic, carcinogenic or potentially carcinogenic.

G. **Contamination** means objects or materials that are reasonably suspected to contain or have contacted known infectious agents, blood products, body fluids, biologicals, or isolation wastes.

H. **Decontamination** means a process that assures the destruction of living infectious organisms.

I. **Generator** means any person producing or packaging wastes containing or contaminated with materials as further defined below in the course of teaching, patient care, housekeeping, research, or other activities.

J. **Infectious agent** means any organism, such as a virus, bacterium, or protozoa that is capable of infecting plants, animals or humans and causing disease or adverse effects in any species.

K. **Isolation wastes** are biological wastes and discarded materials contaminated with blood, excretions, exudates, or secretions of humans or animals that are isolated to protect others from highly communicable diseases, or isolated animals infected with highly communicable diseases.

BIOLOGICAL WASTE DISPOSAL PROCEDURES

A. Biological Waste

1. All biological waste from BSL1, BSL2, and BSL3 laboratories must be decontaminated prior to disposal.

2. Decontamination and disposal are the responsibility of the person/laboratory generating the waste.

    a. Collect contaminated disposable, *solid* materials, excluding sharps, or broken or unbroken glass, into a clear, non-color autoclave bag (with no biohazardous symbols or wording) within a sturdy container. When full, the non-descriptive bags are to be autoclaved at 121°C for 30 minutes, cooled, and then placed in the building's dumpster. All material placed in the building's dumpster should be checked to ensure that no symbols or wording is on the bags or boxes to indicate that the container once held a biohazardous substance.

    b. Decontaminate *liquids* containing a biological agent by the addition of a chemical disinfectant such as sodium hypochlorite (household bleach) or an iodophor, or by autoclaving, then dispose of by pouring down the sink. It is not necessary to autoclave liquids that have been chemically disinfected. However, if a bleach solution has been used in the collection tray for labware that will later be autoclaved, sodium thiosulfate must be added to the bleach to prevent the release of chlorine gas during autoclaving.

B. Disposal of Blood Products and Body Fluids

1. All blood and other infectious or potentially infectious materials must be handled using Universal Precautions.

2. Discard disposable items contaminated with human blood or body fluids (excluding sharps and glassware) into biohazardous waste containers lined with red biohazard bags. Do not overfill the waste container. These containers are used for temporary storage and accumulation of waste. When full, close and seal the plastic liner.

C. Disposal of Animal Tissues, Carcasses, and Bedding

1. a. Place animal carcasses/tissues into a plastic bag. Double-bag when carcass contains a zoonotic agent (transmissible from animals to humans).

b. Place the bag in freezer until disposal.

2. Disposal of animal carcasses/tissues that are contaminated with radioactive materials or hazardous chemicals is through EHS.

D. Mixed Waste

1. Avoid generating mixed waste if possible. Keep volume to a minimum.

2. Do not autoclave mixed waste.

3. When discarding waste containing an infectious agent and radioactive material, inactivate the infectious agent first, and then dispose of as radioactive waste. Seek advice from the Radiation Safety Officer (RSO) at Ext. 6652 before beginning inactivation procedures.

4. When discarding waste containing an infectious agent and a hazardous chemical, inactivate the infectious agent first, and then dispose of as chemical waste. Seek advice from the RSO before beginning inactivation procedures. After the infectious agent has been deactivated, dispose of the waste as stated in the Hazardous Waste Management section in this manual.

E. Disposal of Sharps and Disposable Glassware

1. Discard all needles, needle and syringe units, scalpels, and razor blades, **whether contaminated or not**, directly into rigid, red, labeled sharps containers. Do not recap, bend, remove or clip needles. Sharps containers should not be overfilled.

   a. Sharps that are contaminated with radioactive materials or hazardous chemicals should be discarded into separate sharps containers. Specify chemical and/or isotope content when requesting pick-up by EHS.

2. **Uncontaminated** pasteur pipets and broken or unbroken glassware are discarded into containers specifically designed for broken glass disposal, or into heavy-duty cardboard boxes that are closeable. When boxes are full, the laboratory personnel should tape the box closed and place it in the building's dumpster.

3. **Contaminated** pasteur pipets and broken or unbroken glassware are decontaminated by autoclaving or chemical disinfection, then discarded into glass disposal boxes.

F. Reusable Labware

1. Contaminated labware must be placed in leakproof biohazard bags and refrigerated until autoclaved.

2. Items such as culture flasks, centrifuge bottles, and Petri dishes are decontaminated by lab personnel before washing by one of two methods:

    a. Autoclave items that have been collected in autoclavable containers at 130°C for 30 minutes; or,

    b. Chemically disinfect items by soaking in diluted disinfectant for one hour before washing.

G. Disposal Containers

Each laboratory is responsible for purchasing containers for the disposal of biological waste. The following types of containers are available:

1. **Sharps containers**. They must be puncture resistant, red, labeled as "Sharps," and have a tightly closing lid. Do not use "needle-cutter"devices that may produce aerosols when used.

2. **Autoclave Bags are** polypropylene bags that are able to withstand autoclaving and are clear, non-color bags, with no biohazardous symbols or wording. They should be placed inside a rigid container with lid while waste is being collected.

3. **Glass Disposal Boxes are** heavy-duty, closeable cardboard boxes that are used for disposal of broken glass.

H. Waste Removal Procedure

1. **Sharps containers** – To request removal, submit a completed “Hazardous Waste Removal Request Form” to your department waste coordinator or EHS via interoffice mail or fax at Ext. 7918.

2. **Medical Wastes –** Submit a removal request for infectious or potentially infectious wastes to EHS via interoffice mail or fax at Ext. 7918.

PART IV. LOW-LEVEL RADIOACTIVE WASTE (LLRW) MANAGEMENT

PURPOSE

The following procedure presents measures to safely control future disposal costs, minimize the amount of LLRW stored on-site, and minimize the amount of LLRW presently generated.

REGULATORY AUTHORITY

COMAR 26.12 Control of Ionizing Radiation (1994)

LOW LEVEL RADIOACTIVE WASTE DISPOSAL PROCEDURE

Burial of radioactive waste is not permitted in the State of Maryland.

Release of radioactive materials into the sanitary sewer system (through sinks, drains, etc.) is not permitted.

Incineration of radioactive materials on the UMES campus is not permitted.

A. General Radioactive Waste Container Requirements

1. Complete Radioactive Waste Generator Training

2. Use only radioactive waste containers authorized by EHS. EHS will not complete radioactive waste pickup requests if material is packaged in unauthorized waste containers.

3. Liquid and solid radioactive waste must be separated by isotope except as authorized by the RSO. Reactive chemicals must not be mixed.

4. Aqueous and non-aqueous liquid, vials, and solid wastes must be kept in separate containers.

5. Keep waste containers closed and properly labeled at all times. All containers must be clearly labeled "Caution Radioactive Waste" or "Caution Radioactive Materials." The label must also identify isotopes and a reasonable estimate of the activity of each isotope.

6. Document the date and activity on the container content sheet each time waste is added. A running inventory must be maintained on the outside of each container.

7. Radioactive waste must be stored separately from other hazardous chemicals and chemical waste.

8. Waste containers for solid radioactive wastes must be lined with a removable plastic liner.

9. All radioactive wastes must be stored in a manner so as to prevent:

    a. Contamination of laboratory space or personnel
    b. Generation of airborne hazards, and
    c. Incompatible mixing of chemicals

8. Each container of radioactive waste is thoroughly inspected before disposal. Improperly packaged containers will be returned to the generator or PI for repackaging.

B. LLRW Disposal

No radioactive waste may be disposed of by conventional methods. Collection, storage and removal of radioactive wastes must be accomplished as specified in the following sections. In order to attain the goals of controlling disposal costs and minimizing the amount of LLRW presently generated, each LLRW generator must ensure that LLRW is strictly segregated by waste stream category, isotope, and chemical composition.

1. Dry Solid LLRW are radioactive material and laboratory wastes such as paper, paper towels, absorbent paper, cardboard, gloves, liquid-free pipettes, and used glassware contaminated with radioactive material.

    a. 14Carbon and Tritium 3H may be combined in the same container, but not mixed with other isotopes.

    b. All other isotopes (32P, 35S, 125I, etc.) must be stored alone and not mixed together.

    c. Dry Solid LLRW contaminated by organic or other hazardous chemicals shall be considered to be Mixed LLRW (see 5., below) and shall be stored separately from other Dry Solid LLRW.

    d. Needles, syringes and other sharps, free of contained liquids, and biological materials shall not be combined with Dry Solid LLRW. Waste generators shall supply their own sharps containers. When the sharps containers are full, they should be placed in the appropriate dry solid waste container.

    e. Liquids, lead source containers, loose sharp objects, and biohazard bags/labels shall not be disposed in Dry Solid LLRW containers.

2. Needles, syringes and other sharps contaminated with radioactive material shall be placed in properly labeled "Sharps" containers and segregated by isotope. Radioactive waste generating departments or individuals shall supply their own sharps containers. When the sharps containers are full, they should be placed in the appropriate dry solid waste container.

3. Radioactive contaminated biological materials, including animal carcasses, animal bedding, and animal wastes, must be double bagged in watertight bags, sealed with duct tape or similar material, and stored in a freezer while awaiting removal. The bag must be labeled with the contents, generator's name, department, building no., room no., date, isotope, and activity and a "caution radioactive material" tag.

4. Radioactive contaminated etiological material (bacteria, viruses, etc.) must be sterilized prior to disposal or packaged by the generator in such a way that the possibility of microbiological contamination no longer exists. The labeling and packaging procedures are the same as for radioactive biological/pathological waste.

5. Liquid LLRW consists of water, solvents, scintillation fluid or other non-hazardous chemical solutions which contain radioactive materials:

    a. Liquid LLRW shall not be mixed with any organic material.

    b. Liquid LLRW must be segregated by type such as water, organic solvent, scintillation cocktail, or other solution.

    c. Waste containers are glass or polyethylene jugs fitted with a securely fitting stopper or cover. The container must remain closed except when in use or in an approved, operational hood. To prevent spills or leaks, store liquids containers in secondary containment.

    d. Special consideration must be given to liquid wastes to ensure that mixing of liquids does not result in altered pH, unstable solutions, or the generation of gas.

    e. Isotopes may be combined in the same container; however, no materials other than liquids may be placed in liquid radioactive waste containers.

    f. Do not fill liquid containers to the top. Always leave 3-4 inches of head space in the container for safe sampling and handling.

6. Scintillation Solutions, Cocktails and Vials

   a. Small scintillation type vials containing liquid samples must be treated separately from solid and liquid radioactive waste.

   b. Vials may be plastic or glass containing 5 to 15 ml of radioactive liquid or scintillation fluid. Each type must be disposed of in separate containers.

   c. In all possible instances, use biodegradable scintillation fluid in place of organic/hazardous based material. Do not combine vials containing biodegradable scintillation fluid with vials containing organic/hazardous scintillation fluid in the same container.

   d. Write the brand name of the scintillation fluid on the container inventory sheet.

   e. If vials containing liquids are to be reused, their liquid contents must be placed in a liquid radioactive waste container. Do not mix their contents with dissimilar liquids.

   e. Vials containing dry, solid samples, or vials which have been emptied of their contents must be separated from other solid radioactive waste.

   f. Vials may be stored in a waste can type container fitted with a removable liner, or upright in the boxes or trays in which they were received when purchased. Containers must be properly labeled.

   g. Remove vials from the "egg crate" cartons and ensure the caps are on tight before placing the loose vials in the appropriate container. Dispose of the "egg crate" as domestic trash if they are not contaminated or as dry solid LLRW if contaminated.

7. Mixed LLRW consists of mixtures of organic chemicals, isotope(s), and other hazardous or non-hazardous materials. Mixed LLRW shall be stored in its own container and not mixed with other LLRW. Do not mix isotopes. Contact the Radiation Safety Officer (RSO) at Ext. 6652 before generating a mixed waste.

8. Sealed and Unsealed Sources

   a. Sealed sources consist of radioactive material either encapsulated by a solid material or permanently plated on metal. Unsealed

sources are usually liquids or other material not meeting the definition of a sealed source.

b. Shielding requirements for sealed and unsealed sources are normally met with the original shipping container. If additional shielding is required, it must be commensurate with the radiation emitted.

c. Sealed and unsealed sources shall not be mixed with any other LLRW. Keep separate and present them to EHS personnel for disposal as required.

9. Special or Unusual Waste

A user must notify the RSO in advance when an experiment may cause special disposal problems, generate unusual wastes, an abnormally large quantity of wastes, or when large animal carcasses are used. Appropriate guidelines for management of the waste will be furnished after consideration by the RSO AND RSC.

C. LLRW Removal Procedure

1. Each LLRW container/bag shall be labeled/tagged with the following information: Generator Name, Department, Building, Room, Telephone, Isotope(s), Waste Percentage Composition, Activity, and Date.

2. Submit a completed "Hazardous Waste Removal Request Form" for LLRW removal to the department waste coordinator or EHS via interoffice mail or fax at Ext. 7918.

D. Final Disposal

EHS will transport and process all radioactive wastes in accordance with applicable regulations as established by the U.S. Department of Transportation, The NRC, and State of Maryland Department of the Environment. Transport from the campus and final disposal will be accomplished by contractors authorized for these functions by the above agencies.

E. LLRW Reduction Methods

1. LLRW shall be managed to ensure that Mixed Wastes are not accidentally produced. The introduction of an organic (hazardous) chemical, even at low concentrations, could cause a radioactive waste to be classified as a mixed waste.

3. Principal Investigators, their staff and students, when preparing or engaged in research protocols, need to consider alternatives that will eliminate the use of hazardous chemicals.

4. To minimize the disposal of non-radioactive waste as radioactive waste, monitor the waste material and only dispose of the contaminated parts as radioactive.

5. Using short-lived radioactive isotopes whenever possible will drastically reduce the University's disposal costs and overall management responsibilities.

F. Unknowns

Unknown or unidentified LLRW and Mixed Waste will not be removed by EHS personnel. The identification of such waste, and the related expense, are the responsibility of the waste generator.

PART V. SPILL RESPONSE PROCEDURES

PURPOSE

An environmental emergency is a release of a hazardous material to the environment, including air, soil, groundwater, or surface water. Spillage of hazardous materials is not considered an environmental emergency if the spillage is contained by the building in which it occurs, but still may present a danger to personnel from toxic fumes, explosive vapors, etc., requiring building evacuation. Qualified personnel may only remediate very small spills without EHS assistance. Residues of spill clean-up shall be handled as hazardous waste.

REGULATORY AUTHORITY

COMAR 26.14.01 - .02

PROCEDURES AND EQUIPMENT

MDE regulations require waste generators to have knowledge of, and implement as necessary, emergency procedures for potential emergencies involving hazardous materials or waste.

A. Spill Response – Major Spills

Releases of hazardous substances that pose a significant threat to health or safety, or that require an emergency response regardless of the circumstances surrounding the release or the mitigating factors, are emergency situations. The following designate an emergency situation:

- The situation is unclear to the person causing or discovering the spill;
- The release requires evacuation of persons (e.g. chemicals or contaminants could enter the air handling system of the building);
- The release involves or poses a threat of fire, suspected fire, explosion, or other imminent danger; conditions that are Immediately Dangerous to Life and Health (IDLH); high levels of exposure to toxic substances;
- The person(s) in the work area is uncertain that they can handle the severity of the hazard with the PPE and response equipment that has been provided and/or the exposure limit could easily be exceeded.

Specific procedures for responding to emergency situations including major hazardous material spill or release, fire, utility failure, weather, violence, and medical emergency, including chemical exposure, are detailed in the ***Emergency Resources Guide***.

B. Spill Response – Nuisance Spills

Conversely, small "nuisance" spills (less than 1 liter with low toxicity and low flammability) that do not pose significant safety or health hazards and do not have the potential to become emergencies within a short time frame are NOT emergency situations. The following situations are not emergencies:

- The person causing or discovering the release understands the properties and can make an informed decision as to the exposure level.
- The release can be appropriately cleaned by trained personnel.
- The materials are limited in quantity, exposure potential, or toxicity and present minor safety or health hazards to persons in the immediate work area or those assigned to clean up the activity.
- Incidental releases of hazardous substances that are routinely cleaned up by EHS need not be considered an emergency.

Nuisance spills may be cleaned up by properly trained and equipped staff using a chemical spill kit. Personal protective equipment (PPE) and appropriate clean-up materials should be available prior to an incident. Before responding to a spill, the minimum PPE needed includes goggles, lab coat (sleeves rolled down), and nitrile or neoprene gloves.

1. The supplies needed to clean up a spill will depend on the quantity and type of chemical that is spilled. A recommended list of supplies is:

    a. polypropylene pads
    b. heavy duty trash bags
    c. Hazardous waste labels
    d. A gallon plastic container with lid
    e. Dust pan and brush
    f. Laboratory tongs
    g. Absorbent clay

2. Clean-up procedures are as follows:

    a. Secure the area of the spill.

    b. Don appropriate PPE and control further release and spread of spill material by righting containers and placing absorbent materials (e.g. absorbent pads) around the spill.

    c. Absorb any free liquid; spills of acids and bases can be easily absorbed into polypropylene pads, or a clay absorbent (cat litter). Once all of the free liquids are absorbed, place all of the absorbents and other contaminated spill clean-up residue and material into a heavy duty trash bag or plastic container that can be sealed.

d. Neutralize any remaining residues using acids or bases for spilled corrosives, or warm soapy water for other chemicals, and decontaminate the area. **Never** use water for spilled chemicals that are water reactive!

e. Inspect the area for spill residue, hidden contamination, or other unsafe conditions. Dispose of remaining contaminated materials. Label the container(s) as hazardous waste and submit a Hazardous Waste Removal Request to EHS.

C. Mercury Spills and Broken Thermometers

Mercury spills must be properly cleaned up because mercury can cause irreparable damage to the nervous system. Investigators shall adhere to the following prevention and spill response procedures:

1. Trays shall be placed under equipment where a mercury spill is possible.

2. Spills must be isolated immediately to prevent foot traffic through the area.

3. If the mercury spill is larger than that from a broken thermometer, all personnel should be evacuated from the spill area.

4. If a mercury spill occurs in a heated oven or an electrical device, turn off the device, evacuate the area and notify EHS for further assistance.

5. In all cases of mercury spillage, **except for broken thermometers**, EHS must be contacted.

6. Metallic mercury and metallic mercury contaminated waste must be stored in airtight containers to prevent the escape of toxic vapors. Do not place any liquid in the container to prevent the escape of toxic vapors. Plastic or glass bottles or a sealable plastic bag are adequate containers. Closed containers of waste must have a completed Hazardous Waste label.

7. Always wear gloves and a respirator when conducting a mercury cleanup. Mercury is absorbed through intact skin.

PART VI. CHEMICAL STORAGE FACILITY

The Chemical Waste Storage Facility (CSF) is used to store hazardous, medical, and LLRW wastes generated by the campus. The CSF is located adjacent across from Spaulding Hall. All wastes are stored inside the CSF.

A. Hazardous Waste Storage

1. Hazardous wastes are stored with concerns for compatibility. All wastes stored in the facility are physically separated according to the nine (9) different hazard classes defined below:

    a. Acutely toxic chemicals
    b. Flammable liquids with flash points < 100°C
    c. Combustible liquids with flash points > 101°C
    d. Flammable and water reactive solids
    e. Oxidizers
    f. Acidic corrosives with pH < 2
    g. Alkaline corrosives with pH > 12.5

2. Flammable liquids with flash points < 100°C and contaminated with low levels of radioactive nuclide.

3. All chemicals not covered by the above definitions.

4. With the exception of Class 6 materials, all containers must be placed in plastic containment pans of sufficient size to contain spills.

5. At least once every three (3) months or as necessary, containers are collected by an outside contractor for ultimate disposal.

6. LLRW are stored in a separate building at the CSF.

    a. Regulations governing the storage of radioactive material are followed in addition to those governing storage of chemical / hazardous waste.
    b. Class 8 chemicals are stored in double plastic bin liners in 55 gallon DOT approved sealed drums. Each drum will only store <10 gallons of liquid. Sufficient vermiculite must be placed in the bottom of each drum to absorb material leaking from the liner.

B. Emergency Procedures

The following emergency procedures shall be instituted in the event of explosion, fires, spills, or personnel contamination at the CSF:

1. Evacuation Plan

    a. In the event of an emergency necessitating evacuation from the CSF, all personnel shall be verbally informed immediately to evacuate the premises.
    b. Evacuation shall be accomplished via the doors leading from the facility.
    c. The primary exit route from the campus shall be Backbone Road. The secondary route shall be across the open fields.

2. Explosions and/or Fires

    a. The person initially at the scene shall notify Campus Police at Ext. 3300. This person shall then contact any of the three chemical safety personnel listed below. Information necessary to contact these personnel is also written on the outside of the door to the CSF.

    b. The initial respondent shall remain in a safe area until emergency responders arrive.

    c. The fire department having jurisdiction over a fire/explosion incident is The City of Princess Anne Fire Department (PAFD).

    d. Fire department personnel shall wear protective gear in accordance with their standard procedures when on the premises of the CSF during an emergency. It is recommended that full protective gear be worn at all times during an emergency due to the presence of radioactive nuclide in the CSF.

3. Spills and/or Release

    a. The concrete floor of the facility is bermed to contain any spill within the buildings.

    b. At no time shall clean-up operations commence which could result in personnel contamination either through absorption, inhalation, or ingestion, unless the individual(s) are fully trained and aware of the hazards associated with the chemicals involved.

    c. General guidelines in the event of a spill or release at the CSF are outlined below:

        i. Spills/Releases of Slight/Moderate Hazard

            a. Attempt to minimize or control further spillage

b. If the leak is from a 5 or 55 gallon drum, rotate the drum in such a manner that it no longer leaks.

c. If the leak is from a bottle or other small container, place the container in an upright position or a position in which it no longer leaks, or place the container in a plastic bag or secondary container.

d. Contact chemical safety personnel for clean-up.

ii. Spills/Releases of Chemicals Immediately Dangerous to Life or Health

a. Immediately evacuate the CSF; the procedures under "Explosion and/or Fire" shall be in effect.

b. Common methods of spill clean-up are listed below. Emergency equipment is located in the CSF. Additional supplies are located in the Physical Plant Building.

1. Acids – an acid neutralizer kit should be used. This is spread over the spill, from the outer edges toward the inside, until it ceases to react, and is then swept up and treated as hazardous waste.
2. Bases / Alkalines – follow the procedure outlined above for an acid spill, using base neutralizer
3. Solvents – Use a solvent absorbent kit to absorb the spill, then sweep up the residue and treat as a hazardous waste.
4. Vermiculite shall be used to absorb aqueous spills. The saturated vermiculite must be swept up and treated as hazardous waste.

d. After the spill is contained and cleaned, chemical safety personnel must determine whether, or to what extent any secondary contamination has occurred. Any contamination debris must be treated as hazardous waste.

4. Personal Contamination

a. Individual(s) exposed to toxic or corrosive chemicals must be transported to appropriate medical facilities as determined by responding emergency medical services and according to established fire department procedures.
b. Emergency first aid shall be provided, as needed.

5. Notification of the State and EPA

The State of Maryland and EPA shall be notified in the event of a spill or release if there is a potential that human health or the environment will be affected, of if the amount spilled or released is in a reportable quantity as specified in EPA's CERCLA. Notification shall occur immediately after the above determination is made.

6. Emergency Equipment List

    a. Ventilation system for CSF is explosion proof to provide manually operated exhaust of chemical fumes/odors
    b. Spill containment: The CSF has a concrete, bermed floor to provide containment of all spilled liquid(s).
    c. 10 lb. ABC Portable fire extinguisher
    d. Miscellaneous spill clean-up items stored in the CSF and in laboratory preparation rooms include:

        1. vermiculite
        2. containers (1, 2.5, 5 gallon capacity)
        3. drums (5, 30, 55, DOT approved)
        4. rubber gloves
        5. plastic over-boots
        6. plastic bags
        7. goggles and respirators
        8. brushes, plans
        9. plastic buckets
        10. Baker spill clean-up kits for acids, bases, and solvents
        11. Additional spill clean-up kits
        12. Chemical reference books and MSDS are stored in individual laboratories.

7. Chemical Safety Personnel

    a. Upon notification of a spill and arrival, Chemical Safety Personnel shall perform the following actions:

        1. Identify the chemical(s) involved by reading the container label or using other techniques such as pH paper, sight, or judicious smelling.

        2. Identify the hazards involved by consulting MSDS

        3. If Chemical Safety Personnel determine that the hazard is not excessive, clean-up operations may proceed.

        4. If Chemical Safety Personnel determine that self-contained breathing apparatus (SCBA) is required for the clean-up, of if a fire or explosion is imminent, the CFD shall be notified immediately following

procedures in the section, “Explosions and/or Fires.” Examples of situations in which CFD must be notified include:

i. The chemical has a National Fire Protection Association (NFPA) rating of 4 for toxicity, and is moderately or highly volatile (e.g. bromine).
ii. A hazardous reaction has occurred or is suspected to have occurred, liberating a substance immediately dangerous to life or health (e.g. cyanide with acids, phosgene producing reactions).
iii. A hazardous reaction has occurred or is suspected to have occurred, posing an imminent fire or explosion hazard (e.g. a flammable liquid with strong oxidizer); and/or,
iv. A flammable substance is exposed to heat, fire, flame, or open electrical circuits.

PART VII. EPA HAZARDOUS WASTE CODES

Only those codes applicable to the University of Maryland Eastern Shore are listed.

A. **Hazardous waste is any solid waste that either exhibits any of the** characteristics o**f hazardous waste or is a listed EPA waste.**

B. **In addition, EPA Hazardous Waste Codes are also classified as acute and non-acute. P-listed codes and certain dioxin codes (F020-F023 and F026-F028) are considered to be acute, whereas the remaining codes are non-acute.**

Criteria and Characteristics of Hazardous Waste

Ignitability (D001)	A solid waste that meets *any* of the following criteria: 1. A liquid that has a flash point of less than 140º F as determined by a Pensky-Martens closed cup tester using ASTM method D-93-70 or D-93-80; 2. A solid, under standard temperature and pressure, that can cause fire through friction, absorption of moisture, or spontaneous chemical changes *and* burn vigorously and persistently that it creates a hazard; 3. An ignitable compressed gas as defined by the Department of Transportation in 49 CFR 173.300; or, 4. An oxidizer as defined by the Department of Transportation in 49 CFR 173.151.
Corrosivity (D002)	A solid waste that meets *any* of the following criteria: 1. An aqueous liquid that has a pH of 2 or less or 12.5 or more; or, 2. A liquid that corrodes steel at a rate of 6.35 mm or more per year as determined by the National Association of Corrosion Engineers
Reactivity (D003)	A solid waste that meets *any* of the following criteria: 1. Instability and readiness to under go violent change; 2. Violent reactions when mixed with water; 3. Formation of potentially explosive mixtures when mixed with water; 4. Generation of toxic fumes in quantities sufficient to present a danger to human health or the environment when mixed with water; 5. Cyanide or sulfide waste which generate toxic fumes when exposed to acidic conditions; 6. Ease of detonation or explosive reaction when exposed to pressure

	or heat; 7. Ease of detonation or explosive decomposition or reaction at standard temperature and pressure; or, 8. Defined as a forbidden explosive by the Department of Transportation.
Toxicity (D004-D043)	A solid waste whose extract under the test procedure specified under 40CFR Part 261.24 contains one or more constituents at concentrations greater than those specified in the Maximum Concentration of Contaminants for the Toxicity Characteristic Table:

Maximum Concentration of Contaminants for the Toxicity Characteristic

EPA Hazardous Waste Number	Contaminant	Regulatory Level (mg/L)
D004	Arsenic	5.0
D005	Barium	100.0
D018	Benzene	0.5
D006	Cadmium	1.0
D019	Carbon tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D007	Chromium	5.0
D023	Cresol, o-	200.0
D024	Cresol, m-	200.0
D025	Cresol, p-	200.0
D026	Cresol	200.0
D016	2,4-D	10.0
D027	Dichlorobenzene, 1,4-	7.5
D028	Dichloroethane, 1,2-	0.5
D029	Dichloroethylene, 1,1-	0.7

EPA Hazardous Waste Number	Contaminant	Regulatory Level (mg/L)
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D008	Lead	5.0
D013	Lindane	0.4
D009	Mercury	0.2
D014	Methoxychlor	10.0
D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentrachlorophenol	100.0
D038	Pyridine	5.0
D010	Selenium	1.0
D011	Silver	5.0
D039	Tetrachloroethylene	0.7
D015	Toxaphene	0.5
D040	Trichloroethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D017	2,4,5-TP (Silvex)	1.0

D030	Dinitrotoluene, 2,4-	0.13	D043	Vinyl chloride	0.2
D012	Endrin	0.02			
D031	Heptachlor (and its epoxide)	0.008			

EPA Hazardous Waste Number	**Hazardous Waste from non-specific sources**
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene,1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and f005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F004	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by

	volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F006	Wastewater treatment sludge from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and align=center etching and milling of aluminum.
F007	Spent cyanide plating bath solutions from electroplating operations.
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.
F012	Quenching waste water treatment sludge from metal heat treating operations where cyanides are used in the process.
F019	Wastewater treatment sludge from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of termediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant,

	chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).
F024	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludge, spent catalysts, and wastes listed in § 261.31 or § 261.32).
F025	Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.
F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.).
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.
F032	Wastewaters (except those that have not come into contact with process contaminants),rocess residuals, preservative drippage, and spent

	formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with § 261.35 of this chapter or potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes (i.e., F034 or F035), and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.
F034	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.
F035	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.
F037	Petroleum refinery primary oil/water/solids separation sludge--Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludge include, but are not limited to, those generated in: oil/ water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludge generated in stormwater units that do not receive dry weather flow, sludge generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludge generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludge generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge--Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludge and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludge generated in DAF units. sludge generated in stormwater units that do not receive dry weather flow, sludge generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludge

	and floats generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludge and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and f037, K048, and K051 wastes are not included in this listing.
F039	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of this part. (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other Hazardous Wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028.)

Acute Hazardous Waste

EPA Hazardous Waste Number	Substance
P023	Acetaldehyde, chloro-
P002	Acetamide, N-(aminothioxomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P002	Acetyl-2-thiourea, 1-
P003	Acrolein
P070	Aldicarb
P203	Aldicarb sulfone
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide
P007	Aminomethyl)-3-isoxazolol, 5-(
P008	Aminopyridine, 4-
P009	Ammonium picrate
P119	Ammonium vanadate
P099	Argentate(1-), bis(cyano-C)-, potassium
P010	Arsenic acid H3AsO4
P012	Arsenic oxide As2O3
P011	Arsenic oxide As2O5
P011	Arsenic pentoxide

P012	Arsenic trioxide
P038	Arsine, diethyl-
P036	Arsonous dichloride, phenyl-
P054	Aziridine
P067	Aziridine, 2-methyl-
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-
P028	Benzene, (chloromethyl)-
P042	Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, 1,2-
P046	Benzeneethanamine, alpha,alpha-dimethyl-
P014	Benzenethiol
P127	Benzofuranol, 2,3-dihydro-2,2-dimethyl-,-2-methylcarbamate
P188	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-tr imethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester
P001	Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-2-phenylbutyl)-2H-1-, & salts, when present at concentrations greater than 0.3%
P028	Benzyl chloride
P015	Beryllium powder
P017	Bromoacetone
P018	Brucine
P045	Butanone, 3,3-dimethyl-1-(methylthio)-, O-4-[methylamino)carbonyl] oxime
P021	Calcium cyanide
P021	Calcium cyanide Ca(CN)
P189	Carbamic acid, [(dibutylamino)- thio]methyl-, 2,3,-dihydro-2,2-dimethyl- 7-benzofuranyl ester
P191	Carbamic acid, dimethyl-, 1-[(dimethyl-amino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester
P192	Carbamic acid, dimethyl-, 3-methyl-1- (1-methylethyl)-1H-pyrazol-5-yl ester
P190	Carbamic acid, methyl-, 3-methylphenyl ester
P127	Carbofuran.
P022	Carbon disulfide
P095	Carbonic dichloride
P189	Carbosulfan

P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	Chlorophenyl)thiourea, 1-(o-
P027	Chloropropionitrile, 3-
P029	Copper cyanide
P029	Copper cyanide Cu(CN)
P202	Cumenyl methylcarbamate, m-
P030	Cyanides (soluble cyanide salts), not otherwise specified
P031	Cyanogen
P033	Cyanogen chloride
P033	Cyanogen chloride (CN)Cl
P034	Cyclohexyl-4,6-dinitrophenol, 2-
P016	Dichloromethyl ether
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P041	Diethyl-p-nitrophenyl phosphate
P040	Diethyl O-pyrazinyl phosphorothioate, O,O-
P043	Diisopropylfluorophosphate (DFP)
P004	1,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a,-hexahydro-,(1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-
P060	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-,(1alpha,4alpha,4abeta,5beta,8beta,8abeta)-
P037	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a, 7,7a-octahydro-,(1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-
P051	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6, 6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta, 7aalpha)-, & metabolites
P044	Dimethoate
P046	alpha,alpha-Dimethylphenethylamine
P191	Dimetilan
P047	4,6-Dinitro-o-cresol, & salts
P048	2,4-Dinitrophenol
P020	Dinoseb
P085	Diphosphoramide, octamethyl-

P111	Diphosphoric acid, tetraethyl ester
P039	Disulfoton
P049	Dithiobiuret
P185	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)-carbonyl]oxime
P050	Endosulfan
P088	Endothall
P051	Endrin
P051	Endrin, & metabolites
P042	Epinephrine
P031	Ethanedinitrile
P194	Ethanimidothioc acid, 2-(dimethylamino)-N-0-[[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester
P066	Ethanimidothioic acid, N- [[(methylamino)carbonyl]oxy]-, methyl ester
P101	Ethyl cyanide
P054	Ethyleneimine
P097	Famphur
P056	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P198	Formetanate hydrochloride
P197	Formparanate
P065	Fulminic acid, mercury(2+) salt
P059	Heptachlor
P062	Hexaethyl tetraphosphate
P116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid
P063	Hydrogen cyanide
P096	Hydrogen phosphide
P060	Isodrin
P192	Isolan
P202	Isopropylphenyl N-methylcarbamate
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-
P196	Manganese, bis(dimethylcarbamodithioato-S,S')-,

P196	Manganese dimethyldithiocarbamate
P092	Mercury, (acetato-O)phenyl-
P065	Mercury fulminate
P082	Methanamine, N-methyl-N-nitroso-
P064	Methane, isocyanato-
P016	Methane, oxybis[chloro-
P112	Methane, tetranitro-
P118	Methanethiol, trichloro-
P198	Methanimidamide, N,N-dimethyl-N'-[3-[[(methylamino)-carbonyl]oxy]phenyl]-, monohydrochloride
P197	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[(methylamino)carbonyl]oxy]phenyl]-
P050	Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexa hydro-, 3-oxide
P059	Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P199	Methiocarb
P066	Methomyl
P068	Methyl hydrazine
P064	Methyl isocyanate
P069	Methyllactonitrile
P071	Methyl parathion
P190	Metolcarb
P128	Mexacarbate
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P073	Nickel carbonyl Ni(CO)4
P074	Nickel cyanide
P074	Nickel cynaide Ni(CN)2
P075	Nicotine, & salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen oxide NO
P078	Nitrogen oxide NO2
P081	Nitroglycerine
P082	N-Nitrosodimethylamine

P084	N-Nitrosomethylvinylamine
P085	Octamethylpyrophosphoramide
P087	Osmium oxide OsO4
P087	Osmium tetroxide
P088	Oxabicyclo[2.2.1]heptane-2, 3-dicarboxylic acid
P194	Oxamyl
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	Phenol, 2,4-dinitro-
P047	Phenol, 2-methyl-4,6-dinitro-, & salts
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	Phenol, 2,4,6-trinitro-, ammonium salt
P128	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)
P199	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate
P202	Phenol, 3-(1-methylethyl)-, methyl carbamate
P201	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate
P092	Phenylmercury acetate
P093	Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl4-nitrophenyl ester
P039	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	Phosphorofluoridic acid, bis(1-methylethyl) ester
P089	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester
P071	Phosphorothioic acid, O,O,-dimethyl O-(4-nitrophenyl) ester
P204	Physostigmine
P188	Physostigmine salicylate
P110	Plumbane, tetraethyl-

P098	Potassium cyanide
P098	Potassium cyanide KCN
P099	Potassium silver cyanide
P201	Promecarb
P070	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P203	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl-
P081	Propanetriol, trinitrate
P017	Propanone, 1-bromo-
P102	Propargyl alcohol
P003	Propenal
P005	Propen-1-ol
P067	Propylenimine
P102	Propyn-1-ol
P008	Pyridinamine
P075	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts 5
P204	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS- cis)-
P114	Selenious acid, dithallium(1+) salt
P103	Selenourea
P104	Silver cyanide
P104	Silver cyanide Ag(CN)
P105	Sodium azide
P106	Sodium cyanide
P106	Sodium cyanide Na(CN)
P108	Strychnidin-10-one, & salts
P018	Strychnidin-10-one, 2,3-dimethoxy-
P108	Strychnine, & salts
P115	Sulfuric acid, dithallium(1+)salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethyl pyrophosphate

P112	Tetranitromethane
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium oxide Tl2O3
P114	Thallium(I) selenite
P115	Thallium(I) sulfate
P109	Thiodiphosphoric acid, tetraethyl ester
P045	Thiofanox
P049	Thioimidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-1
P072	Thiourea, 1-naphthalenyl-
P093	Thiourea, phenyl-
P185	Tirpate
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide V2O5
P120	Vanadium pentoxide
P084	Vinylamine, N-methyl-N-nitroso-
P001	Warfarin, & salts, when present at concentrations greater than 0.3%
P205	Zinc, bis(dimethylcarbamodithioato-S,S')-,
P121	Zinc cyanide
P121	Zinc cyanide Zn(CN)2
P122	Zinc phosphide Zn3P2, when present at concentrations greater than 10%
P205	Ziram

Toxic (Non-Acute) Hazardous Waste

EPA Hazardous Waste Number	**Substance**
U394	A2213
U001	Acetaldehyde

U034	Acetaldehyde, trichloro-
U187	Acetamide, N-(4-ethoxyphenyl)-
U005	Acetamide, N-9H-fluoren-2-yl-
U240	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U112	Acetic acid ethyl ester
U144	Acetic acid, lead(2+) salt
U214	Acetic acid, thallium(1+) salt see F027Acetic acid, (2,4,5-trichlorophenoxy)-
U002	Acetone
U003	Acetonitrile
U004	Acetophenone
U005	Acetylaminofluorene
U006	Acetyl chloride
U007	Acrylamide
U008	Acrylic acid
U009	Acrylonitrile
U011	Amitrole
U012	Aniline
U136	Arsinic acid, dimethyl-
U014	Auramine
U015	Azaserine
U365	Azepine-1-carbothioic acid, hexahydro-, S-ethyl 1 ester
U010	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione,6-amino-8-[[(amin ocarbonyl)oxy] methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta,8aalpha,8balpha)]-
U280	Barban
U278	Bendiocarb
U364	Bendiocarb phenol
U271	Benomyl
U157	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	Benz[c]acridine
U017	Benzal chloride
U192	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
U018	Benz[a]anthracene
U094	Benz[a]anthracene, 7,12-dimethyl-
U012	Benzenamine

U014	Benzenamine, 4,4'-carbonimidoyl bis[N,N-dimethyl-
U049	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U093	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	Benzenamine, 2-methyl-
U353	Benzenamine, 4-methyl-
U158	Benzenamine, 4,4'-methylenebis[2-chloro-
U222	Benzenamine, 2-methyl-, hydrochloride
U181	Benzenamine, 2-methyl-5-nitro-
U019	Benzene
U038	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U030	Benzene, 1-bromo-4-phenoxy-
U035	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	Benzene, chloro-
U221	Benzenediamine, ar-methyl-
U028	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U069	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	1,2-Benzenedicarboxylic acid, diethyl ester
U102	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	1,2-Benzenedicarboxylic acid, dioctyl ester
U070	Benzene, 1,2-dichloro-
U071	Benzene, 1,3-dichloro-
U072	Benzene, 1,4-dichloro-
U060	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
U017	Benzene, (dichloromethyl)-
U223	Benzene, 1,3-diisocyanatomethyl-
U239	Benzene, dimethyl-
U20	1,3-Benzenediol
U127	Benzene, hexachloro-
U056	Benzene, hexahydro-
U220	Benzene, methyl-
U105	Benzene, 1-methyl-2,4-dinitro-
U106	Benzene, 2-methyl-1,3-dinitro-
U055	Benzene, (1-methylethyl)-
U169	Benzene, nitro-

U183	Benzene, pentachloro-
U185	Benzene, pentachloronitro-
U020	Benzenesulfonic acid chloride
U020	Benzenesulfonyl chloride
U207	Benzene, 1,2,4,5-tetrachloro-
U061	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
U247	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-
U023	Benzene, (trichloromethyl)-
U234	Benzene, 1,3,5-trinitro-
U021	Benzidine
U202	Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts
U278	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate
U364	1,3-Benzodioxol-4-ol, 2,2-dimethyl-,
U203	1,3-Benzodioxole, 5-(2-propenyl)-
U141	1,3-Benzodioxole, 5-(1-propenyl)-
U367	Benzofuranol, 2,3-dihydro-2,2-dimethyl-
U090	1,3-Benzodioxole, 5-propyl-
U064	Benzo[rst]pentaphene
U248	Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations of 0.3% or less
U022	Benzo[a]pyrene
U197	p-Benzoquinone
U023	Benzotrichloride
U085	2,2'-Bioxirane
U021	[1,1'-Biphenyl]-4,4'-diamine
U073	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U091	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U401	Bis(dimethylthiocarbamoyl) sulfide
U400	Bis(pentamethylene)thiuram tetrasulfide
U225	Bromoform
U030	4-Bromophenyl phenyl ether
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	1-Butanamine, N-butyl-N-nitroso-
U031	1-Butanol

U159	2-Butanone
U160	2-Butanone, peroxide
U053	2-Butenal
U074	2-Butene, 1,4-dichloro-
U143	Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1- yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-
U031	n-Butyl alcohol
U392	Butylate
U136	Cacodylic acid
U032	Calcium chromate
U372	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester
U271	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol -2-yl]-,methyl ester
U375	Carbamic acid, butyl-, 3-iodo-2-propynyl ester
U280	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
U238	Carbamic acid, ethyl ester
U178	Carbamic acid, methylnitroso-, ethyl ester
U373	Carbamic acid, phenyl-, 1-methylethyl ester
U409	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester
U097	Carbamic chloride, dimethyl-
U379	Carbamodithioic acid, dibutyl, sodium salt
U277	Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
U381	Carbamodithioic acid, diethyl-, sodium salt
U383	Carbamodithioic acid, dimethyl, potassium salt
U382	Carbamodithioic acid, dimethyl-, sodium salt
U376	Carbamodithioic acid, dimethyl-, tetraanhydrosulfide with orthothioselenious acid
U378	Carbamodithioic acid, (hydroxymethyl) methyl-, monopotassium salt
U384	Carbamodithioic acid, methyl-, monosodium salt
U377	Carbamodithioic acid, methyl,- monopotassium salt
U389	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
U392	Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
U391	Carbamothioic acid, butylethyl-, S-propyl ester
U386	Carbamothioic acid, cyclohexylethyl-, S-ethyl ester

U390	Carbamothioic acid, dipropyl-, S-ethyl ester
U387	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester
U385	Carbamothioic acid, dipropyl-, S-propyl ester
U114	Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters
U062	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3- dichloro-2-propenyl) ester
U279	Carbaryl
U372	Carbendazim
U367	Carbofuran phenol
U215	Carbonic acid, dithallium(1+) salt
U033	Carbonic difluoride
U156	Carbonochloridic acid, methyl ester
U033	Carbon oxyfluoride
U211	Carbon tetrachloride
U034	Chloral
U035	Chlorambucil
U036	Chlordane, alpha & gamma isomers
U026	Chlornaphazin
U037	Chlorobenzene
U038	Chlorobenzilate
U039	p-Chloro-m-cresol
U042	2-Chloroethyl vinyl ether
U044	Chloroform
U046	Chloromethyl methyl ether
U047	beta-Chloronaphthalene
U048	o-Chlorophenol
U049	4-Chloro-o-toluidine, hydrochloride
U032	Chromic acid H2CrO4, calcium salt
U050	Chrysene
U393	Copper, bis(dimethylcarbamodithioato-S,S')-,
U393	Copper dimethyldithiocarbamate
U051	Creosote
U052	Cresol (Cresylic acid)
U053	Crotonaldehyde
U055	Cumene
U246	Cyanogen bromide (CN)Br

U386	Cycloate
U197	2,5-Cyclohexadiene-1,4-dione
U056	Cyclohexane
U129	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
U057	Cyclohexanone
U130	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	Cyclophosphamide
U240	2,4-D, salts & esters
U059	Daunomycin
U366	Dazomet
U060	DDD
U061	DDT
U062	Diallate
U063	Dibenz[a,h]anthracene
U064	Dibenzo[a,i]pyrene
U066	1,2-Dibromo-3-chloropropane
U069	Dibutyl phthalate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-Dichlorobenzidine
U074	1,4-Dichloro-2-butene
U075	Dichlorodifluoromethane
U078	1,1-Dichloroethylene
U079	1,2-Dichloroethylene
U025	Dichloroethyl ether
U027	Dichloroisopropyl ether
U024	Dichloromethoxy ethane
U081	2,4-Dichlorophenol
U082	2,6-Dichlorophenol
U084	1,3-Dichloropropene
U085	1,2:3,4-Diepoxybutane
U108	1,4-Diethyleneoxide
U028	Diethylhexyl phthalate

U395	Diethylene glycol, dicarbamate
U086	N,N'-Diethylhydrazine
U087	O,O-Diethyl S-methyl dithiophosphate
U088	Diethyl phthalate
U089	Diethylstilbesterol
U090	Dihydrosafrole
U091	3,3'-Dimethoxybenzidine
U092	Dimethylamine
U093	p-Dimethylaminoazobenzene
U094	7,12-Dimethylbenz[a]anthracene
U095	3,3'-Dimethylbenzidine
U096	alpha,alpha-Dimethylbenzylhydroperoxide
U097	Dimethylcarbamoyl chloride
U098	1,1-Dimethylhydrazine
U099	1,2-Dimethylhydrazine
U101	2,4-Dimethylphenol
U102	Dimethyl phthalate
U103	Dimethyl sulfate
U105	2,4-Dinitrotoluene
U106	2,6-Dinitrotoluene
U107	Di-n-octyl phthalate
U108	1,4-Dioxane
U109	1,2-Diphenylhydrazine
U110	Dipropylamine
U111	Di-n-propylnitrosamine
U403	Disulfiram
U390	EPTC
U041	Epichlorohydrin
U001	Ethanal
U404	Ethanamine, N,N-diethyl-
U174	Ethanamine, N-ethyl-N-nitroso-
U155	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-
U067	Ethane, 1,2-dibromo-
U076	Ethane, 1,1-dichloro-
U077	Ethane, 1,2-dichloro-

U131	Ethane, hexachloro-
U024	Ethane, 1,1'-[methylenebis (oxy)]bis[2-chloro-
U117	Ethane, 1,1'-oxybis-(I)
U025	Ethane, 1,1'-oxybis[2-chloro-
U184	Ethane, pentachloro-
U208	Ethane, 1,1,1,2-tetrachloro-
U209	Ethane, 1,1,2,2-tetrachloro-
U218	Ethanethioamide
U226	Ethane, 1,1,1-trichloro-
U227	Ethane, 1,1,2-trichloro-
U410	Ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]] bis-, dimethyl ester
U394	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-1 oxo-, methyl ester
U359	Ethanol, 2-ethoxy-
U173	Ethanol, 2,2'-(nitrosoimino)bis-
U395	Ethanol, 2,2'-oxybis-, dicarbamate
U004	Ethanone, 1-phenyl-
U043	Ethene, chloro-
U042	Ethene, (2-chloroethoxy)-
U078	Ethene, 1,1-dichloro-
U079	Ethene, 1,2-dichloro-
U210	Ethene, tetrachloro-
U228	Ethene, trichloro-
U112	Ethyl acetate
U113	Ethyl acrylate
U238	Ethyl carbamate (urethane)
U117	Ethyl ether
U114	Ethylenebisdithiocarbamic acid, salts & esters
U067	Ethylene dibromide
U077	Ethylene dichloride
U359	Ethylene glycol monoethyl ether
U115	Ethylene oxide
U116	Ethylenethiourea
U076	Ethylidene dichloride

U118	Ethyl methacrylate
U119	Ethyl methanesulfonate
U407	Ethyl Ziram
U396	Ferbam
U126	Fluoranthene
U122	Formaldehyde
U123	Formic acid
U124	Furan
U125	Furancarboxaldehyde
U147	2,5-Furandione
U213	Furan, tetrahydro-
U125	Furfural
U124	Furfuran
U206	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-,
U206	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)-4 carbonyl]amino]-
U126	Glycidylaldehyde
U163	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	Hexachlorobenzene
U128	Hexachlorobutadiene
U130	Hexachlorocyclopentadiene
U131	Hexachloroethane
U132	Hexachlorophene
U243	Hexachloropropene
U133	Hydrazine
U086	Hydrazine, 1,2-diethyl-
U098	Hydrazine, 1,1-dimethyl-
U099	Hydrazine, 1,2-dimethyl-
U109	Hydrazine, 1,2-diphenyl-
U134	Hydrofluoric acid
U134	Hydrogen fluoride
U135	Hydrogen sulfide
U135	Hydrogen sulfide H2S
U096	Hydroperoxide, 1-methyl-1-phenylethyl-
U116	2-Imidazolidinethione
U137	Indeno[1,2,3-cd]pyrene

U375	3-Iodo-2-propynyl n-butylcarbamate
U396	Iron, tris(dimethylcarbamodithioato-S,S')-,
U190	1,3-Isobenzofurandione
U140	Isobutyl alcohol
U141	Isosafrole
U142	Kepone
U143	Lasiocarpine
U144	Lead acetate
U146	Lead, bis(acetato-O)tetrahydroxytri-
U145	Lead phosphate
U146	Lead subacetate
U129	Lindane
U163	MNNG
U147	Maleic anhydride
U148	Maleic hydrazide
U149	Malononitrile
U150	Melphalan
U151	Mercury
U384	Metam Sodium
U152	Methacrylonitril
U092	Methanamine, N-methyl-
U029	Methane, bromo-
U045	Methane, chloro-
U046	Methane, chloromethoxy-
U068	Methane, dibromo-
U080	Methane, dichloro-
U075	Methane, dichlorodifluoro-
U138	Methane, iodo-
U119	Methanesulfonic acid, ethyl ester
U211	Methane, tetrachloro-
U153	Methanethiol
U225	Methane, tribromo-
U044	Methane, trichloro-
U121	Methane, trichlorofluoro-
U036	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-

	hexahydro-
U154	Methanol
U155	Methapyrilene
U142	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one,1,1a,3,3a,4,5,5,5a, 5b,6-decachlorooctah ydro-
U247	Methoxychlor
U154	Methyl alcohol
U029	Methyl bromide
U186	1-Methylbutadiene
U045	Methyl chloride
U156	Methyl chlorocarbonate
U226	Methyl chloroform
U157	3-Methylcholanthrene
U158	4,4'-Methylenebis(2-chloroaniline)
U068	Methylene bromide
U080	Methylene chloride
U159	Methyl ethyl ketone (MEK)
U160	Methyl ethyl ketone peroxide
U138	Methyl iodide
U161	Methyl isobutyl ketone
U162	Methyl methacrylate
U161	4-Methyl-2-pentanone
U164	Methylthiouracil
U010	Mitomycin C
U365	Molinate
U059	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-3 trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-
U167	1-Naphthalenamine
U168	2-Naphthalenamine
U026	Naphthalenamine, N,N'-bis(2-chloroethyl)-
U165	Naphthalene
U047	Naphthalene, 2-chloro-
U166	1,4-Naphthalenedione
U236	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)bis [5-amino-4-hydroxy]-, tetrasodium salt

U279	1-Naphthalenol, methylcarbamate
U166	1,4-Naphthoquinone
U167	alpha-Naphthylamine
U168	beta-Naphthylamine
U217	Nitric acid, thallium(1+) salt
U169	Nitrobenzene
U170	p-Nitrophenol
U171	2-Nitropropane
U172	N-Nitrosodi-n-butylamine
U173	N-Nitrosodiethanolamine
U174	N-Nitrosodiethylamine
U176	N-Nitroso-N-ethylurea
U177	N-Nitroso-N-methylurea
U178	N-Nitroso-N-methylurethane
U179	N-Nitrosopiperidine
U180	N-Nitrosopyrrolidine
U181	Nitro-o-toluidine
U193	1,2-Oxathiolane, 2,2-dioxide
U058	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl) tetrahydro-, 2-oxide
U115	Oxirane
U126	Oxiranecarboxyaldehyde
U041	Oxirane, (chloromethyl)-
U182	Paraldehyde
U391	Pebulate
U183	Pentachlorobenzene
U184	Pentachloroethane
U185	Pentachloronitrobenzene (PCNB)
See F027	Pentachlorophenol
U161	Pentanol, 4-methyl-
U186	1,3-Pentadiene
U187	Phenacetin
U188	Phenol
U048	Phenol, 2-chloro-
U039	Phenol, 4-chloro-3-methyl-

U081	Phenol, 2,4-dichloro-
U082	Phenol, 2,6-dichloro-
U089	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-
U101	Phenol, 2,4-dimethyl-
U052	Phenol, methyl-
U132	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U411	Phenol, 2-(1-methylethoxy)-, methylcarbamate
U170	Phenol, 4-nitro
See F027	Phenol, pentachloro
See F027	Phenol, 2,3,4,6-tetrachloro
See F027	Phenol, 2,4,5-trichloro
See F027	Phenol, 2,4,6-trichloro
U150	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U145	Phosphoric acid, lead(2+) salt (2:3)
U087	Phosphorodithioic acid, O,O-diethyl S-methyl ester
U189	Phosphorus sulfide
U190	Phthalic anhydride
U191	2-Picoline
U179	Piperidine, 1-nitroso-
U400	Piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis-
U383	Potassium dimethyldithiocarbamate
U378	Potassium n-hydroxymethyl- n-methyldi-thiocarbamate
U377	Potassium n-methyldithiocarbamate
U192	Pronamide
U194	1-Propanamine
U111	1-Propanamine, N-nitroso-N-propyl-
U110	1-Propanamine, N-propyl-
U066	Propane, 1,2-dibromo-3-chloro-
U083	Propane, 1,2-dichloro-
U149	Propanedinitrile
U171	Propane, 2-nitro-
U027	Propane, 2,2'-oxybis[2-chloro-
U193	1,3-Propane sultone
See F027	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	1-Propanol, 2,3-dibromo-, phosphate (3:1)

U140	1-Propanol, 2-methyl-
U002	2-Propanone
U007	2-Propenamide
U084	1-Propene, 1,3-dichloro-
U243	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	2-Propenenitrile
U152	2-Propenenitrile, 2-methyl-
U008	2-Propenoic acid
U113	2-Propenoic acid, ethyl ester
U118	2-Propenoic acid, 2-methyl-, ethyl ester
U162	2-Propenoic acid, 2-methyl-, methyl ester
U373	Propham
U411	Propoxur
U387	Prosulfocarb
U194	n-Propylamine
U083	Propylene dichloride
U148	3,6-Pyridazinedione, 1,2-dihydro-
U196	Pyridine
U191	Pyridine, 2-methyl-
U237	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	Pyrrolidine, 1-nitroso-
U200	Reserpine
U201	Resorcinol
U202	Saccharin, & salts
U203	Safrole
U204	Selenious acid
U204	Selenium dioxide
U205	Selenium sulfide
U205	Selenium sulfide SeS2
U376	Selenium, tetrakis(dimethyldithiocarbamate)
U015	L-Serine, diazoacetate (ester)
See F027	Silvex (2,4,5-TP)
U379	Sodium dibutyldithiocarbamate
U381	Sodium diethyldithiocarbamate

U382	Sodium dimethyldithiocarbamate
U206	Streptozotocin
U103	Sulfuric acid, dimethyl ester
U277	Sulfallate
U189	Sulfur phosphide
See F027	2,4,5-T
U402	Tetrabutylthiuram disulfide
U207	1,2,4,5-Tetrachlorobenzene
U208	1,1,1,2-Tetrachloroethane
U209	1,1,2,2-Tetrachloroethane
U210	Tetrachloroethylene
See F027	2,3,4,6-Tetrachlorophenol
U213	Tetrahydrofuran
U401	Tetramethylthiuram monosulfide
U214	Thallium(I) acetate
U215	Thallium(I) carbonate
U216	Thallium(I) chloride
U216	Thallium chloride Tlcl
U217	Thallium(I) nitrate
U366	2H-1,3,5-Thiadiazine- 2-thione, tetrahydro-3,5- dimethyl-
U218	Thioacetamide
U410	Thiodicarb
U153	Thiomethanol
U244	Thioperoxydicarbonic diamide [(H2N)C(S)]2S2, tetramethyl-
U402	Thioperoxydicarbonic diamide, tetrabutyl
U403	Thioperoxydicarbonic diamide, tetraethyl
U409	Thiophanate-methyl
U219	Thiourea
U244	Thiram
U220	Toluene
U221	Toluenediamine
U223	Toluene diisocyanate
U328	o-Toluidine
U353	p-Toluidine
U222	o-Toluidine hydrochloride

U389	Triallate
U011	1H-1,2,4-Triazol-3-amine
U227	1,1,2-Trichloroethane
U228	Trichloroethylene
U121	Trichloromonofluoromethane
See F027	2,4,5-Trichlorophenol
See F027	2,4,5-Trichlorophenol
U404	Triethylamine
U234	1,3,5-Trinitrobenzene
U182	1,3,5-Trioxane, 2,4,6-trimethyl-
U235	Tris(2,3-dibromopropyl) phosphate
U236	Trypan blue
U237	Uracil mustard
U176	Urea, N-ethyl-N-nitroso-
U177	Urea, N-methyl-N-nitroso-
U385	Vernolate
U043	Vinyl chloride
U248	Warfarin, & salts, when present at concentrations of 0.3% or less
U239	Xylene
U200	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester,(3beta,16beta,17alpha,18beta,20alpha)-
U407	Zinc, bis(diethylcarbamodithioato-S,S')-
U249	Zinc phosphide Zn3P2, when present at concentrations of 10% or less

APPENDIX A

HAZARDOUS WASTE REMOVAL REQUEST FORM

UNIVERSITY OF MARYLAND EASTERN SHORE

HAZARDOUS WASTE REMOVAL REQUEST FORM

Researcher/PI: _____ Department: _____

Building/Rm #: _____ Telephone: _____

Contact Person/Title: _____

Waste Charge #: _____

Container No.	WASTE DESCRIPTION	CONTAINER SIZE / TYPE	WASTE VOLUME / WEIGHT (KG)	COMPONENT PERCENTAGE	EHS USE ONLY EPA NO.

Principal Investigator Signature: _____

EHS USE ONLY: Date of waste removal: Waste removed by:

UNIVERSITY OF MARYLAND EASTERN SHORE

HAZARDOUS WASTE REMOVAL REQUEST FORM

INSTRUCTIONS

Complete the form in its entirety and submit the form to EHS to request the removal of identified hazardous chemical, biological (pathological and infectious), or radioactive wastes. A separate form is required for each waste category (i.e. chemical, radioactive, infectious or other medical wastes). Submit requests via fax to Ext. 7918 or by mailing this form through campus mail. Please adhere to the following detailed instructions in filling out the form:

Hazardous Chemical Waste:

The information is required by Federal (EPA) and State (Maryland Department of the Environment (MDE)) regulations in order to provide an operating record showing complete and accurate waste identification and a record of waste origin and destination.

The waste description must include the chemical name (s). Chemical mixtures must be identified by listing the solute, each chemical component, and the respective percentages. The total waste volume / weight (mL, L, g, or kg) represents the actual volume / weight of the waste in the container. Fractions should be rounded. The container type is "B" for bottle, "C" for can, and "O" for other container.

Example

Container No.	Waste Description	Container Size / Type	Waste Volume / Weight (kg)	Component Percentage	EHS USE ONLY EPA NO.
1	Phenol	500 mL, B		100%	
2	Methylene chloride	4 L, B		100%	
3	*Chemical Mixture:*				
	Sodium hydroxide	150 mL, B		15%	
	Methylene chloride			29%	
	Water			56%	

Biological, Pathological, and Medical Waste (BPMW):

BMPW consists of the following types of materials: Vaccines, cultures, blood products, body fluids, infectious agents, bloodborne pathogens and materials so contaminated, pathological waste and pathology specimens, sharps (including hypodermic syringes, needles, scalpel blades, razor blades, blood vials, vacutainer tubes with needles attached or containing blood), suture needles, needles with attached tubing, culture dishes from medical facilities or contaminated with HBV/HIV, animal wastes (consisting only of contaminated animal carcasses, body parts, and bedding of animals known to have been exposed to infectious agents), and isolation wastes (materials contaminated with blood, excretions, exudates, or secretion of humans or animals who are isolated to protect others from disease, or isolated animals infected with communicable disease agents.

If BPMW is contaminated with a hazardous chemical or a radioactive isotope, include the relevant information on the chemical or the isotope in the waste description.

Low-Level Radioactive Waste (LLRW):

This information is required by Federal (NRC) and State (Maryland Radiation Management Administration) regulations in order to provide an operating record showing complete and accurate waste identification and a record of waste origin and destination.

The waste description must include the isotope(s) present in the container, and the activity for each isotope in microcuries or millicuries. The waste type must also be identified as Dry Solid (paper, plastic, glass, etc.), Aqueous (water based only, does not contain hazardous chemicals), Mixed (liquid based, contains

hazardous chemicals), Animal Parts, Source, Sharps, Vials, or Medical Waste. If LLRW contains hazardous chemical, indicate the complete chemical composition of the waste.