Waste Management Plan

for

Stevens Institute of Technology
Castle Point on Hudson
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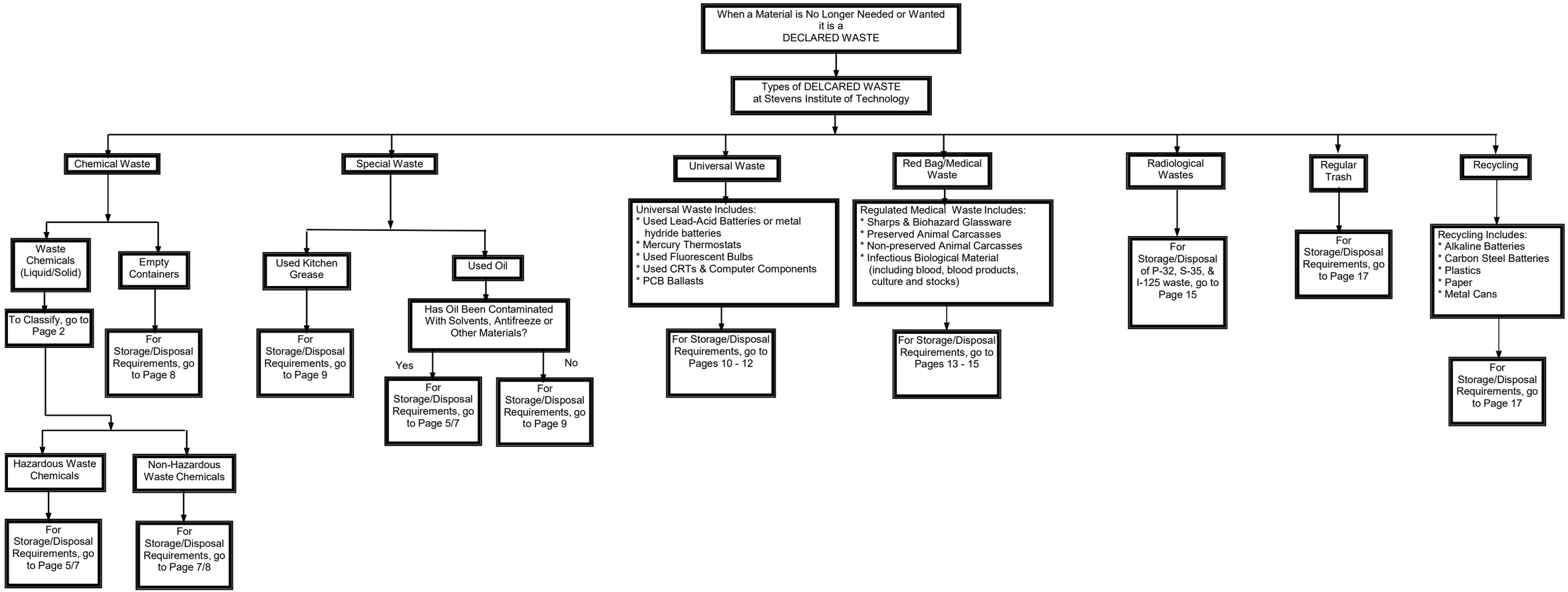

STEVENS INSTITUTE OF TECHNOLOGY
WASTE MANAGEMENT PLAN

1.0 INTRODUCTION

1.1 How to Use the Waste Management Plan

This Waste Management Plan is intended to provide a roadmap for the proper management of wastes generated at Stevens Institute of Technology (Stevens). It contains both requirements of state and federal environmental law as well as University policies.

The **Waste Management Flow Diagram** serves as the starting point for using the Plan. University generated wastes are divided into the following 7 categories:

- Chemical Wastes;
- Special Wastes;
- Universal Wastes;
- Red Bag/Medical Waste;
- Radiological Waste;
- Regular Trash*; and,
- Recycled Wastes.

Brief descriptions of each waste type are contained within the Diagram. Once you have located your particular waste, the Diagram will indicate the page on which the requirements for handling, storage and disposal are located.

The Plan is maintained by the University's Environmental Health and Safety Department. Questions regarding the content or use of the Plan should be directed to David Fernandez, Director EHS (A list of names of people responsible for implementing this Waste Management Plan may be found in **Appendix A**.)

2.0 WASTE MANAGEMENT REQUIREMENTS BY WASTE TYPE

2.1 Chemical Waste

2.1.1 Identification

In accordance with Stevens' Waste Management Plan, any chemical substance,

***Construction and demolition debris are handled on a project-specific basis.**

or mixture of chemical substances that you have decided to discard (and can not be used or reused by another party) is known as a **chemical waste**. This can include chemicals that are intended to be disposed of and chemicals that are being stored but are no longer used or needed. Chemical wastes can be in liquid, solid or gaseous form.

2.1.2 Classification

All chemical wastes generated at the University must be evaluated to determine if they would be considered to be "hazardous waste" or "non-hazardous waste". Hazardous wastes are a group of wastes classified by the United States Environmental Protection Agency (USEPA) and New Jersey Department of Environmental Protection (NJDEP) as requiring special handling and disposal due to their potential to harm human health and the environment. Review each of the following to determine if your chemical waste is a hazardous waste.

2.1.2.1 Hazardous Waste

There are two ways that a chemical waste may be a hazardous waste. The first is if the waste exhibits certain characteristics based either on your knowledge of the waste or by testing the waste. These are known as *Characteristic Hazardous Wastes*. The second is if the USEPA specifically lists the waste as a hazardous waste. These are known as *Listed Hazardous Wastes*. Based on these criteria, it is critical that you understand how your chemical waste was generated and what the components of the waste are. This information is used by the Waste Disposal Contractor to dispose of the waste.

2.1.2.1 (a) Characteristic Hazardous Wastes

Characteristic hazardous wastes are divided into the following categories:

Ignitable hazardous waste;
Corrosive hazardous waste;
Reactive hazardous waste; and,
Toxic hazardous waste.

2.1.2.1 (a)(1) Ignitable Hazardous Waste

Ignitable hazardous wastes are wastes that readily catch fire and can sustain combustion. Wastes are ignitable, as defined by USEPA, if they are liquids and have a flash point of less than 60ºC (140ºF). Other ignitable wastes include oxidizers such as chlorates, permanganates, inorganic peroxides, or nitrates/nitrites that liberate oxygen readily to promote the combustion of organic matter. Also ignitable are flammable compressed gases, and wastes that are not liquid at 20ºC (68ºF) that are spontaneously combustible. Wastes exhibiting the characteristic of ignitability are assigned the waste code D001.

Examples of **Ignitable Hazardous Waste** found at Stevens include:

- Used acetone solutions
- Used ethanol or methanol solutions
- Used xylene solutions

Note: Some examples may fit into more than one waste category.

2.1.2.1 (a)(2) Corrosive Hazardous Waste

Corrosive hazardous wastes are either acidic or alkaline (basic) wastes that can readily corrode or dissolve metal, skin or other materials. USEPA classifies a waste as corrosive if it is aqueous and it has a pH of 2.0 or less, or a pH that's 12.5 or greater. Wastes exhibiting the characteristic of corrosivity are assigned the waste code D002.

Examples of **Corrosive Hazardous Waste** found at Stevens include:

- Hydrochloric acid solutions
- Nitric acid solutions
- Sodium hydroxide solutions

Note: Some examples may fit into more than one waste category.

2.1.2.1 (a)(3) Reactive Hazardous Waste

A reactive hazardous waste, as defined by USEPA, is one that readily explodes or undergoes violent reactions. Wastes that react violently with water, such as pure sodium metal or wastes that form potentially explosive mixtures with water are considered reactive. In addition, wastes that contain cyanides or sulfides that can release toxic gases when exposed to acid or basic conditions are also considered reactive. Wastes exhibiting the characteristic of reactivity are assigned the waste code D003.

Examples of **Reactive Hazardous Waste** found at Stevens include:

- Metallic sodium or potassium
- Waste concentrated bleaches
- Cyanide containing salts

Note: Some examples may fit into more than one waste category.

2.1.2.1 (a)(4) Toxic Hazardous Waste

Toxicity characteristic wastes are determined by use of a standardized test method. This method, known as the Toxicity Characteristic Leaching Procedure (TCLP), is designed to simulate the leaching of toxic landfill wastes into groundwater. USEPA considers wastes to have the characteristic of toxicity if they have the potential of leaching any of 39 constituents in levels at or above specific TCLP threshold levels. Wastes displaying the characteristic of toxicity can carry any of the waste codes D004 to D043. The codes include 8 heavy metals, 4 insecticides, 2 herbicides, and 25 other organic compounds (*see* **Appendix B** for a list of toxicity characteristic (TC) wastes and their threshold levels).

Examples of **Toxicity Characteristic Hazardous Waste** found at Stevens include:

- Mercury, silver or lead salt solutions
- Benzene solutions
- Chromium solutions

Note: Some examples may fit into more than one waste category.

2.1.2.1 (b) Listed Hazardous Wastes

A chemical waste is a Listed Hazardous Waste if it is specifically identified on any one of four USEPA lists contained in the regulations. The four lists are:

- **F-Listed Hazardous Wastes**- The non-specific source waste list (which contains many organic solvent-type chemicals) contains wastestreams from common industrial and manufacturing processes. Many spent solvents generated in both instructional and research laboratories at Stevens may be found here. These wastes are typically identified by the waste codes F001 through F005. (Note that there are other F-waste listed waste codes, but the University does not typically generate these.)
- **K-Listed Hazardous Wastes**- The specific source waste list contains wastes generated by specific industries (i.e., petroleum refining, pesticide manufacturing). These waste codes are not typically generated at the University, unless a research laboratory is working with chemical wastes generated by such industries.
- **P-Listed Hazardous Wastes-** The P-waste list designates as hazardous pure or commercial grade formulations of certain unused chemicals. These include chemicals whose shelf lives have expired, chemicals that are no longer needed, or spill cleanup residues of these chemicals.
- **U-Listed Hazardous Wastes**- Similar to P listed wastes, the U-waste list designates as hazardous pure or commercial grade formulations of certain unused chemicals. These include chemicals whose shelf lives have expired, chemicals that are no longer needed, or spill cleanup residues of these chemicals.

Examples of **Listed Hazardous Waste** found at Stevens include:

- Used solvents including xylene, acetone or benzene (typical F listed waste)
- Sodium cyanide (typical P listed waste)
- **Unused** formaldehyde that is going to be discarded (typical U listed waste)

Note: Some examples may fit into more than one waste category.

Listed F, P and U wastes may be found in **Appendix C** of this Waste Management Plan.

2.1.2.2 NON-HAZARDOUS WASTE

All chemical wastes that are not classified as Hazardous Waste are considered to be Non-Hazardous Wastes. These wastes are not subject to the strict handling, storage or disposal requirements of Hazardous Waste. However, in order to protect human health and the environment, Non-Hazardous Wastes must meet minimum best management practices for storage and disposal. These best management practices are discussed in Section 2.1.3.3 and 2.1.4.2 of the Plan.

Examples of **Non-Hazardous Waste** found at Stevens include:

- Used formaldehyde solutions
- Copper-containing salt solutions
- Latex paints (not contaminated with other solvents)*****

*****Only latex-based paints that are dry can be considered as non-hazardous waste. If the residual paint material in a can has solidified, the can may be put into the regular trash, providing that the lid to the can has been removed. Otherwise, the residual waste should go through the hazardous waste classification process described in Section 2.1.2.1 of this waste management plan.

2.1.3 Storage and Handling

The storage and handling of hazardous waste is subject to strict requirements imposed by the USEPA, NJDEP and the University. The purpose of these requirements is to ensure that hazardous waste does not escape into the environment and does not harm the public. All employees and students of the University are responsible for ensuring that the hazardous wastes they create, handle, or store meet each of these requirements as discussed below.

2.1.3.1 HAZARDOUS WASTE SATELLITE ACCUMULATION AREAS

Each laboratory that accumulates hazardous waste for disposal must designate an area within the laboratory as the "laboratory satellite accumulation area." Federal and state regulations require that each satellite accumulation area be under the control of one individual. The responsible party for each satellite area is the *Laboratory Instructor* for classroom laboratories, or *the faculty member conducting the research*, for research laboratories.

Satellite accumulation is intended for the collection of bulk containers of chemicals generated in the lab. For example, solvent wastes may be accumulated in a container made of materials that are compatible with the solvents. [NOTE: Small bottles of out-dated chemicals intended for disposal should not be stored in Satellite Accumulation Areas, but should be brought to the Central Storage Area as soon as they become wastes. The Central Storage Area is located in the garages behind the McLean building. Procedures for moving hazardous waste to the Central Storage Area are discussed later in this Waste Management Plan (*see* section 2.1.3.2)].

2.1.3.1.1 Hazardous Waste Labeling

Each Satellite Accumulation Area must be labeled as such. Signs are available from the Office of Environmental Health & Safety and Insurance Risk Management. Within the satellite accumulation area hazardous waste may be consolidated in containers provided by the Office of Environmental Health & Safety and Insurance Risk Management providing that all consolidated materials are compatible with each other and with the container used for collection.

Each container must have a label with the following information:

(a) The words "HAZARDOUS WASTE" must be prominently displayed on the container.
(b) Waste Description: The following are examples of general chemical waste types that can be used for grouping similar chemicals:

Corrosive - Acid (pH<5)
Corrosive - Base (pH>10)
Halogenated Solvents
Non-Halogenated Solvents
Heavy Metals & Solutions of Heavy Metals
Oxidizers
Reactive Chemicals
Flammable Liquids (flash point < 140° F)

(c) GHS Warning Labels that reflect the dangers associated with the waste. (DOT Hazard Class labels may also be used)

(d) Special Hazards (if any): Any additional information that would facilitate the safe handling and disposal of the material.
(e) Chemical Name: List the names and concentrations (if known) of the chemicals collected in the container and the date each were added to the container.
(f) Building: Indicate the building in which the waste was generated.
(g) Lab or Room Number: Indicate the lab or room number in which the waste was generated.
(h) Date the container is full: The container must be dated as soon as it is full, or if not full, the date the container is transferred to the Central Storage Area.

NOTE: Regulations require that the container be:

(a) Removed from the satellite accumulation area within three (3) days from the date the container is full; and,

(b) Kept closed at all times, except when waste is being added to the container. (NOTE: Regulations now state that caps on containers that are holding volatile wastes be left slightly loose, so that pressure in the container does not build up causing the container to fail.)

The Laboratory instructors and/or the faculty member conducting the research are responsible for ensuring that these conditions are met. Failure to do so may result in substantial fines for the University. Any fines that the University receives based on failure to follow published University procedures will be paid from the budget of the responsible party.

2.1.3.2 HAZARDOUS WASTE CENTRAL STORAGE AREA

Within **three (3) days** from the time that they are full, all chemical waste containers located in satellite storage areas must be taken to the campus's Central Storage Area. The Central Storage Area is located in the garages behind the McLean Building. Contact Stevens EHS at EHS@stevens.edu or 216 8705 to arrange for transportation of chemical waste containers from the satellite storage area to the Central Storage Area.

In addition to receiving chemical wastes from satellite storage areas, the Central Storage Area is the area where other chemical wastes generated at the University are stored. This includes small containers of chemicals discarded from labs, including off-specification chemicals, out-dated chemicals, and unused chemicals. It also includes chemical wastes from maintenance operations, such as unused paints. When these materials are declared to be waste, they must be brought to the Central Storage Area. Also, spill clean-up residues should be brought to the Central Storage Area, and not be placed in satellite storage. When these wastes are brought to the Central Storage Area, a hazardous waste disposal label must accompany them. (*See* section 2.1.3.1.1 for labeling requirements.)

Stevens is classified as a "Small Quantity Generator" (SQG) of hazardous waste under USEPA and State of New Jersey hazardous waste regulations. SQGs generate 100 kilograms or more, but less than 1,000 kilograms, of hazardous waste (or less than 1 kilogram of acute hazardous waste) in any given month. The Central Storage Area is inspected weekly by the Office of Environmental Health & Safety and Insurance Risk Management, as required by USEPA and NJDEP hazardous waste regulations. An inspection checklist is included with this Waste Management Plan as **Appendix D**. The inspection checklist will be maintained on-site as proof of the inspection. Copies of the completed checklists must be maintained for a minimum of **3 years**. All SQGs must not store hazardous waste for more than **180 days** in the Central Storage Area. The 180 days is based on the accumulation start date listed on the label of the container.

2.1.3.3 NON-HAZARDOUS WASTE STORAGE

Non-hazardous waste is to be stored in accordance with the following best management practices:

- Wastes should be stored in containers that are in good condition to minimize the possibility of spills and releases;
- Wastes should be stored in a secure location and an inventory maintained for tracking purposes;
- Incompatible wastes must be segregated;
- Wastes must not be stored in a manner which creates a public health threat or otherwise would create a nuisance to students, faculty or staff;

- Wastes should be stored in locations that are proximate to fire suppression equipment;
- Leaking or spilled wastes must be contained as soon as possible. All leaked/spilled wastes must be reported to the Safety and Environment Officer; and,
- Wastes must not be stored for more than 1 year.

2.1.4 Disposal

2.1.4.1 HAZARDOUS WASTE DISPOSAL

As discussed above, all hazardous waste chemicals stored in satellite accumulation areas must be moved to the Central Storage Areas within three (3) days of the container being full. All other hazardous waste generated on campus will be brought directly to the Central Storage Area, once the responsible party declares the material to be a waste.

Stevens' policy is to have a licensed contractor remove the waste from the Central Storage Area about every 180 days. Only waste transporters and disposal facilities approved by Stevens Environmental Health and Safety may be utilized. All waste shipment documentation, including hazardous waste manifests and Land Disposal Restriction (or Land Ban) forms are to be signed only by those individuals approved by the Stevens EHS. All such individuals must have training that meets the requirements of federal law (i.e., 40 CFR 265.16 and 49 CFR 172, Subpart H). Copies of waste disposal documentation must be retained for at least **3 years by law**. However, it is Stevens' policy to maintain these records permanently to minimize potential CERCLA (landfill) liability.

2.1.4.2 NON-HAZARDOUS WASTE DISPOSAL

Non-hazardous waste will be disposed of in accordance with the following best management practices:

- Wastes may only be shipped off-campus for disposal using transporters and disposal facilities approved by the Safety and Environment Officer; and
- Prior to shipment for disposal, all waste must be evaluated to determine if it would be classified as a USDOT Hazardous Material. If so classified, the waste must be shipped on shipping papers meeting USDOT standards and only individuals with valid USDOT Hazardous Materials training in accordance with 49 CFR 172, Subpart H may sign the shipping papers.

2.1.5 Empty Containers

USEPA and NJDEP require that all containers that once held an acute hazardous waste (*see* the P listed wastes in **Appendix C** for the list of acute hazardous wastes) are considered empty and may be disposed of as regular trash if the container or inner liner has been triple rinsed using a solvent capable of removing the chemical waste from the container.

In order to ensure protection of human health and the environment, it is the University's policy that *all* containers that once held chemicals or chemical waste be triple rinsed before they can be disposed of as regular trash. This policy applies to all chemicals, regardless of chemical type or quantity.

The rinseate generated from triple rinsing the containers must be containerized and managed as chemical waste. The steps outlined in Section 2.1.2 of this Plan should then be followed in order to determine the proper method for classifying, storing and disposing of the rinseate as a chemical waste.

2.2 Special Waste

2.2.1 Identification

In accordance with Stevens' Waste Management Plan, special wastes include the following materials:

- Used Kitchen Grease; and,
- Used Oil.

Each of these special wastes must be stored and disposed of in accordance with the procedures described in the sections that follow.

2.2.2 Storage, Handling and disposal

2.2.2.1 USED KITCHEN GREASE

Used kitchen grease is generated on a periodic basis by the food services vendor. Used kitchen grease that is generated each day is required to be stored in dedicated kitchen grease dumpsters/drums, on top of spill pallets. These dumpsters are located at the Howe Center loading dock. When full, these dumpsters/drums are emptied under contract by a local waste hauler. To minimize the potential for spills and releases to the environment, these storage drums are to be kept closed, except when being filled or emptied. The exterior of each drum must be kept clean in order to minimize the attraction of rodents and other pests. Used kitchen grease that is spilled in the process of transferring it to a drum must be cleaned up immediately by the person responsible for the spill. Reports of all spills must be made to Stevens EHS x8705.

2.2.2.2 USED OIL

Used oil is defined by the USEPA as crude or synthetic oil that has been used and is contaminated by physical or chemical impurities. USEPA regulations on the management of Used Oil are focused on recycling of the used oil rather than disposal.

Examples of **Used Oil** found at Stevens include:

- Engine/Motor Oil
- Metal Working Oils
- Hydraulic Fluids

Used Oil must be collected in drums or containers that are clearly labeled with the words "Used Oil." In order to ensure that used oil can be recycled, only oil that is **not** contaminated with other chemicals (such as solvents) is to be placed in designated Used Oil drums. **It is imperative that no other chemicals are placed in used oil drums!**

Used oil filters must be punctured and drained for twenty-four (24) hours before disposal. The filters must begin the draining process while they are still hot. After draining, the filters may be disposed of in the regular trash. Oil accumulated from draining should be added to the Used Oil drum.

All containers of Used Oil must be kept closed unless oil is being added to the container. All Used Oil containers must be in good condition. Containers that are rusted, deteriorated or otherwise damaged are not to be used.

Once a used oil container is full, contact Stevens EHS at EHS@stevens.edu or x8705 to arrange for transport of the container to the Central Storage Area. Stevens EHS will arrange for the proper transport and disposal of the used oil by a University approved contractor.

Any deviation from this policy and associated procedures will result in additional analytical and disposal costs to the University.

2.3 Universal Waste

2.3.1 Identification

Universal wastes are a group of hazardous wastes widely generated by industry and businesses, including college and university campuses. The USEPA regulates these wastes separately from other hazardous wastes in order to encourage their recycling and proper disposal. Types of Universal Wastes include:

- Used or Spent Fluorescent Light Bulbs;
- Used Mercury-containing Switches;
- Used Lead-Acid Storage Batteries & Metal Hydride Batteries;
- Consumer Electronics, including CRTs and Computer Components; and,
- Light Ballasts.

2.3.2 Storage and Handling

2.3.2.1 USED FLUORESCENT BULBS

All used bulbs must be segregated from other University waste streams and be stored in containers that are structurally sound and adequate to prevent breakage (original cardboard boxes are acceptable). The individual bulbs or each storage container must be marked with the words "Universal Waste – Lamp(s)" or "Waste Lamps" or "Used Lamps". Mark the accumulation start date (i.e., the date the bulbs are first placed in

storage) on each individual bulb or storage container or maintain an inventory system for used bulbs. **Storage time must not exceed one year from the date of generation.**

Used fluorescent bulbs are collected by Physical Plant personnel and are stored in Universal Waste Storage Site located in the Physical Plant Building.

2.3.2.2 USED LEAD ACID & METAL HYDRIDE BATTERIES, & USED TELEPHONE & COMMUNICATIONS BACKUP BATTERIES

Used Lead-Acid and Metal Hydride batteries, and Used Telephone & Communications Backup Batteries must be managed in a way that prevents releases to the environment. Batteries that show signs of leakage, spillage or damage that could result in leaks must be placed in containers that are structurally sound and kept closed. Used batteries or each storage container must be marked with the words "Universal Waste – Battery(ies)" or "Waste Batteries" or "Used Batteries". Mark the accumulation start date (i.e., the date the batteries are first placed in storage) on each battery or storage container or maintain an inventory system for used batteries. **Storage time must not exceed one year from the date of generation.**

Individual battery cells may be drained of electrolyte and then closed thereafter. Drained electrolyte must be managed as a "chemical waste" as discussed in Section 2.1 of this Plan.

Used batteries are collected by Physical Plant personnel and are stored in Universal Waste Storage Site located in the Physical Plant Building.

2.3.2.3 USED MERCURY-CONTAINING SWITCHES

Used mercury-containing switches must also be managed in a way that prevents releases to the environment. Switches that show signs of leakage must be placed in containers that are structurally sound and kept closed. Used switches or each storage container must be marked with the words "Universal Waste – Switch(es)" or "Waste Switches" or "Used Switches". Mark the accumulation start date (i.e., the date the switches are first placed in storage) on each switch or storage container or maintain an inventory system for used switches. **Storage time must not exceed one year from the date of generation.**

Used mercury-containing switches are collected by Physical Plant personnel and are stored in Universal Waste Storage Site located in the Physical Plant Building.

2.3.2.4 CONSUMER ELECTRONICS, INCLUDING COMPUTERS, COMPUTER MONITORS, AND COMPONENTS

Consumer Electronics, including computers, computer monitors and components are handled as Universal Wastes in accordance with NJDEP regulations. In addition to these materials, consumer electronics also include printers, copiers, fax machines, VCRs, stereos, televisions, and telecommunication devices. These materials are classified as

Universal Waste Electronics due to the presence of hazardous materials, such as lead, contained in cathode ray tube (CRT) glass, or lead- or silver-bearing solders, and other heavy metals contained in the components of these devices.

According the NJDEP regulations, Universal Waste Consumer Electronic Devices shall be clearly labeled or marked clearly, individually or by closed container with the following phrase: “Universal Waste - Consumer Electronics”.

Stevens is a “Small Quantity Handler of Universal Waste.” As a Small Quantity Handler of Universal Waste, Stevens must be able to demonstrate the length of time that the universal waste has been accumulated from the date it becomes a waste. For Universal Waste Consumer Electronics, the University will place all Universal Waste Consumer Electronics in a specific accumulation area and identify the earliest date that they were placed there. The accumulation area for Universal Waste Consumer Electronics is in the Physical Plant Building garage. Stevens EHS is responsible for managing this room.

2.3.2.5 LIGHT BALLASTS

Ballasts from fluorescent lights may contain PCBs. PCBs, or polychlorinated biphenyls, are a group of environmentally toxic and persistent chemicals that were commonly used in electrical equipment. Light ballasts manufactured before 1978 or those which are not stamped “No PCBs”, must be considered as containing PCBs, and must be handled according to strict USEPA procedures. PCB ballasts must be packaged in a manner that prevents them from leaking. Ballasts should be placed in a lined, steel drum containing an absorbent material. If ballasts are leaking, extra precautions must be taken when handling and disposing of the ballasts. Individuals responsible for packaging leaking ballasts must wear protective gloves and clothing to prevent skin contact with the PCBs. Leaking ballasts should be double-bagged prior to placement in a drum. Protective clothing and gloves that come in contact with leaking oil from ballasts must be managed in the same manner as the ballasts.

Because there are a mixture of PCB-containing ballasts and non-PCB-containing ballasts in use at Stevens at this time, all light ballasts will be handled as though they contain PCBs.

Light ballasts are collected by Physical Plant personnel and are stored in Universal Waste Storage Site located in the Physical Plant Building.

All containers used to store PCB Ballasts containing more than 50 ppm of PCBs must be labeled with a USEPA required “PCB label” (PCB labels are available from the Safety and Environment Officer). Containers may be stored for up to nine months prior to disposal by a University approved contractor. [Note: The TSCA regulations state that PCB-containing articles must be treated and/or destroyed within twelve months from the time they are taken out of service. Therefore, storing the ballasts on campus for no more than nine months allows the disposal contractor three months to treat and/or destroy the ballasts. If the concentration of PCBs in the ballasts equals or exceeds 50 parts per million (ppm), off-campus shipment of the ballasts must be accompanied by a completed Hazardous Waste manifest. [Wastes containing 50 ppm or more of PCBs are regulated

under USEPA's Toxic Substances Control Act (TSCA). Such wastes must be accompanied by a completed hazardous waste manifest during transportation.]

2.3.3 Disposal

All Universal Wastes may only be shipped to another universal waste handler or to an approved disposal facility. Use of a hazardous waste manifest is not required for off-campus shipments of Universal Wastes. However, Non-Hazardous Waste manifests or Bills of Lading should be used and copies retained for a minimum of three (3) years. Contact Stevens EHS to initiate contractor disposal of these materials.

2.4 Red Bag/Regulated Medical Waste

2.4.1 Identification

Regulated Medical Waste, also known as "Red Bag" waste, consists of the following wastes types:

- Sharps and Biohazard Glassware - includes syringe needles and sharps (razor or scalpel blades), pipettes, pipette tips, microscope slides, and other glass or plastic items that have been exposed to potentially infectious biological materials or biological agents.
- Preserved Animal Carcasses.
- Non-Preserved Animal Carcasses.
- Infectious Biological Material-includes blood and blood products, cultures and culture stocks.

Due to the potential for these wastes to be contaminated with infectious materials and/or biological agents, the NJDEP strictly regulates the storage and disposal of Regulated Medical Waste. These requirements are outlined below.

2.4.2 Storage and Handling

All Regulated Medical Waste must be stored in specially designated red containers as discussed in the following section. Each container is specially designed to meet NJDEP requirements and therefore substitutes are not to be used.

All containers must be stored in an area that meets all of the following requirements:

- The area is designated for storage and is labeled with the word "Biohazard" or the universal biohazard symbol;
- The area is ventilated; and,
- The area is in a location that minimizes exposure to the public and is accessible only to authorized faculty and staff.

Prior to final disposal, red bags and sharps containers are over-packed into pre-marked cardboard boxes that are provided by the University's Medical Waste Contractor.

Caution must be used in the collection of Regulated Medical Waste. If regular trash is mixed with untreated medical waste (i.e., not treated in an autoclave), the combined waste must be managed as Regulated Medical Waste. If hazardous waste (see section 2.1.1) or radioactive waste (see section 2.5.1) is mixed with untreated Regulated Medical Waste, the combined waste must be managed as a hazardous waste or radioactive waste, respectively.

Finally, all staff or faculty with responsibility for managing Regulated Medical Waste must be trained in the federal Occupational Safety and Health Administrations (OSHA) Bloodborne Pathogen regulations, 29 CFR 1910.1030.

Specific requirements for each type of Regulated Medical Waste are discussed below.

2.4.2.1 SHARPS AND BIOHAZARD GLASSWARE

Syringes, needles and sharps, including razor and scalpel blades, must be stored and packaged in special red hard plastic biohazard containers when being discarded. This is true even if the syringe or sharp item was not used for biohazardous operations.

Pipettes, pipette tips, microscope slides, as well as other glass or plastic items that have been exposed to potentially infectious biological materials must also be stored and packaged in special red hard plastic biohazard containers.

According to State of New Jersey Medical Waste Regulations, once a sharps container is full, the container must be sealed. See section 2.4.3.1 for disposal procedures.

2.4.2.2 PRESERVED ANIMAL CARCASSES

Preserved animals or animal parts must be double-bagged in red plastic biohazard bags. These bags are designed to be impermeable. These bags are provided by the University's Medical Waste Contractor. After the bags are filled, follow the disposal requirements under Section 2.4.3.2

2.4.2.3 NON-PRESERVED ANIMAL CARCASSES

Non-preserved animals or animal parts may be double-bagged in non-red plastic bags and brought by Chemistry Department personnel to the Central Storage Area for storage and eventual disposal. For disposal of this material follow the requirements of Section 2.4.3.3.

2.4.2.4 INFECTIOUS BIOLOGICAL MATERIAL

Infectious biological material, including blood and blood products, cultures and culture stocks must be placed in an autoclavable bag as provided by the Medical Waste Contractor and stored as previously explained, until it is picked up by the University's Medical Waste Contractor. Follow the disposal requirements under Section 2.4.3.4 (Infectious Biological Material).

Blood and blood products resulting from health care activities, generated by accidents involving students or staff, or generated during the administration of first aid, must be placed in special "red biohazard bags." After the bags are filled, follow the disposal requirements of 2.4.3.4

2.4.3 Disposal Requirements

Only waste transporters and disposal facilities approved by Stevens EHS may be utilized. All waste shipment documentation, including Medical Waste Tracking Forms, is to be signed only by those individuals approved by Stevens EHS. All such individuals must have training that meets the requirements of federal hazardous materials transportation regulations law (i.e., 49 CFR 172, Subpart H). Copies of waste disposal documentation must be retained for at least **3 years**.

2.4.3.1 SHARPS AND BIOHAZARD GLASSWARE

After being filled, biohazard containers holding sharps and biohazard glassware (including syringes, needles razor, scalpel blades, and contaminated broken glassware) should be taken by Chemistry Department personnel to the Central Storage Area, for pickup by the University approved Regulated Medical Waste Disposal Contractor.

2.4.3.2 PRESERVED ANIMAL CARCASSES

Plastic biohazard bags containing preserved animals or animal parts must be taken by Chemistry Department personnel to the Central Storage Area, for pickup by a University approved Regulated Medical Waste Disposal Contractor.

2.4.3.3 NON-PRESERVED ANIMAL CARCASSES

Plastic non-red bags containing non-preserved animals or animal parts must be taken by Chemistry Department personnel to the Central Storage Area and stored until they are disposed of in regular trash.

2.4.3.4 INFECTIOUS BIOLOGICAL MATERIAL

Plastic biohazard bags, containing infectious biological material (including blood and blood products, cultures and culture stocks), must be taken by Chemistry Department personnel to the Central Storage Area, for pickup by the University approved Regulated Medical Waste Disposal Contractor.

Plastic biohazard bags containing blood and blood products resulting from health care activities, generated by accidents involving students or staff, or generated during the administration of first aid, must be taken by Chemistry Department personnel to the Central Storage Area for pickup by the University approved Regulated Medical Waste Disposal Contractor.

2.5 Radiological Waste

2.5.1 Identification

Radioactive Waste consists of any waste that contains or is contaminated with radioactive materials. At Stevens, radioactive waste may consist of the following radioactive isotopes: Hydrogen-3, Carbon-14, Phosphorus-32, Sulfur-35, Iodine-125, Cobalt-60, Nickel-63, Cadmium-109, and Americum-241. In general, the wastes are typically low level and a large quantity of it may be short lived and classified as Class A based on 10 CFR 61.55.

Generators of radiological waste should review procedures for disposal of materials with the University's Radiation Safety Officer (RSO), during the early stages of experimental design. RSO contact information can be found in Appendix A.

2.5.2 Storage and Handling and Disposal

Radioactive waste samples should not be disposed of via the drain. Wash water (that which is used to wash out the empty containers) may be put down the sanitary drain if the material quantities do not exceed the amounts specified in the Table 3 of Appendix B to 10 CFR 20. In no case should the amount exceed 0.01 mCi without first consulting the RSO. Generators must use the sum of fractions when calculating releases in accordance with Table 3. If generators release 50% of its allowable limit in one month for one particular isotope, they can only release 50% of all other isotopes combined. Generators keep a log of the amount of radioactive wash water that is disposed of down the drain on a daily basis. This log is submitted to the RSO each month.

Hydrogen-3 and Carbon-14 less than 0.05μC_i/gram of Liquid Scintillation Counter (LSC) fluid can be disposed of without regard to radioactivity.

Radioactive waste must be placed in red bags. These bags are available from the RSO. Once a bag is full, the Principal Investigator (PI) dates the bag, and contacts the RSO, who stores the bag in the Radioactive Waste Storage drum located in either the Center for Environmental Systems building or McLean Hall. The RSO periodically arranges to transfer radioactive waste to a licensed disposal facility by an EHS approved contractor.

When transferring to another facility for disposal, the RSO must provide the licensed contractor with all of the information required on NRC's Uniform Low Level Radioactive Waste Manifest (NRC Forms 540, 541 and 542). While transferring materials, be sure to maintain copies of all forms and paper work involved in the transportation.

2.6 Regular Trash

2.6.1 Identification

Regular Trash (or garbage) consists of items that include discarded food, paper, glass, plastic, leather, textiles, cans, and/or other materials normally associated with common household waste. Old tires are also considered as regular trash but should not be placed in dumpsters. Instead, old tires are collected by Physical Plant personnel for storage. Every twelve months these tires are transported to a tire-recycling center.

Also, white goods consisting of discarded refrigerators, stoves, and water heaters, and other household-type appliances, not covered under other sections of this Waste Management Plan, are considered trash. Finally, discarded furniture and other general household-type debris, not otherwise covered under other sections of this Waste Management Plan, are considered to be Regular Trash. Large trash dumpsters are located at strategic areas around campus. All regular trash generated at Stevens is removed by a University approved contractor.

[**Note 1:** In laboratory areas, glass items, such as broken laboratory glass items, may only be placed in specially marked containers that are labeled "broken glass." This is necessary to ensure the Safety and Health of Stevens' housekeeping staff.]

[**Note 2:** "White goods" that contain freon must be processed as follows: As needed, a licensed refrigerant recovery technician from Physical Plant will recover the freon from the disposed of white goods and arrange for its disposal.]

2.6.2 Storage, Handling, and Disposal

2.6.2.1 RECYCLABLE WASTES

The University operates a recycling program for various types of recyclable wastes. Receptacles for these recyclables are found at various locations throughout each campus. These items include glass, metal, paper, and cardboard. All such items should be placed in the proper receptacles so that they may be recycled. [**NOTE:** Because of changes in the manufacturing process, alkaline batteries, and carbon-steel batteries are no longer considered hazardous and may be disposed of in regular trash.]

A University approved waste contractor removes all recyclables generated at each campus.

2.6.2.2 NON-RECYCLABLE WASTES

Various types of garbage receptacles are situated in various locations at each campus. All non-recyclable wastes are to be placed in these receptacles so that a University approved waste contractor may dispose of them.

APPENDIX A
ADMINISTRATION CONTACTS

Stevens Environmental Health & Safety and Insurance Risk Management	McLean 210	Office 201-216-8705 EHS@stevens.edu
Director, Stevens Environmental Health & Safety and Insurance Risk Management	David Fernandez	Office: 201- 216- 8705 Cell: 201 912 4651 David.Fernandez@Stevens.edu
Senior Health Safety Specialist –	K. Byron Light	Office: 201-216-3314 Fax: 201-216-3220 blight@stevens.edu
Radiation Safety Officer (RSO)	K. Byron Light	Office: 201-216-3314 Fax: 201-216-3220 blight@stevens.edu
Physical Plant Contact	John Lanza	Office: 201-216-5599 jlanza@stevens.edu

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APPENDIX B
TOXICITY CHARACTERISTIC WASTES
Toxicity Characteristic Chemical Constituent Regulatory Level

Contaminant	Regulatory Level (mg/l)	EPA Number
Arsenic	5.0	D004
Barium	100.0	D005
Cadmium	1.0	D006
Chromium	5.0	D007
Lead	5.0	D008
Mercury	0.2	D009
Selenium	1.0	D010
Silver	5.0	D011
Endrin	0.02	D012
Lindane	0.4	D013
Methoxychlor	10.0	D014
Toxaphene	0.5	D015
2,4-D	10.0	D016
2,4,5 TP (Silvex)	1.0	D017
Benzene	0.5	D018
Carbon tetrachloride	0.5	D019
Chlordane	0.03	D020
Chlorobenzene	100.0	D021
Chloroform	6.0	D022
o-Cresol	200.0	D023
m-Cresol	200.0	D024
p-Cresol	200.0	D025
Cresol	200.0	D026
1,4-Dichlorobenzene	7.5	D027
1,2-Dichloroethane	0.5	D028
1,1-Dichloroethylene	0.7	D029
2,4-Dinitrotoluene	0.13	D030
Heptachlor (and its hydroxide)	0.008	D031
Hexachloroethane	3.0	D032
Hexachlorobutadiene	0.5	D033
Hexachloroethane	3.0	D034
Methyl ethyl ketone	200.0	D035
Nitrobenzene	2.0	D036
Pentachlorophenol	100.0	D037
Pyridine	5.0	D038
Tetrachloroethylene	0.7	D039
Trichloroethylene	0.5	D040
2,4,5-Trichlorophenol	400.0	D041
2,4,6-Trichlorophenol	2.0	D042
Vinyl chloride	0.2	D043

APPENDIX C
LISTED HAZARDOUS WASTES

F-Listed wastes

Note: If the waste is not spent (in its original form) this list does not apply]

EPA #	Nonspecific Source Waste Description
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 sludges 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 96) chemical etching and milling aluminum.
F007	Spent cyanide plating bath solution from electroplating operations.
F008	Plating bath residues from the bottom of plating bath from electroplating operations where cyanides are used in the process.
F009	Spent stripping and cleaning bath solution 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 solution from salt bath pot cleaning from metal heat treating operations.
F012	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.
F019	Wastewater treatment sludges 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 of manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates 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.).
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 hexacholorbenzenes 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 hexachorophenol from highly purified 2,4,5-trichlorophenol.).
F024	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor cleanout 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 sludges, spent catalysts, and wastes listed in 261.31 or 261.32.
F025	Condensed light ends, spent filters and filter aids, and spent dessicant wastes from the production of certain chlorinate 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 position 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 prepurifified 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, F025, and F027.
F032	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 currently use o 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 waste (i.e., F034, 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 theses 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 sludges 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, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in 261.(b)(2) (including sludges 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 sludges and floats generated in: induced air flotation (IAF)) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from no-contact once-through cooling waters segregated for treatment from other processes or oily cooling waters, sludges and floats generated in aggressive biological treatmetn units as defined in 261.31 (b)(2) (including sludges 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 the 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.)

APPENDIX C
LISTED HAZARDOUS WASTES (Cont'd.)

U-Listed Wastes

The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products referred to in this table are identified as toxic wastes (T), unless otherwise designated (e.g. I is ignitable, R is reactive)

Chemical	Code
[1,1'-Biphenyl]-4,4'-diamine	U021
[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	U073
[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	U091
[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	U095
1,1,1,2-Tetrachloroethane	U208
1,1,2,2-Tetrachloroethane	U209
1,1,2-Trichloroethane	U227
1,1-Dichloroethylene	U078
1,1-Dimethylhydrazine	U098
1,2,4,5-Tetrachlorobenzene	U207
1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	U028
1,2-Benzenedicarboxylic acid, dibutyl ester	U069
1,2-Benzenedicarboxylic acid, diethyl ester	U088
1,2-Benzenedicarboxylic acid, dimethyl ester	U102
1,2-Benzenedicarboxylic acid, dioctyl ester	U107
1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts	U202
1,2-Dibromo-3-chloropropane	U066
1,2-Dichloroethylene	U079
1,2-Dimethylhydrazine	U099
1,2-Diphenylhydrazine	U109
1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	U155
1,2-Oxathiolane, 2,2-dioxide	U193
1,2:3,4-Diepoxybutane (I,T)	U085
1,3,4-Metheno-2H-cyclobuta [cd]pentalen-2-one,1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	U142
1,3,5-Trinitrobenzene (R,T)	U234
1,3,5-Trioxane, 2,4,6-trimethyl-	U182
1,3-Benzenediol	U201
1,3-Benzodioxole, 5-(1-propenyl)-	U141
1,3-Benzodioxole, 5-(2-propenyl)-	U203
1,3-Benzodioxole, 5-propyl-	U090
1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	U128
1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	U130
1,3-Dichloropropene	U084

1,3-Isobenzofurandione	U190
1,3-Pentadiene (I)	U186
1,3-Propane sultone	U193
1,4-Dichloro-2-butene (I,T)	U074
1,4-Diethyleneoxide	U108
1,4-Dioxane	U108
1,4-Naphthalenedione	U166
1,4-Naphthoquinone	U166
1-Butanamine, N-butyl-N-nitroso-	U172
1-Butanol (I)	U031
1-Methylbutadiene (I)	U186
1-Naphthalenamine	U167
1-Propanamine, N-nitroso-N-propyl-	U111
1-Propanamine, N-propyl-(I)	U110
1-Propanol, 2,3-dibromo-, phosphate (3:1)	U235
1-Propanol, 2-methyl-(I,T)	U140
1-Propene, 1,1,2,3,3,3-hexachloro-	U243
1-Propene, 1,3-dichloro-	U084
n-Propylamine (I,T)	U194
1H-1,2,4-Triazol-3-amine	U011
2,2'-Bioxirane	U085
2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-	U237
2,4-D, salts & esters	U240
2,4-Dichlorophenol	U081
2,4-Dimethylphenol	U101
2,4-Dinitrotoluene	U105
2,5-Cyclohexadiene-1,4-dione	U197
2,5-Furandione	U147
2,6-Dichlorophenol	U082
2,6-Dinitrotoluene	U106
2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'- dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)bis[5-amino-4-hydroxy]-, tetrasodium salt	U236
2-Acetylaminofluorene	U005
2-Butanone (I,T)	U159
2-Butanone peroxide (R,T)	U160
2-Butenal	U053
2-Butene, 1,4-dichloro-(I,T)	U074
2-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*),7alpha]]-	U143
2-Chloroethyl vinyl ether	U042
2-Furancarboxaldehyde (I)	U125
2-Nitropropane (I,T)	U171
2-Picoline	U191

2-Propanone (I)	U002
2-Propenamide	U007
2-Propenenitrile	U009
2-Propenenitrile, 2-methyl-(I,T)	U152
2-Propenoic acid (I)	U008
2-Propenoic acid, 2-methyl-, ethyl ester	U118
2-Propenoic acid, 2-methyl-, methyl ester (I,T)	U162
2-Propenoic acid, ethyl ester (I)	U113
2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)te trahydro-, 2-oxide	U058
2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations of 0.3% or less	U248
3,3'-Dichlorobenzidine	U073
3,3'-Dimethoxybenzidine	U091
3,3'-Dimethylbenzidine	U095
3,6-Pyridazinedione, 1,2-dihydro-	U148
3-Methylcholanthrene	U157
4(1H)Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	U164
4,4'-Methylenebis(2-chloroaniline)	U158
4,7,Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-	U036
4-Bromophenyl phenyl ether	U030
4-Chloro-o-toluidine, hydrochloride	U049
4-Methyl isobutyl ketone (I)	U161
5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6 ,8,11-trihydroxy-1-methoxy-, (8S-cis)-	U059
5-Nitro-o-toluidine	U181
7,12-Dimethylbenz[a]anthracene	U094
Acetaldehyde (I)	U001
Acetaldehyde, trichloro-	U034
Acetamide, N-(4-ethoxyphenyl)-	U187
Acetamide, N-9H-fluoren-2-yl-	U005
Acetic acid ethyl ester (I)	U112
Acetic acid, (2,4-dichlorophenoxy)-, salts & esters	U240
Acetic acid, lead(2+) salt	U144
Acetic acid, thallium(1+) salt	U214
Acetone (I)	U002
Acetonitrile (I,T)	U003
Acetophenone	U004
Acetyl chloride (C,R,T)	U006
Acrylamide	U007
Acrylic acid (I)	U008
Acrylonitrile	U009
alpha,alpha-Dimethylbenzylhydroperoxide (R)	U096
alpha-Naphthylamine	U167

Amitrole	U011
Aniline (I,T)	U012
Arsinic acid, dimethyl-	U136
Auramine	U014
Azaserine	U015
Azirino[2',3':3,4]pyrrolo [1,2-a]indole-4,7-dione,6-amino-8-[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta,8aalpha,8balpha)]-	U010
Benz[a]anthracene	U018
Benz[a]anthracene, 7,12-dimethyl-	U094
Benz[c]acridine	U016
Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	U157
Benzal chloride	U017
Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	U192
Benzenamine (I,T)	U012
Benzenamine, 2-methyl-	U328
Benzenamine, 2-methyl-, hydrochloride	U222
Benzenamine, 2-methyl-5-nitro-	U181
Benzenamine, 4,4'-carbonimidoylbis [N,N-dimethyl-	U014
Benzenamine, 4,4'-methylenebis[2-chloro-	U158
Benzenamine, 4-chloro-2-methyl-, hydrochloride	U049
Benzenamine, 4-methyl-	U353
Benzenamine, N,N-dimethyl-4-(phenylazo)-	U093
Benzene (I,T)	U019
Benzene, (1-methylethyl)-(I)	U055
Benzene, (dichloromethyl)-	U017
Benzene, (trichloromethyl)-	U023
Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-chloro-	U061
Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-methoxy-	U247
Benzene, 1,1'-(2,2-dichloroethylidene)bis [4-chloro-	U060
Benzene, 1,2,4,5-tetrachloro-	U207
Benzene, 1,2-dichloro-	U070
Benzene, 1,3,5-trinitro-	U234
Benzene, 1,3-dichloro-	U071
Benzene, 1,3-diisocyanatomethyl-(R,T)	U223
Benzene, 1,4-dichloro-	U072
Benzene, 1-bromo-4-phenoxy-	U030
Benzene, 1-methyl-2,4-dinitro-	U105
Benzene, 2-methyl-1,3-dinitro-	U106
Benzene, chloro-	U037
Benzene, dimethyl-(I,T)	U239
Benzene, hexachloro-	U127
Benzene, hexahydro-(I)	U056
Benzene, methyl-	U220

Benzene, nitro-	U169
Benzene, pentachloro-	U183
Benzene, pentachloronitro-	U185
Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester	U038
Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-	U035
Benzenediamine, ar-methyl-	U221
Benzenesulfonic acid chloride (C,R)	U020
Benzenesulfonyl chloride (C,R)	U020
Benzidine	U021
Benzo[a]pyrene	U022
Benzo[rst]pentaphene	U064
Benzotrichloride (C,R,T)	U023
beta-Chloronaphthalene	U047
beta-Naphthylamine	U168
Bromoform	U225
Cacodylic acid	U136
Calcium chromate	U032
Carbamic acid, ethyl ester	U238
Carbamic acid, methylnitroso-, ethyl ester	U178
Carbamic chloride, dimethyl-	U097
Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters	U114
Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	U062
Carbon oxyfluoride (R,T)	U033
Carbon tetrachloride	U211
Carbonic acid, dithallium(1+) salt	U215