The University of Southern Indiana
Hazardous Waste Management Plan

Policy Purpose:
The Hazardous Waste Management Plan (HWMP) was developed for the University of Southern Indiana full- and part-time faculty and staff who may generate, handle or store hazardous chemical wastes.

Policy Statement:
It is the policy of the University to comply with all local regulations and incorporating by reference U.S. Environmental Protection Agency (EPA) Regulations 40 CFR 260-273. This plan provides the framework for hazardous waste determinations, labeling and container management, hazardous waste storage area requirements, contingency planning, employee training and a clear definition of roles and responsibilities.

1.0 Introduction

With the enactment in 1976 of the Resource Conservation and Recovery Act (RCRA), the transportation, handling, storage and disposal of solid and hazardous wastes became strictly regulated under federal, state and local laws. The Environmental Protection Agency (EPA) and the city of Evansville (and/or Vanderburgh County) have developed regulations for compliance with RCRA. Local regulations are in some instances more stringent or broader in scope than the EPA regulations.

Responsibility for compliance with hazardous waste regulations begins with the person generating the waste material and follows through to disposal. Environmental protection, regulatory requirements and escalating disposal costs underline the importance of waste generators doing their part to ensure that wastes are properly managed at The University of Southern Indiana (USI).

This Hazardous Waste Management Plan (HWMP) serves as a guide for handling hazardous wastes generated at USI. The goal of the HWMP is to handle hazardous waste in a safe, efficient and environmentally sound manner and to comply with local and federal regulations.

2.0 Facility Background

Founded in 1965 as the Indiana State University at Evansville, the University of Southern Indiana (USI) is a residential, coeducational university in Evansville, Indiana. USI's campus is located in the west side of Evansville.

USI grants graduate, undergraduate and professional degrees from eight different schools including: the College of Liberal Arts; the College of Nursing and Health Professions; the Pott College of Science and Engineering; the Bower-Suhrheinrich College of Education and Human Services; the College of Business and the Indiana University Center for Medical Education.

USI employs approximately 250 workers that generate hazardous waste. The university operates on a continuous basis, twenty-four (24) hours a day, seven (7) days a week.

3.0 Scope & Availability of the Plan

This plan applies to each department at The University of Southern Indiana that generates hazardous wastes. It provides directions for containing, labeling, storage, transportation, inspections, training and record keeping for hazardous waste activities.

The HWMP will be made available to all USI employees at any time either via the Office of Risk Management & Safety web site (http://www.usi.edu/riskmgt/HazWasteMgtP.asp) or a copy will be placed in each laboratory generating, storing or handling hazardous waste. Employees will be advised of the availability during their training sessions. A copy of the HWMP will always be accessible in Environmental Health and Safety (812 461-

5393). Also the HWMP will be made available to the EPA or the city of Evansville's (or Vanderburgh County?) Hazardous Waste Division upon request for examination and copying.

4.0 Chemical Hygiene Officer

Each department that generates hazardous waste must designate an individual or individuals to be its Chemical Hygiene Officer (CHO). CHOs will be responsible for ensuring that their departments comply with hazardous waste regulations. They will be trained to do so by Environmental Health and Safety (EHS).

5.0 Responsibilities

5.1 Environmental Health and Safety (EHS):

- Maintain the HWMP, based on regulatory changes and the needs of the USI community.
- Assist in the implementation of the HWMP on campus.
- Train generators and CHOs in the proper handling and disposal of hazardous waste.
- Remove hazardous wastes from their storage areas upon notification by the CHO.
- Arrange for the transportation and disposal of hazardous waste from campus within 90 days from the accumulation start date listed on the label.
- Be the central repository for record keeping of all documents related to the accumulation, transportation, storage, treatment and disposal of hazardous wastes.
- Maintain names, job titles and job descriptions for all personnel managing and handling hazardous wastes.

5.2 Department Head of Hazardous Waste Generators:

- Designate an individual(s) to be the Chemical Hygiene Officers (CHOs).
- Ensure CHOs receive annual training.
- Ensure that no chemicals are abandoned in place.
- Ensure this plan is implemented within the department.
- Absorb any costs associated with regulatory fines arising from their operation (refer to Appendix I for August 9, 2000 Memo from the Vice President for Academic Affairs.)

5.3 Generators:

- Become familiar with the HWMP.
- Attend training provided by EHS.
- Identify or deem chemical waste as hazardous waste.
- Work with their CHO to properly label, date, segregate and store hazardous wastes.
- Develop and implement an active waste minimization program by investigating material substitution, scale reduction, chemical exchange and purchase control.

5.4 Chemical Hygiene Officers (Appointed by the Department Head):

- Attend initial and annual training in Hazardous Waste Management.
- Assist EHS to implement the HWMP.
- Establish waste storage areas in the department with the assistance of EHS.
- Assist generators to properly label, store and segregate hazardous waste.
- Post the log inspection sheet in a highly visible area near the designated storage site.
- Inspect waste storage areas weekly to ensure hazardous waste is properly labeled, stored and segregated.
- Ensure that designated waste storage areas are posted with the DANGER sign (see Appendix 2).
- Contact EHS to collect and remove hazardous waste from the waste storage areas in a timely manner.
- Notify EHS on the 60th day of the accumulation start date of the hazardous waste.
- Assist EHS to identify hazardous waste to be removed from campus within 90 days from the accumulation start date listed on the label.

6.0 Requirements for Personnel Leaving the University

The abandonment of hazardous waste without proper disposal or identification is a regulatory violation and also creates both a dangerous storage situation and an expensive disposal problem. Risk Management recommends that all researchers planning to leave campus properly identify all hazardous wastes and arrange for their disposal before departing the University. It is also recommended that department chairs and principal investigators take responsibility for ensuring that laboratory personnel properly identify all hazardous wastes and arrange for hazardous waste removal before leaving the campus.

7.0 Generator Status

According to regulations, "a generator is a large quantity generator if he or she generates more than one hundred (100) kg but less than one thousand (1000) kg of hazardous waste or less than one (1) kg of acutely hazardous waste in a calendar month." Since the University generates more than 100 kilograms of hazardous waste in a calendar month, USI is classified as a Large Quantity Generator. As such, the campus is permitted to accumulate hazardous waste on campus for no more than 90 days. The hazardous waste must be properly shipped from campus for disposal or treatment within 90 days from the accumulation start date.

8.0 Hazardous Waste Determination

The hallmark of the RCRA hazardous waste program is its cradle-to-grave approach to regulating hazardous waste from generation to ultimate disposal. Operations generating any solid waste must determine whether the waste is hazardous. Determining whether or not a waste is "hazardous" under RCRA is the first step in proper hazardous waste management. There are two basic categories of hazardous waste: (1) solid wastes that are listed as hazardous by EPA or the relevant state agency and (2) solid wastes which, while not listed, display one of four hazardous "characteristics." The city of Evansville also requires USI to conduct waste determinations on their waste streams (Appendix 3).

Solid Wastes
Solid wastes are materials that are no longer used, unwanted and are set aside for disposal. Solid wastes include abandoned items, materials that are ready to be disposed or those that are ready to be recycled. Materials are solid waste if they are "abandoned" by being disposed of; burned or incinerated; or accumulated, stored or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned or incinerated. Solid wastes may be a solid, liquid or gas. EPA's regulations on waste also automatically exempt certain solid wastes from being considered hazardous. Among those subject to exemption are agricultural wastes that are returned to the ground as fertilizer, utility wastes from coal combustion, nuclear sources or domestic sewage. EPA has also adopted a conditional exemption for waste samples to be used for testing.

"Inherently Waste like" Materials
Chemicals no longer suitable for use are considered "inherently waste like" materials and are subject to hazardous waste regulations. Some examples include:

- Chemicals that are no longer used, e.g., past the expiration date;
- Chemicals with obliterated labels, e.g., corroded, faded or smeared;
- Chemicals with no labels, e.g., sample vials, jars or beakers; or
- Samples that cannot be identified.

Hazardous Waste:
RCRA defines a hazardous waste as a solid waste that because of its quantity; concentration; or physical, chemical or infectious characteristics may cause or significantly contribute to an increase in serious; irreversible; or incapacitating, reversible illnesses or pose a substantial present or potential hazard to human health, safety or welfare to the environment when improperly treated, stored, transported, used or disposed of or otherwise managed.

A solid waste is a hazardous waste if it is not excluded from regulations and it meets any of the following descriptions:

- Solid waste that exhibits one or more of the hazardous waste characteristics (termed a **characteristic**

waste): ignitability, corrosivity, reactivity or toxicity. (See Section 8.1)
- Solid waste that is identified on any of the hazardous waste lists (termed a **listed** waste): nonspecific source wastes (F list), specific source wastes (K list), commercial chemical products (P and U lists). (See Section 8.2)
- Solid waste that is a mixture of a solid waste and one or more listed hazardous wastes.
- A mixture of solid waste and one or more characteristic hazardous wastes.
- Residues derived from the treatment of listed hazardous waste.

If there is uncertainty as to whether or not a solid waste is hazardous, deem the waste hazardous and apply the HWMP.

8.1 Characteristics

A solid waste is a hazardous waste if it exhibits any of the following characteristics: ignitability, corrosivity, reactivity or toxicity.

Ignitability (EPA Code D001):
A solid waste that has any of the following properties displays the characteristic of ignitability and is considered a hazardous waste:
- A liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, with a flash point below 60° C (140° F);
- A non-liquid, capable under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and when ignited burns so vigorously and persistently that it creates a hazard;
- An ignitable compressed gas, which includes gases that form flammable mixtures at a concentration of 13 percent or less in air; or
- An oxidizer, such as permanganate, inorganic peroxide or nitrate that readily stimulates combustion of organic materials.

Corrosivity (EPA Code D002):
A solid waste that has any of the following properties displays the characteristic of corrosivity and is considered a hazardous waste:
- Is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, using EPA-specified or approved test methods; or
- Is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.25 inch) per year at a test temperature of 55° C (130° F).

Reactivity (EPA Code D003):
A solid waste that has any of the following properties displays the characteristic of reactivity and is considered a hazardous waste:
- Is normally unstable and readily undergoes violent change without detonation;
- Reacts violently with water;
- Forms potentially explosive mixtures with water;
- When mixed with water, generates toxic gases, vapors or fumes in a quantity sufficient to present a danger
- Is a cyanide or sulfide bearing waste that generates toxic gases, vapors or fumes at a pH between 2 and 12.5;
- Is capable of detonation or explosive reaction when subject to a strong initiating source or if heated in confinement;
- Is readily capable of detonation, explosive decomposition or reaction at standard temperature and pressure; or
- Is an explosive, as defined in 49 CFR Sections 173.51, 173.53 or 173.88.

Toxicity: A waste exhibits the characteristic of toxicity when EPA-defined test procedures indicate that an extract derived from the waste contains certain toxicants. The toxicants to be tested for are listed in the table on the next page.

Maximum Concentration of Contaminants for the Toxicity Characteristics

Contaminant	Chemical Abstracts Service (CAS) Number	Regulatory Level (mg/L)
Arsenic	7440-38-2	5.0
Barium	7440-39-3	100.0
Benzene	71-43-2	0.5
Cadmium	7440-43-9	1.0
Carbon Tetrachloride	56-23-5	0.5
Chlordane	57-74-9	0.03
Chlorobenzene	108-90-7	100.0
Chloroform	67-66-3	6.0
Chromium	7440-47-3	5.0
o-Cresol	95-48-7	200.0[a]
m-Cresol	108-39-4	200.0 [a]
p-Cresol	106-44-5	200.0 [a]
Cresol	…	200.0 [a]
2,4-D	94-75-7	10.0
1,4-Dichlorobenzene	106-46-7	7.5
1,2-Dichloroethane	107-06-2	0.5
1,1-Dichloroethylene	75-35-4	0.7
2,4-Dinitrotoluene	121-14-2	0.13 [b]
Endrin	72-20-8	0.02
Heptachlor (and its epoxide)	76-44-8	0.008
Hexachlorobenzene	118-74-1	0.13 [b]
Hexachlorbutadiene	87-68-3	0.5
Hexachloroethane	67-72-1	3.0
Lead	7439-92-1	5.0
Lindane	58-89-9	0.4
Mercury	7439-97-6	0.2
Methoxychlor	72-43-5	10.0
Methyl ethyl ketone	78-93-3	200.0
Nitrobenzene	98-95-3	2.0
Pentachlorophenol	87-86-5	100.0
Pyridine	110-86-1	5.0 [b]
Selenium	7782-49-2	1.0
Silver	7440-22-4	5.0
Tetrachloroethylene	127-18-4	0.7
Toxaphene	8001-35-2	0.5
Trichloroethylene	79-01-6	0.5
2,4,5-Trichlorophenol	95-95-4	400.0
2,4,6-Trichlorophenol	88-06-2	2.0
2,4,5-TP (Silvex)	93-72-1	1.0
Vinyl chloride	75-01-4	0.2

[a] If o-, m-, p-Cresol concentrations cannot be differentiated, the total cresol concentration is used. The regulatory level of total cresol is 200 mg/L.

[b] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

8.2 Listed Waste

A solid waste is a listed hazardous waste if it is not excluded from regulation, incorporating by reference 40 CFR 261 Subpart D. These lists include:

- Hazardous waste from nonspecific sources (F List).
- Hazardous waste from specific sources (K List).
- Discarded commercial chemical products, off specification species, container residues and spill residues thereof (P List and U List).

Hazardous Waste from Nonspecific Sources:
Wastes on EPA's F List: These are wastes EPA has determined to be hazardous but not generated by a particular industry or manufacturing process. (See Appendix 4)

Hazardous Wastes from Specific Sources:
Wastes on EPA's K List: These are wastes from particular industries that EPA has determined to be hazardous. (See Appendix 5)

Discarded Commercial Products, Off-Specification Species, Container Residues and Spill Residues:
This classification of hazardous waste includes certain commercial chemical products having the generic names listed on the P and U lists when they are discarded or intended to be discarded. Materials on the P list are classified as acute hazardous waste and materials on the U list are classified as toxic waste. (See Appendix 6 for P-List and Appendix 7 for U-List)

The following materials on the P List or the U List are classified as hazardous **wastes if they are intended for disposal**:

- The material itself, including commercially pure grades and technical grades of the material that are produced or marked for commercial or manufacturing use.
- A formulated product in which the chemical is the sole active ingredient.
- Off-specification commercial chemical products or manufacturing intermediates, which, if specifications were met, would have the generic name, listed.
- Residues remaining in a container or in a container liner that has held any of the materials on the P or U list, unless the container is empty.
- P-or U- listed materials contained in products, which are applied to the land in lieu of their original intended purpose.
- P or U listed materials that are produced for use as (or as a component of) a fuel, distributed for use as a fuel or burned as a fuel.
- Spill residues of P and U listed materials, including contaminated soil, contaminated water and other debris resulting from the cleanup of a spill of any of the items listed above.

Examples of commercial chemical product hazardous wastes include products with the generic names listed on the P and U lists from research laboratories (expiration dated or unused reagents intended for disposal), photography laboratories and analytical laboratories. These items become hazardous waste when a decision has been made that they must be discarded or disposed of. For example, when the commercial products' expiration date has been reached or when they are no longer needed, it becomes hazardous waste.

8.3 Examples of Hazardous Waste

- Solvents used for parts cleaning or degreasing
- Paint thinners and paint removing compounds
- Organic solvents
- Battery acid and other waste acids
- Phenol wastes
- Dyes
- Adhesives
- Cements
- Lubricants
- Photographic film processing waste
- Laboratory waste
- Ethidium Bromide
- Water treatment chemicals
- Wastes containing metals such as lead, chromium, silver or cadmium
- Mercury waste
- Paints
- Inks
- Pigments
- Glazes
- Compressed gas cylinders (empty, partially full or full)
- Residues of spill materials
- Household cleaning supplies
- Used oil contaminated with PCBs or chlorinated refrigerant oil
- Pesticides

8.4 Wastes Requiring Special Handling

Used Oil: Support Building near Transportation Garage collects Used Oil and it is recycled. (See Appendix 8) Link to Used Oil regulations and EHS program).

Oil filters: Transportation to collect in separate drum and recycle.

Computer Monitors: Monitors that are broken and can no longer be used should be deemed hazardous waste. Those that are still working, but no longer needed should be donated for reuse. Contact Computer Services at 812 465-1255 during the hours of 8 a.m. through 4:30 p.m. on Monday through Friday.

Universal waste: Thermostats, bulbs and batteries are collected by EHS for recycling and proper handling. (See Appendix 9 for Mercury-Containing Lamp Program and Appendix 10 for Used Batteries)

Toner Cartridges: Many toner cartridges used in office equipment can be refurbished and used again. Check with the manufacturer of the toner cartridge to see if they will accept them back. For Hewlett Packard and Xerox cartridges contact Jeff Sponn at (812) 465-1601 during the hours of 8:00 a.m. through 4:30 p.m. on Monday through Friday. Any non-returnable toner cartridges, contact Environmental Health and Safety for other options. If any cartridge cannot be recycled than it should be deemed hazardous waste.

Spray paint cans/aerosol cans: Use cans until empty. Do not puncture the empty cans; dispose of in regular trash. If the cans still contain aerosol and are not to be used, handle as hazardous waste.

Silver Recovery Units: Two silver recovery units are used in the Photography studio in Smith Hall. The units are serviced by Safety-Kleen at a maximum of every 90 days. Photography personnel inspect the units weekly and document.

Compressed gas cylinders: Compressed gas cylinders should be returned to the company where originally purchased. Do not throw any compressed gas cylinder in the trash. Contact EHS when cylinder is empty or is no longer needed for use.

Closed head metal drums: (55 gallon or smaller) should be cut open and then disposed of as scrap metal. If they are not considered empty then they should be disposed of as hazardous waste. Open head drums, if empty, can be disposed of as scrap metal.

8.5 Examples of Wastes That Do Not Fall Under HWMP

8.5.1 Biomedical waste:
EHS is not responsible for collecting or disposing of sharps, needles, broken glass or biohazard material. These items must be disposed of through a work ticket. Work tickets may be called in at (812) 464-0000. Custodial Services will be responsible for collecting these items. Disposal procedure poster is located in **Appendix 11.**

Infectious waste boxes are the cardboard boxes with the red plastic liners that are used for the disposal of research materials that are contaminated with hazardous biological agents or chemicals to include: tissue samples, animal cadavers, animal organs, slides, broken lab glassware, absorbent pads, pharmaceuticals and small quantities of chemicals. Sharps should be collected in the red puncture resistant collection containers. The red puncture resistant sharps collection containers are purchased through each department. Following are the instruction for the infectious waste boxes:

- The boxes are delivered constructed (from Custodial Services).
- All sharps must be placed in a puncture resistant collection container inside of the infectious waste box.
- Do not pour liquids in the boxes or over pack -- weight limit is 40 lbs.
- Use only the infectious waste boxes provided.
- Do not deliver the boxes to the loading dock.
- Do not use for disposal of non-hazardous material.
- When the infectious waste box is ready for disposal:
- Label the box with the building name and lab room #.
- Seal the plastic liner, NOT the cardboard top.
- Call (812) 464-0000, request a pickup and a replacement box.

Any questions regarding these procedures please contact EHS at (812) 461-5393.

The red puncture resistant sharps container for labs that generate needles should be purchased through each department.

8.5.2 Select Agent List

In recent years, the threat of illegitimate use of infectious agents has attracted increasing interest from the perspective of public health, in view of concern that certain select agents could have serious adverse consequences for human health and safety. "The Antiterrorism and Effective Death Penalty Act of 1996," enacted on April 24, 1996, established new provisions to regulate transfer of hazardous agents. The term “select agent" means "a microorganism (virus, bacterium, fungus, rickettsia) or toxin listed in this section."

If you have in your possession any of the following select agents, please contact the Office of Laboratory Safety and Compliance to ensure that the agent has been properly registered with the Center for Disease Control and Prevention.

The Office of Health and Safety, Centers for Disease Control and Prevention, 1600 Clifton Road N.E., Mail Stop F05 Atlanta, Georgia 30333, USA last modified this list on 5/20/97.

Viruses
1. Crimean-Congo haemorrhagic fever virus
2. Eastern Equine Encephalitis virus
3. Ebola viruses
4. Equine Morbillivirus
5. Lassa fever virus
6. Marburg virus
7. Rift Valley fever virus syndrome
8. South American Haemorrhagic fever viruses (Junin, Machupo, Sabia, Flexal, Guanarito)
9. Tick-borne encephalitis complex viruses
10. Variola major virus (Smallpox virus)
11. Venezuelan Equine Encephalitis virus
12. Viruses causing hantavirus pulmonary
13. Yellow fever virus

Exemptions: Vaccine strains of viral agents (Junin Virus strain candid #1, Rift Valley fever virus strain MP-12, Venezuelan Equine encephalitis virus strain TC-83, Yellow fever virus strain 17-D) are exempt.

Bacteria

1.Bacillus anthracis
2.Brucella abortus, B. melitensis, B. suis
3.Burkholderia (Pseudomonas) mallei
4.Burkholderia (Pseudomonas) pseudomallei
5.Clostridium botulinum
6.Francisella tularensis
7.Yersinia pestis

Exemptions: vaccine strains as described in Title 9 CFR, Part 78.1 are exempt.

Rickettsiae

1.Coxiella burnetii
2.Rickettsia prowazekii
3.Rickettsia rickettsii

Fungi

1.Coccidioides immitis

Toxins

1. Abrin
2. Aflatoxins
3. Botulinum toxins
4. Clostridium perfringens epsilon toxin
5. Conotoxins
6. Diacetoxyscirpenol
7. Ricin
8. Saxitoxin
9. Shigatoxin
10. Staphylococcal enterotoxins
11. Tetrodotoxin
12. T-2 toxin

Exemptions: Toxins for medical use, inactivated for use as vaccines or toxin preparations for biomedical research use at an LD50 for vertebrates of more than 100 nanograms per kilogram body weight are exempt. National standard toxins required for biologic potency testing as described in 9 CFR Part 113 are exempt.

Recombinant organisms/molecules

1. Genetically modified microorganisms or genetic elements from organisms on Appendix A, shown to produce or encode for a factor associated with a disease.
2. Genetically modified microorganisms or genetic elements that contain nucleic acid sequences coding for any of the toxins listed in this Appendix or their toxic subunits.

Other restrictions

The deliberate transfer of a drug resistance trait to microorganisms listed in this Appendix that are not known to acquire the trait naturally is prohibited by NIH "Guidelines for Research Involving Recombinant DNA Molecules," if such acquisition could compromise the use of the drug to control these disease agents in humans or veterinary medicine.

Additional Exemptions

1. Products subject to regulation under the Federal Insecticide Fungicide and Rodenticide Act (7 U.S.C. § 136 et seq.) and the Toxic Substances Control Act (15 U
exempt.
2. Additional exemptions for otherwise covered strains will be considered when CDC reviews and updates the list of select agents. Individuals seeking an exemption should submit a request to CDC that specifies the agent or strain to be exempted and explains why such an exemption should be granted. Future exemptions will be published in the Federal Register for review and comment prior to inclusion in this select agent list.

Do not transfer select agents between institutions.

8.5.3 Nuclear/radioactive waste:

Risk Management is not responsible for collecting or disposing of radioactive waste. Any radioactive waste

that is generated must be disposed of through the Radiation Safety Officer (Kent Scheller). He may be contacted at 812 464-1903.

9.0 Hazardous Waste Handling

Once solid waste is identified as hazardous waste by the generator, the CHO or EHS, it must be handled in accordance with the HWMP. Hazardous waste must not be: disposed or recycled with other forms of trash or waste, burned or allowed to evaporate into the air, disposed or diluted in water (i.e., down the drain), disposed on or buried in the land.

An appropriate container (bottle, jar, etc.) must be used to accumulate waste. It must be labeled properly, as discussed in Section 9.1, at the time the first drop of waste is added to the container. This is known as *The First Drop Rule*.

Hazardous waste containers must be kept closed except when adding or transferring waste and the contents of the containers must be compatible with the container. Hazardous waste containers must be segregated based on the hazards of the waste.

Hazardous wastes must be stored in designated waste storage areas; these areas must be equipped with secondary containment in the form of bins or a berm that would contain liquid waste in the event of a spill. A *DANGER* sign must be posted at waste storage areas to indicate the presence of hazardous waste. The room that has a waste storage area will have a phone, access to an emergency eyewash/shower, basic spill cleanup equipment, a fire extinguisher, adequate aisle space and will be incorporated into the University's contingency plan. Weekly inspections of the waste storage area are required and the inspection must be documented and maintained.

9.1 Labeling Containers

A chemical container must be labeled as hazardous waste at the time its content is designated as a hazardous waste. When a hazardous waste is added to a container, it must also be labeled as a hazardous waste at the time the first drop of hazardous waste is added to it. This is referred to as the First Drop Rule.

Chemicals that are to be reused should be clearly labeled as such to avoid confusion with hazardous waste. EHS will not remove any material that is not clearly labeled as hazardous waste.

The person who identifies the hazardous waste is responsible for labeling the container that stores the waste with the "Hazardous Waste" sticker or tag supplied by EHS.

If a sticker is too large for the container, use a tag in its place. Attach the tag with a rubber band or string. Use only a sticker or a tag to label but not both.

If a mistake is made on the sticker after it has already been attached to the container, use a one-line cross out with initial and date to modify and add the correction. Do not place a new sticker on top of an old sticker, unless changing the old one would make it legible. Do not change the accumulation start date on the label. The hazardous waste regulations strictly prohibit this act and it will not be tolerated.

If a mistake is made on the tag, discard the old tag and complete a new one immediately. Dispose of the old tag in the trash.

If a container already has a label that identifies content and hazards (e.g., a manufacturer's label), try to place the sticker on a location that does not cover that label or use a tag. Regardless of the label existing on the container, place a completed hazardous waste sticker or tag on the container once the contents are deemed hazardous waste. Hazardous waste tags are also available for labeling of bottles and containers that hold hazardous waste. The tags contain the same information as the stickers, but are smaller.

Contact Person:
Whoever generates the waste is deemed the contact person (a.k.a., generator). The person's name should be legibly written into this space on the label.

Dept.:

Identify the department in which the generator is employed at the University.

Bldg. and Room:
Identify the building and the room inside that building where the waste is generated. If the room does not have a number, describe the location, e.g., custodial closet or mechanical room.

Ext.:
Identify the on-campus telephone extension of the person who generated the waste. If a direct number is not available, write in the department's central extension.

Accumulation Start Date:
This is the date the chemical is deemed hazardous waste. It may be the date on which the first drop of waste entered an accumulation container. It may be the date you decide you no longer need to use the chemical. It should not be the purchase date of the chemical.

Hazard Class:
To the best of your ability, identify the hazards associated with the hazardous waste. The hazard information should be identified on the container's label per the OSHA Hazard Communication standard.

- Flammable hazards: Flammable substances are those that readily catch fire and burn in air. They may be solid, liquid or gaseous. A common fire hazard is a flammable liquid or the vapor produced from such a liquid. Examples: acetaldehyde, acetone, diethyl ether, toluene, methyl alcohol.
- Corrosive hazards: Corrosive substances cause destruction of living tissue by chemical action at the site of contact and can be solids, liquids or gases. Examples: sulfuric acid, aqueous solutions of sodium hydroxide and solid form of sodium hydroxide, ammonia gas, nitrogen dioxide, phenol.
- Oxidizer hazards: Oxidizing substances promote combustion of other materials thereby causing fire either of the oxidizing substance itself or of other materials. Examples include: chlorine, hydrogen peroxide.
- Toxic hazards: Toxic substances are poisonous and cause adverse effects on living systems. Toxic effects of chemicals can occur after single, repeated or long-term exposure. Examples: mercury, hydrogen cyanide.
- Reactive hazards: Reactive substances may release great quantities of energy from a chemical reaction at a rate too great to be absorbed by the immediate environment. There are water reactive materials that react violently with water, such as sodium metal, aluminum bromide or calcium oxide. There are also pyrophoric materials that oxidize rapidly in oxygen or moisture and ignite, such as some finely divided metals.
- Carcinogens: Carcinogens are agents that cause cancer. Carcinogens are defined by OSHA and by the International Agency for Research on Cancer (IARC). Examples: arsenic, benzene, diethylstilbestrol, ethylene oxide, formaldehyde.

Chemical and %/Volume:
To the best of your ability, identify the contents of the container. It may contain 100% of one chemical or it may contain a variety of chemicals, e.g., from a student laboratory in which the jar was used to accumulate different but compatible compounds. Do not use chemical formulas to identify the contents; write out the chemical names.

9.2 Waste Storage Areas

The CHO, with assistance from EHS, will designate waste storage areas in locations where waste is generated. The CHO should consult with personnel who work in the room where a potential waste storage area will be located to determine waste generation habits. The waste storage area must be placed next to or near the process that generates the hazardous waste and the person who operates that process or area must control the hazardous waste placed in the waste storage area.

Waste storage areas can be in a laboratory fume hood, on a countertop or on the floor (but not in an aisle). They should not be placed in front of or behind doors or windows, blocking means of egress or suspended from equipment.

Aisle space must be maintained to allow the unobstructed movement of emergency equipment and personnel into all areas where waste is stored. Adequate aisle space is determined based on the types of emergency equipment that is necessary to respond to fires, spills, releases or explosions of the waste materials on site.

The room that houses the waste storage area should be equipped with:

- A device capable of summoning emergency assistance, e.g, a telephone or a hand-held two-way radio;
- Water at adequate volume and pressure to supply water hose streams or foam producing equipment or automatic sprinklers or water spray systems;
- An internal communications or alarm system capable of providing immediate emergency instruction to personnel who can be affected by the emergency incident;
- Portable fire extinguishers and
- Spill control equipment.

EHS will maintain a database of waste storage areas on campus (Appendix 12). Designated waste storage areas will be marked with a" DANGER" sign distributed by EHS. Waste storage areas can be added or removed based on changes in hazardous waste generation habits.

9.3 Container Management

Containers used to collect hazardous waste must be compatible with the substance they contain. Glass or Nalgene jars are appropriate for most wastes. Do not use soda bottles, food containers or other containers that could be confused with consumer products.

To avoid a hazardous chemical reaction, do not place incompatible wastes in the same container. Do not place hazardous waste in an unwashed container that previously held an incompatible material. If you are unsure if a waste is incompatible with the waste in a container or with the container itself, contact EHS for advice.

Storage containers holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles or open tanks will be separated from the other materials or protected from them by means of a dike, berm, wall or other device. Separate hazardous waste containers that store wastes which may be incompatible. Place compatible liquid waste containers in secondary containment bins. Compatible waste containers of non-liquids can be placed on a counter that is away from a sink or in secondary containment bins. Depending on the quantity and types of hazardous waste produced, several different secondary containment bins can be provided for use. Secondary containment bins ensure that in case of a spill, the hazardous waste is contained and does not mix with incompatible materials. Contact EHS to obtain secondary containment bins.

EPA has published a list of potentially incompatible waste components and materials along with the harmful consequences of mixing those materials together. This list does not include every possible hazardous chemical reaction, but should be used as a guide in packaging and storing these materials.
The list indicates the potential consequences of the mixing of a GROUP A material with a GROUP B material.

Compatibility Table

GROUP 1-A	**GROUP 1-B**
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte, acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkali	Pickling liquor and other corrosive acids

Lime wastewater Lime and water Spent caustic	Spent acid Spent mixed acid Spent sulfuric acid

Potential consequences: Heat generation; violent reaction

GROUP 2-A	**GROUP 2-B**
Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides	Any waste in GROUP 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

GROUP 3-A	**GROUP 3-B**
Alcohol Water	Any concentrated waste in GROUP 1-A Calcium Lithium Metal hydrides Potassium SO_2Cl_2, $SOCl_2$, PCl_3, CH_3SiCl3 Other water-reactive waste

Potential consequences: Fire, explosion or heat generation; generation of flammable or toxic gases.

GROUP 4-A	**GROUP 4-B**
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds	Concentrated GROUP 1-A or 1-B wastes GROUP 2-A wastes

Potential consequences: Fire, explosion or violent

GROUP 5-A	**GROUP 5-B**
Spent cyanide and sulfide solutions	GROUP 1-B waste

Potential consequences: Generation of toxic hydrogen

GROUP 6-A	**GROUP 6-B**
Chlorates Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers	Acetic acid and other organic acids Chlorine Concentrated mineral acids GROUP 2-A wastes GROUP 4-A wastes Other flammable and combustible wastes

Potential consequences: Fire, explosion or violent

Keep hazardous waste containers closed unless adding or removing waste. If you use a funnel to transfer waste, remove the funnel after the transfer and close the container. A closed container is one whose contents would not spill if the container were knocked over. Depending on the design of the container, it may be properly closed by firmly applying a screw-on cap, bung, drum ring, cork, etc.

Use an overpack drum or container for containers that may leak or cannot be closed. Overpack containers must also be compatible with the waste, be sealable and may be filled with vermiculite to occupy extra space. Overpack containers for hazardous waste are available from several manufacturers, including Lab Safety Supply and Fisher Scientific.

When adding waste to a container, do not completely fill the container. Leave space for the contents to expand. Containers and chemicals may expand or contract based on temperature. Transfer of hazardous waste is not recommended. If a transfer is necessary, ensure adequate spill response equipment is available, wear personal protective equipment (PPE) and use adequate transferring mechanisms, e.g., a funnel.

Ground ignitable hazardous waste to prevent sparks from igniting flammable vapors. Use a bonding wire and a ground wire when transferring flammable liquids into containers to prevent sparks caused by the buildup of static electricity during pouring operations.

Empty Containers
A container that held a P-listed waste is empty if it has been triple-rinsed using a solvent capable of removing the waste. Any rinsate must be collected as hazardous waste, but the container can be disposed of as regular trash.

If the container did not hold a P-listed waste, the container is empty when all contents have been removed that can be removed by using common practices such as pouring, pumping and aspirating. The container can be disposed of as regular trash if:

- No more than one inch of residue remains on the bottom of the container or inner liner; or
- For a 100 gallon container or less, no more than 3% of the total capacity of the container remains; or
- For a container larger than 100 gallons, no more than 0.3% remains.

A compressed gas cylinder is empty when the pressure in the container approaches atmospheric pressure. Many compressed gas cylinder suppliers recycle compressed gas cylinders as part of their contract. Check with your supplier. Do not throw empty gas cylinders in the regular trash. Contact EHS for proper disposal.

Empty closed head metal drums (55 gallon or smaller) should be cut open and then disposed of as scrap metal. Open head drums, if empty, can be disposed of as scrap metal.

9.4 Weekly Inspections

CHOs are required to perform weekly inspections of waste storage areas, using a multi-week inspection form developed by EHS (See Appendix 13). EHS recommends that each CHO establish a schedule for inspections to ensure they become routine. For example, establish Wednesday mornings as the designated inspection time and every week perform the inspection at that time.

Keep the inspection form adjacent to the waste storage area, either in a binder or in a covered, protective folder.

Use the form for a maximum of sixteen weeks. Use one form per waste storage area. The form consists of nine questions to guide you through the inspection. Any question that is answered with a “no” must be addressed and corrective actions noted at the bottom or on the back of the form.

When a form is complete, start a new inspection form. At that time, photocopy the completed form (two sides as necessary), mail the copy to EHS and file the original.

Once a waste storage area has been established, a weekly inspection of that area is required, regardless of the quantity of waste in the storage area. Even if no waste has been added to a storage area, an inspection is still required.

The exception to this rule will be the December Winter break when the University is officially closed. CHOs will not have to perform the weekly inspection during that break. EHS will complete a waste pickup prior to the closure to ensure the majority of all waste is removed from the waste storage areas. EHS will document this via a memorandum at that time. It is the CHOs responsibility to resume inspections the week following the holiday break when the University reopens.

If the CHO for a designated waste storage area is not able to complete the weekly inspection due to absence, it is his/her responsibility to ensure the inspection is completed. A database of CHOs, established by EHS, will be available.

10.0 Contingency Plan

The HWMP documents the University's commitment to manage hazardous waste so as to minimize the possibility of a release of hazardous waste into the environment. As part of this commitment, we maintain equipment on-site to facilitate spill cleanup and protect human health. In addition, to addressing emergency issues and large releases, we have made mutual aid arrangements with The Minor Emergency Center, the Perry Township Volunteer Fire Department, the local Police Department and an emergency spill response company.

The University has a Spill Prevention, Control and Countermeasure (SPCC) Plan per EPA regulations. The Energy Environmental Management Office maintains the SPCC Plan. EHS has designed a Contingency Plan which contains each waste storage area. The contingency plan is designed to help manage spill response and emergency situations related to hazardous waste management.

The Contingency Plan for the waste storage areas will be designed by EHS in consultation with the CHO for that area. The plan will include:

- a list of names, addresses and phone numbers (office and home) of all persons qualified to act as emergency coordinator.
- a list of all emergency equipment at the storage area such as fire extinguishing systems, spill control equipment, communications and alarm systems and decontamination equipment.
- the location and a physical description (schematic drawing) of each item and the storage area.
- an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary.

The plan must be maintained at each waste storage area. The diagram will be posted at the door(s) to the room where the waste storage area is located. Revisions or amendments, when necessary, must be made in conjunction with EHS.

11.0 Pick-up Schedule

As a large quantity generator, the University must not accumulate hazardous waste for more than 90 days. Therefore, it is imperative that hazardous waste that is stored in waste storage areas be managed in an organized and systematic manner to ensure compliance with the 90-day regulation.

Environmental Health and Safety coordinates quarterly hazardous waste pick-ups for all campus departments which generate hazardous waste. A contracted hazardous waste disposal company provides waste pick ups approximately every 60 days, but not exceeding 90 days.

It is the responsibility of the CHO to contact EHS to arrange a hazardous waste pick-up from the waste storage area. EHS will remove the waste from the storage area within five business days and transport the waste to the central hazardous waste accumulation point located in Science Center Room . If EHS cannot transport to the central accumulation point, we will arrange to have the waste removed from the waste storage areas using a licensed hazardous waste disposal company. Keeping within the 90-day clock EHS will arrange for hazardous

waste removal from campus using a qualified waste transportation and disposal company.

To guarantee 100 percent compliance with the 90-day regulation EHS recommends that waste should be removed from laboratories within 60 days of the accumulation start date. The weekly inspection form can be used as a tracking calendar. The form is designed for sixteen consecutive weeks or 128 days of waste storage area inspections. When the form is on the eighth week, contact EHS to pick-up any hazardous waste from the waste storage area.

If there is no waste in the waste storage area, there is no need to contact EHS.

No matter the quantity of hazardous waste in the waste storage area, send a completed copy of the inspection form to EHS for recordkeeping purposes.

To arrange for pick-up from the waste storage areas, contact EHS via phone, email or submit the Chemical Waste Removal Request Form via the Internet. The removal request form can be accessed at www.usi.edu/riskmgt/HazWaste.asp. Note that if your area does not submit a form, then chemical waste will **NOT** be picked up from your area.

Prior to pick-up, ensure in-house recordkeeping or documentation is complete. Each department is responsible for its own recordkeeping.

12.0 Training

Newly appointed CHOs will receive initial hazardous waste management training within six (6) months of the date of their appointment to the position. Thereafter, every CHO will receive annual training in the hazardous waste management practices applicable to our University. EHS will provide classroom training for CHOs. EHS trainers will receive annual hazardous waste training from an independent firm. Generators and/or handlers of hazardous waste will receive hazard communication training based on either 29 CFR 1910.1200 or 29 CFR 1910.1450 depending on their work practices. Hazard communication training will include an introduction to the HWMP.

Hazardous waste management training will include, at a minimum, emergency procedures, emergency equipment, emergency systems and a review of the regulatory requirements set forth by the EPA, DOT and OSHA. The training will focus on the details of the HWMP as described in this document.

Following each training session, a quiz will be administered. The quiz is designed to review the most important concepts of hazardous waste management practices and provide feedback to the trainer. A 75-percent pass rate is required. Department chairs and supervisors will receive documentation of trainees who successfully complete the training and pass the quiz, issued from EHS.

EHS will maintain names, job titles and job descriptions for USI employees that receive the hazardous waste management training for 3 years from the date the employee last worked at the University (See Appendix 14 for a list of names and job title and Appendix 15 for job descriptions).

13.0 Recordkeeping

Document all waste management activities. If you suspect something should be documented, you are probably correct. If you do not think something should be documented, you may be incorrect; so document it regardless.

Documentation requirements:

- Initial / annual training in hazardous waste management.
- Quizzes will be filed by EHS and maintained per regulatory requirements.
- Proof of training will be documented on sign-in sheets and will by filed by EHS and maintained per regulatory requirements.
- Training records for those who have achieved at least 75% on the training quiz will be issued to department chairs and supervisors. Department chairs and supervisors should file these records and

keep them for the duration of three years.
- Weekly inspection forms should be managed by the CHO, filed and saved for three years.
- Photocopies of the weekly inspection forms will be managed by EHS, filed and saved for three years.
- All other hazardous waste documentation relating to shipment, regulatory reports and land disposal records will be maintained by EHS for at least three years. Land disposal records will be maintained for at least five years.

14.0 Little Known but Allowable Ways to Manage Hazardous Waste

At times, chemicals may be reacted with other chemicals, to render them non-hazardous or to reduce the volume of hazardous waste. Treatment in containers is permitted only when the treatment occurs in the container in which the waste was generated. Some examples include:
- Oxidizing organic chemicals with sodium hypochlorite;
- Using phase separation of organics from aqueous solutions and liquids from solids;
- Precipitation of toxic metals;
- Oxidation of inorganic cyanides and sulfides;
- Destruction of ethidium bromide using hydrophosphorus acid and $NaNO_2$.

Elementary neutralization is also permitted. Combining like wastes to neutralize an entire batch is permitted.

Be absolutely certain that the waste is not hazardous before it is disposed of as non-regulated waste. If you are not 100 percent certain, the waste should be deemed hazardous and should be managed under this program.

15.0 Waste Minimization

Wherever feasible, the generation of waste is to be reduced or eliminated as expeditiously as possible. Implementing a comprehensive waste minimization program may reduce the generator status of the University and therefore reduce the compliance requirements. It can reduce potential environmental liabilities and help protect the environment through more efficient resource utilization. It also reduces expenses by minimizing waste treatment and disposal costs, raw material purchases and other operating costs.

Benefits of waste minimization include economic savings, increased environmental integrity, decreased exposure to toxic materials and an improved image for the University.

There are many ways to prevent or minimize hazardous waste generation. This list provides some ideas for waste minimization techniques.
- Maintain a limited inventory of chemicals on hand so those chemicals do not expire or deteriorate and necessitate disposal. Only purchase what is needed.
- Develop a running inventory of chemicals on hand.
- Use the inventory to track unused chemicals for possible use by other departments.
- Reduce or eliminate the use of highly toxic chemicals in lab experiments.
- Establish reasonable waste minimization goals within your department.
- Perform laboratory experiments on a microscale whenever feasible.
- Reuse or recycle spent solvents.
- Recover metal from catalyst.
- Initiate procedures to reduce mercury use; e.g., replace mercury-bearing instruments with alternatives.
- Polymerize epoxy waste to a safe solid.
- Replace chromic acid cleaning solutions with Alconox or a similar detergent.
- Recycle office equipment such as computer monitors.

Waste handling options and the priority in which they should be considered are illustrated below.

Prevention
Elimination
Reduction
Recycling
Treatment
Disposal

15.0 References

- Title 40 of the Code of Federal Regulations, Parts 260-268, 270, 273, 279.
- Environmental Protection Agency, Hazardous Waste Regulation, 40 CFR 260
- http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_40/40cfr260_00.html
- USI Chemical Hygiene Plan.
- Chemical compatibility table from USI Chemical Hygiene Plan.
- EPA Compatibility Table 40 CFR 264, Appendix
- http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_40/40cfr264_00.html
- Listing Information (F, K, P, U Lists):
-
-
- OSHA information on carcinogens:
- http://www.osha-slc.gov/SLTC/carcinogens/index.html
- The Catholic University of America Hazardous Waste Management Plan.
- University of California at Santa Cruz Hazardous Waste Classification and Determination Guide.

ADDENDUM

1. **Section 9.3 does not make the provisions of §4415.16 concerning incompatibles clear.**

Section 4415.16 of the DCMR states that storage containers holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, or open tanks will be separated from the other materials or protected from them by means of a dike, berm, wall or other device. Separate hazardous waste containers that store wastes which may be incompatible. Place compatible liquid waste containers in secondary containment bins. Compatible waste containers of non liquids can be placed on a counter that is away from a sink or in secondary containment bins. Depending on the quantity and types of hazardous waste produced, several different secondary containment bins can be provided for use. Secondary containment bins ensure that in case of a spill, the hazardous waste is contained and does not mix with incompatible materials. Contact EHS to obtain secondary containment bins.

2. **Section 12.0 does not make it clear that training is required within six months of employment or that written descriptions of the type and amount of training is maintained pursuant to §§4405.4 and 4405.6(c) respectively.**

Newly appointed CHOs will receive initial hazardous waste management training within six (6) months of the date of their appointment to the position. Thereafter, every CHO will receive annual training in the hazardous waste management practices applicable to our University. EHS will provide classroom training for CHOs. EHS trainers will receive annual hazardous waste training from an independent firm. Generators and/or handlers of hazardous waste will receive hazard communication training based on either 29 CFR 1910.1200 or 29 CFR 1910.1450 depending on their work practices. Hazard communication training will include an introduction to the HWMP.

Hazardous waste management training will include, at a minimum, emergency procedures, emergency equipment, emergency systems and a review of the regulatory requirements set forth by the EPA, DOT and OSHA. The training will focus on the details of the HWMP as described in this document.

Following each training session, a quiz will be administered. The quiz is designed to review the most important concepts of hazardous waste management practices and provide feedback to the trainer. A 75 percent pass rate is required. Department chairs and supervisors will receive documentation of trainees who successfully complete the training and pass the quiz, issued from EHS.

EHS will maintain names, job titles and job descriptions for USI employees that receive the hazardous waste management training for three years from the date the employee last worked at the University (See Appendix 14 for a list of names and job title and Appendix 15 for job descriptions).

3. **Appendix 3, Hazardous Waste Determinations & Classifications, flowcharts do not consistently identify RCRA defined Hazardous Wastes pursuant to §4100. For example, the RCRA definition of "Ignitable" is used, but called "Hazard Class: Flammable". Similarly, asbestos is incorrectly identified as Hazardous Waste when it is a regulated material. Appendix 3*, Compressed Gas Cylinders & Aerosols Flowchart,* gives an incorrect definition of an empty compressed gas cylinder pursuant to §4104.4 (should state atmospheric pressure)**

Change the term "Flammable" to "Ignitable" to conform to the RCRA definition.
Change the term "Hazardous" to "Regulated" for Asbestos.
Gas cylinders are categorized as empty when they have reached atmospheric pressure.

APPENDIX 1:
AUGUST 9, 2000 MEMO FROM VICE PRESIDENT OF ACADEMIC AFFAIRS

APPENDIX 2:
WASTE STORAGE AREA DANGER SIGN

HAZARDOUS WASTE STORAGE AREA

UNAUTHORIZED PERSONNEL KEEP OUT

To dispose of hazardous waste submit removal request to
http://www.usi.edu/riskmgt/HazMaterials.asp

In case of emergency call Security (7777 or 812 464-1845) and
Environmental Health and Safety (812 461-5393)

APPENDIX 3:
HAZARDOUS WASTE DETERMINATION & CLASSIFICATION

APPENDIX 4:
F-LISTED WASTES

Hazardous Waste Generated By Generic Processes ("F" List)		
EPA Waste No.	**Hazardous waste**	**Hazard code**
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 that contain, before use, a total of 10% or more (by volume) of 1 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.	(T)
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-trichloro-ethane; all spent solvent mixtures/blends containing, before use, a total of 10% or more (by volume) of 1 or more of the above halogenated solvents or those listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
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, 1 or more of the above non-halogenated solvents, and a total of 10% or more (by volume) of 1 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.	(I)
F004	The following spent non-halogenated solvents: cresols, cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of 10% or more (by volume) of 1 or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of those spent solvents and spent solvent mixtures.	(T)
F005	The following spent non-halogenatedsolvents: 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 10% more (by volume) of 1 or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)*
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 6) chemical etching and milling of aluminum.	(T)
F007	Spent cyanide plating bath solutions from electroplating operations.	(R,T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R,T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R,T)
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R,T)
F012	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.	(T)
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.	(T)

(continued)

Hazardous Waste Generated By Generic Processes ("F" List) *(continued)*		
EPA Waste No.	**Hazardous waste**	**Hazard code**
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 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.)	(H)
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.	(H)
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.	(H)
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.)	(H)
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 1 to and including 5, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, waste- water treatment sludges, spent catalysts, and wastes listed in RCRA Sections 261.31 or 261.32).	(T)
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 1 to and including 5, with varying amounts and positions of chlorine substitution.	(T)
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.	(H)
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol 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.)	(H)
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA hazardous waste numbers F020, F021, F022, F023, F026, and F027.	(T)

(continued)

Hazardous Waste Generated By Generic Processes ("F" List) *(continued)*		
EPA Waste No.	**Hazardous waste**	**Hazard code**
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 or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with RCRA Section 261.35 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.	(T)
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.	(T)
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.	(T)
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 RCRA Section 261.31(b)(2) (including sludges generated in 1 or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.	(T)
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 dissolved air flotation (DAF) units. Sludges generated in storm water 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 and floats generated in aggressive biological treatment units as defined in RCRA Section 261.31(b)(2) (including sludges and floats generated in 1 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.	

(continued)

Hazardous Waste Generated By Generic Processes ("F" List) *(continued)*		
EPA Waste No.	**Hazardous waste**	**Hazard code**
F039	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than 1 restricted waste classified as hazardous under Subpart D (Leachate resulting from the disposal of 1 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).	(T)

Notes:

* (I,T) should be used to specify mixtures containing ignitable and toxic constituents.

- For the purposes of the F037 and F038 listings, oil/water/solids is defined as oil and/or water and/or solids.
- For the purposes of the F037 and F038 listings, aggressive biological treatment units are defined as units that employ 1 of the following 4 treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks in which intense mechanical aeration is used to completely mix the wastes and enhance biological activity. High-rate aeration units employ a minimum of 6 horsepower per million gallons of treatment volume, and either the hydraulic retention time of the unit is no longer than 5 days, or the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the toxicity characteristic. Generators and TSD facilities have the burden of proving that their sludges are exempt from listing as F037 and F038 wastes under this definition. Generators and TSD facilities must maintain, in their operating or other onsite records, documents and data sufficient to prove that the unit is an aggressive biological treatment unit and the sludges sought to be exempted were actually generated in the aggressive biological treatment unit.

APPENDIX 5:
K-LISTED WASTES

Hazardous Waste From Specific Sources ("K" list)

Wood Preservation

K001(T) Bottom sediment sludge from the treatment of wastewaters from wood-preserving processes that use creosote and/or pentachlorophenol.

Inorganic Pigments

K002(T) Wastewater treatment sludge from the production of chrome yellow and orange pigments.
K003(T) Wastewater treatment sludge from the production of molybdate orange pigments.
K004(T) Wastewater treatment sludge from the production of zinc yellow pigments.
K005(T) Wastewater treatment sludge from the production of chrome green pigments.
K006(T) Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).
K007(T) Wastewater treatment sludge from the production of iron blue pigments.
K008(T) Oven residues from the production of chrome oxide green pigments.

Organic Chemicals

K009(T) Distillation bottoms from the production of acetaldehyde from ethylene.
K010(T) Distillation side cuts from the production of acetaldehyde from ethylene.
K011(R,T) Bottom stream from the wastewater stripper in the production of acrylonitrile.
K013(R,T) Bottom stream from the acrylonitrile column in the production of acrylonitrile.
K014(T) Bottoms from the acetonitrile purification column in the production of acrylonitrile.
K015(T) Still bottoms from the distillation of benzyl chloride.
K016(T) Heavy ends or distillation residues from the production of carbon tetrachloride.
K017(T) Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.
K018(T) Heavy ends from the fractionation column in ethyl chloride production.
K019(T) Heavy ends from the distillation of ethylene dichloride production.
K020(T) Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.
K021(T) Aqueous spent antimony catalyst waste from flouromethanes production
K022(T) Distillation bottom tars from the production of phenol/acetone from cumene.
K023(T) Distillation light ends from the production of phthalic anhydride from naphthalene.
K024(T) Distillation bottoms from the production of phthalic anhydride from naphthalene.
K025(T) Distillation bottoms from the production of nitrobenzene by the nitration of benzene.
K026(T) Stripping still tails from the production of methyl ethyl pyridines.
K027(R,T) Centrifuge and distillation residues from toluene diisocyanate production.
K028(T) Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.
K029(T) Waste from the product steam stripper in the production of 1,1,1-trichloroethane.
K030(T) Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.
K083(T) Distillation bottoms from aniline production.
K085(T) Distillation or fractionation column bottoms from the production of chlorobenzenes.
K093(T) Distillation light ends from the production of phthalic anhydride from ortho-xylene.
K094(T) Distillation bottoms from the production of phthalic anhydride from ortho-xylene.
K095(T) Distillation bottoms from the produciton of 1,1,1-trichloroethane.
K103(T) Process residues from aniline extraction from the production of aniline.
K104(T) Combined wastewater streams from generated from nitrobenzene/aniline production.
K105(T) Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.
K107(C,T) Column bottoms from product separation from the production of 1,1-dimethyl-hydrazine (UDMH) from carboxylic acid hydrazines.

(continued)

Organic Chemicals (continued)

K108(I,T) Condensed column overheads from product separation and condensed reactor vent gases for the production of UDMH from carboxylic acid hydrazides.

K109(T) Spent filter cartridges from the product purification from the production of UDMH from carboxylic acid hydrazides.

K110(T) Condensed column overheads from intermediate separation from the production of UDMH from carboxylic acid hydrazides.

K111(C,T) Product washwaters from the production of dinitrotoluene via nitration of toluene.

K112(T) Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.

K113(T) Condensed liquid light ends from the purification of toluenediamine via hydrogenation of dinitrotoluene.

K114(T) Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.

K115(T) Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.

K116(T) Organic condensate from the solvent recovery in the production of toluene diisocyanate via phosgenation of toluenediamine.

K117(T) Wastewater from reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethylene.

K118(T) Spent adsorbent solids from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethylene.

K136(T) Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethylene.

K149(T) Distillation bottoms from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzyl chlorides, and compounds with mixtures of these functional groups. (This waste does not include still bottoms from the distillation of benzyl chloride.)

K150(T) Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzyl chlorides, and compounds with mixtures of these functional groups.

K151(T) Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzyl chlorides, and compounds with mixtures of these functional groups.

Inorganic Chemicals

K071(T) Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.

K073(T) Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.

K106(T) Wastewater treatment sludge from the mercury cell process in chlorine production.

Pesticides

K031(T) By-product salts generated in the production of Methanearsonic Acid (MSMA) in the production of chlordane.

K034(T) Filter solids from the filtration of hexachlorocyclapentadiene in the production of chlordane.

K035(T) Wastewater treatment sludges generated in the production of creosote.

K036(T) Still bottoms from toluene reclamation distillation in the production of disulfoton.

K037(T) Wastewater treatment sludges from the production of disulfoton

K038(T) Wastewater from the washing and stripping of phorate production.

K039(T) Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.

(continued)

Pesticides (continued)

K040(T)	Wastewater treatment sludge from the production of phorate.
K041(T)	Wastewater treatment sludge from the production of toxaphene.
K042(T)	Heavy ends of distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T.
K043(T)	2,6-Dichlorophenol waste from the production of 2,4-D.
K097(T)	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane.
K098(T)	Untreated process wastewater from the production of toxaphene.
K099(T)	Untreated wastewater from the production of 2,4-D.
K123(T)	Process wastewater (including supermates, filtrates, and washwaters) from the production of ethylebisdithiocarbamic acid and it salt.
K124(C,T)	Reactor vent scrubber water from the production of ethylebisdithiocarbamic acid and it salts.
K125(T)	Filtration, evaporation, and centrifugation solids from the production of ethylebisdithiocarbamic acid and it salts.
K126(T)	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylebisdithiocarbamic acid and it salts.
K131(C,T)	Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide.
K132(T)	Spent absorbent and wastewater separator solids from the production of methyl bromide.

Explosives

K044(R)	Wastewater treatment sludges from the manufacturing and processing of explosives.
K045(R)	Spent carbon from the treatment of wastewater containing explosives.
K046(T)	Wastewater treatment sludges from the manufacturing, formulation, and loading of lead-based initiating compounds.
K047(R)	Pink/red water from trinitrotoluene (TNT) operations.

Petroleum refining

K048(T)	DAF float from the petroleum industry.
K049(T)	Slop oil emulsion solids from the petroleum refining industry.
K050(T)	Heat exchanger bundle cleaning sludge from the petroleum refining industry.
K051(T)	American Petroleum Institute (API) separator sludge from the petroleum refining industry.
K052(T)	Tank bottoms (leaded) from the petroleum refining industry.

Iron and Steel

K061(T)	Emission control dust/sludge from the primary production of steel in electric furnaces.
K062(C,T)	Spent pickle liquor generated by steel finishing operations from facilities within the iron and steel industry (Standard Industrial Classification (SIC) codes 331 and 332).

Primary Copper

K064(T)	Acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production.

Primary Lead

K065(T)	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities.

Primary Zinc

K066(T)	Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production.

(continued)

Primary Aluminum

K088(T) Spent potliners from primary aluminum reduction.

Ferroalloys

K090(T) Emission control dust or sludge from ferrochromiumsilicon production.

K091(T) Emission control dust or sludge from ferrochromium production.

Secondary Lead

K069(T) Emission control dust/sludge from secondary lead smelting. (NOTE: This listing is stayed administratively for sludge generated from secondary acid scrubber systems. The stay will remain in effect until further administrative action is taken. If EPA takes further action affecting this stay, EPA will publish a notice of the action in the *Federal Register*.)

K100(T) Waste leaching solution from acid leaching of emission control dust sludge from secondary lead smelting.

Veterinary Pharmaceuticals

K084(T) Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.

K101(T) Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.

K102(T) Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.

Ink Formulation

K086(T) Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead.

Coking

K060(T) Ammonia still lime sludge from coking operations.

K087(T) Decanter tank tar sludge from coking operations.

K141(T) Process residues from the recovery of coal tar, including, but not limited to, collecting sump residues from the production of coke from coal or the recovery of coke byproducts produced from coal. This listing does not include K087 (decanter tank tar sludges from coking operations).

K142(T) Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products produced from coal.

K143(T) Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal.

K144(T) Wastewater sump residues from light oil refining, including but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal.

K145(T) Residues from napthalene collection and recovery operations from the recovery of coke by-products produced from coal.

K147(T) Tar storage tank residues from coal tar refining.

K148(T) Residues from coal tar distillation, including but not limited to, still bottoms.

Key: (T) = toxic; (C) = corrosive; (R) = reactive.

APPENDIX 6:
P-LISTED WASTES

Hazardous Waste "P" List		
HW No.	**CAS No.**	**Substance**
P023	107-20-0	Acetaldehyde, chloro
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro
P058	62-74-8	Acetic acid, fluoro, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-2	Aldicarb
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium picrate (R)
P119	7803-55-6	Ammonium vanadate
P099	506-61-6	Argentate(1-), bis(cyano-C)-potassium
P010	7778-39-4	Arsenic Acid H(3)AsO(4)
P012	1327-53-3	Arsenic oxide As(2)O(3)
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl-
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-
P046	122-09-8	Benzeneethanamine, alpha, alpha-dimethyl-
P014	108-98-5	Benzenethiol
P001	[1]81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)- and salts when present at concentrations greater than 0.3%
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium Powder
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P045	39196-18-4	2-Butanone, 3,3-dimethyl-1 -(methylthio)-, O-[methylamino) carbonyl] oxime
P021	592-01-8	Calcium cyanide
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl)thiourea

(continued)

(continued)		
HW No.	**CAS No.**	**Substance**
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide
P030	---------	Cyanides (soluble cyanide salts), not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha, 4abeta, 5alpha, 8alpha,8abeta)-
P060	465-73-6	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	60-57-1	2,7:3,6-Dimethanonaphth[2,3b]oxirane,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	72-20-5	2,7,3,6-Dimethanonaphth[2,3b] oxirine,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	60-51-5	Dimethoate
P046	122-09-8	alpha, alpha-Dimethylphenethylamine
P047	[1]534-52-1	4,6-Dinitro-o-cresol, and salts
P048	51-28-5	2,4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramide, octamethyl-
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-04-4	Disulfoton
P049	541-53-7	Dithiobiuret
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin, & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P066	16752-77-5	Ethanimidothioic acid, N[[(methylamino) carbonyl]oxy]-, methyl ester
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine

(continued)

Hazardous Waste "P" List *(continued)*		
HW No.	**CAS No.**	**Substance**
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P065	628-86-4	Fluminic acid, mercury(2+) salt (R,T)
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyl tetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	80-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid (Hydrogen cyanide)
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	62-38-4	Mercury, (acetato-O)phenyl
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis[chloro-
P112	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol, trichloro-
P050	115-29-7	6,9-Methano-2,4,3-benzodioxathiepin,6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methyllactonitrile
P071	298-00-0	Methyl parathion
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel carbonyl
P074	557-19-7	Nickel cyanide
P075	[1]54-11-5	Nicotine and salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide NO
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosomethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium tetroxide*)*
P088	145-73-3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51-28-5	Phenol, 2,4-dinitro-

(continued)

Hazardous Waste "P" List *(continued)*		
HW No.	**CAS No.**	**Substance**
P047	(1) 534-52-1	Phenol, 2-methyl-4,6-dinitro- and salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester
P094	296-04-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoridic acid, bis-(1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	297-92-2	Phosphorodithioic acid, O,O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorodithioic acid, O-O,4 [(diimethylamino)sulfonyl])phenyl]O,O-dimethyl ester
P071	296-00-0	Phosphorodithioic acid, O,O-dimethyl O-(4-nitrophenyl)ester
P110	78-00-2	Plumbane, tetraethyl-
P098	151-50-8	Potassium cyanide
P099	506-61-6	Potassium silver cyanide
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-,O-[(methylamino)carbonyl] oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile,3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1,2,3-Propanetriol, trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	107-19-7	2-Propyn-1-ol
P008	504-24-5	4-Pyridinamine
P075	[1]54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, and salts
P114	12039-52-0	Selenious acid, dithallium(1+) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P108	[1]57-24-9	Strychnidin-10-one (Strychnine), and salts
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
P115	7446-18-6	Sulfuric acid, dithallium(1+) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate

(continued)

Hazardous Waste "P" List *(continued)*		
HW No.	**CAS No.**	**Substance**
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethyl pyrophosphate
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide
P114	12039-52-0	Thallium(I) selenite
P115	7446-18-6	Thallium(I) sulfate
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thiomidodicarbonic diamide [(H(2)N)C(S)](2)NH
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt
P120	1314-62-1	Vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso
P001	[1]81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
P121	557-21-1	Zinc cyanide
P122	1314-84-7	Zinc phosphide Zn(3)P(2), when present at concentrations greater than 10% (R,T)

Notes:
Key: T = toxicity; R = reactivity; I = ignitability; C = corrosivity. Absence of a letter indicates that the compound is only listed for toxicity.
[1] CAS No. given for parent compound only.
(f) The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products referred to above are identified as toxic wastes (T), unless otherwise designated, and are subject to the SQG exclusion defined in 40 CFR 261.5(a) and (g).

APPENDIX 7:
U-LISTED WASTES

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde,trichloro-
U187	62-44-2	Acetamide,N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide,N-9H-fluoren-2-yl-
U240	(1)94-75-7	Acetic acid,(2-4-dichlorophenoxy)-salts & esters
U112	141-78-6	Acetic acid,ethylester (I)
U144	301-04-2	Acetic acid,lead(2+)salt
U214	563-68-8	Acetic acid,thallium(1+) salt See 93-76-5 Acetic acid, (2,4,5-trichlorophenoxy)-F027
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetylchloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U136	75-60-5	Arsinic acid,dimethyl
U014	492-80-8	Auramine
U015	115-02-6	Azaserine
U010	50-07-7	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)]-
U157	50-49-5	Benz[j]aceanthrylene,1,2-dihydro-3-methyl-
U016	225-51-4	Benz(c)acridine
U017	98-87-3	Benzalchloride
U192	23950-58-5	Benzamide,3,5-dichloro-N-(1,1-diethyl-2-propynyl)-
U018	56-55-3	Benz[a]anthracene
U094	57-97-6	Benz[a]anthracene,7,12-dimethyl-
U012	62-53-3	Benzenamine (1,T)
U014	492-80-8	Benzenamine,4,4-carbonimidoylbis (N,N-dimethyl-
U049	3165-93-3	Benzenamine,4-chloro-2-methyl-hydrochloride
U093	60-11-7	Benzenamine,N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine,2-methyl-
U353	106-49-0	Benzenamine,4-methyl-
U158	101-14-4	Benzenamine,4,4'-methylenebis[2-chloro-
U222	636-21-5	Benzenamine,2-methyl-,hydrochloride
U181	99-55-8	Benzenamine,2-methyl-5-nitro
U019	71-43-2	Benzene (I,T)
U038	510-15-6	Benzeneacetic acid,4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-ethylester
U030	101-55-3	Benzene,1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid,4-[bis(2-chloroethyl)amino]-

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U037	108-90-7	Benzene,chloro
U221	25376-45-8	Benzenediamine,ar-methyl
U028	117-81-7	1,2-Benzenedicarboxylic acid,bis(2-ethylhexyl)ester
U069	84-74-2	1,2-Benzenedicarboxylic acid,dibutylester
U088	84-66-2	1,2-Benzenedicarboxylic acid,diethylester
U102	131-11-3	1,2-Benzenedicarboxylic acid,dimethylester
U107	117-84-0	1,2-Benzenedicarboxylic acid,dioctyl
U070	95-50-1	Benzene,1,2-dichloro-
U071	541-73-1	Benzene,1,3-dichloro-
U072	106-46-7	Benzene,1,4-dichloro-
U060	72-54-8	Benzene,1,1'-(2,2-dichloroethylidene)bis[4-chloro-
U017	98-87-3	Benzene,(dichloromethyl)-
U223	26471-62-5	Benzene,1,3-diisocyanatomethyl-(R,T)
U239	1330-20-7	Benzene,dimethyl-(I,T)
U201	108-46-3	1,3-Benzenediol
U127	118-74-1	Benzene,hexachloro-
U056	110-82-7	Benzene,hexahydro-(I)
U220	108-88-3	Benzene,methyl-
U105	121-14-2	Benzene,1-methyl-2,4-dinitro-
U106	606-20-2	Benzene,2-methyl-1,3-dinitro-
U055	98-82-8	Benzene,(1-methylethyl)-(I)
U169	98-95-3	Benzene, nitro-
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-
U020	98-09-9	Benzene sulfonic acid chloride (C,R)
U020	98-09-9	Benzene sulfonyl chloride (C,R)
U207	95-94-3	Benzene,1,2,4,5-tetrachloro-
U061	50-29-3	Benzene,1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
U247	72-43-5	Benzene,1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-
U023	98-07-7	Benzene,(trichloromethyl)-
U234	99-35-4	Benzene,1,3,5-trinitro-
U021	92-87-5	Benzidine
U202	(1)81-07-2	1,2-Benzisothiazol-3(2H)-one,1,1-dioxide, and salts
U203	94-59-7	1,3-Benzodioxole,5-(2-propenyl)-
U141	120-58-1	1,3-Benzodioxole,5-(1-propenyl)-
U090	94-58-6	1,3-Benzodioxole,5-propyl-
U064	189-55-9	Benzo[rst]pentaphene
U248	(1)81-81-2	2H-1-Benzopyran-2-one,4-hydroxy-3-(3-oxo-1-phenyl-butyl)-,&salts,when present at concentrations of 0.3%orless
U022	50-32-8	Benzo[a]pyrene
U197	106-51-4	p-Benzoquinone
U023	96-07-7	Benzotrichloride(C,R,T)
U085	1464-53-5	2,2'-Bioxirane
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U225	75-25-2	Bromoform
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1,3-Butadiene,1,1,2,3,4,4-hexachloro-
U172	924-16-3	1-Butanamine,N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (I)
U159	78-93-3	2-Butanone (I,T)
U160	1338-23-4	2-Butanone peroxide (R,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene,1,4-dichloro-(I,T)
U143	303-34-4	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-ylester,[1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-
U031	71-36-3	n-Butylalcohol (I)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U238	51-79-6	Carbamic acid,ethylester
U178	615-53-2	Carbamic acid,methylnitroso-,ethylester
U097	79-44-7	Carbamic chloride,dimethyl
U114	(1)111-54-6	Carbamodithioic acid,1,2-ethanediylbis-,saltsandesters
U062	2303-16-4	Carbamothioic acid,bis(1-methylethyl)-,S-(2,3-dichloro-2-propenyl)ester
U215	6533-73-9	Carbonic acid,dithallium(1+)salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid,methylester (I,T)
U033	353-50-4	Carbonoxyfluoride (R,T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	57-74-9	Chlordane, alpha and gamma isomers
U026	494-03-1	Chlornaphazin
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate
U039	59-50-7	p-Chloro-m-cresol
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid,H(2)CrO(4)calcium salt
U050	218-01-9	Chrysene
U051	–	Creosote
U052	1319-77-3	Cresol(Cresylicacid)

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene(I)
U246	506-68-3	Cyanogenbromide (CN)Br
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U056	110-82-7	Cyclohexane (I)
U129	58-89-9	Cyclohexane,1,2,3,4,5,6-hexachloro-,(1alpha,2alpha,3beta,4alpha,5alpha, 6beta)-
U057	108-94-1	Cyclohexanone(I)
U130	77-47-4	1,3-Cyclopentadiene,1,2,3,4,5,5-hexa-chloro-
U058	50-18-0	Cyclophosphamide
U240	(1) 94-75-7	2,4-D,salts and esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz[a,h]anthracene
U064	189-55-9	Dibenzo[a,i]pyrene
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutylphthalate
U070	95-50-1	o-Dichlorobenzene
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3,3'-Dichlorobenzidine
U074	764-41-0	1,4-Dichloro-2-butene (I,T)
U075	75-71-8	Dichlorodifluoromethane
U078	75-35-4	1,1-Dichloroethylene
U079	156-60-5	1,2-Dichloroethylene
U025	111-44-4	Dichloroethyl ether
U027	108-60-1	Dichloroisopropyl ether
U024	111-91-1	Dichloromethoxyethane
U081	120-83-2	2,4-Dichlorophenol
U082	87-65-0	2,6-Dichlorophenol
U084	542-75-6	1,3-Dichloropropene
U085	1464-53-5	1,2:3,4-Diepoxybutane (I,T)
U108	123-91-1	1,4-Diethyleneoxide
U028	117-81-7	Diethylhexylphthalate
U086	1615-80-1	N,N'-Diethylhydrazine
U087	3288-58-2	O,O-DiethylS-methyldithiophosphate
U088	84-66-2	Diethylphthalate
U089	56-53-1	Diethylstilbestrol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3,3'-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	p-Dimethylaminoazo benzene
U094	57-97-6	7,12-Dimethylbenz[a]anthracene

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U095	119-93-7	3,3'-Dimethylbenzidine
U096	80-15-9	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097	79-44-7	Dimethylcarbamoylchloride
U098	57-14-7	1,1-Dimethylhydrazine
U099	540-73-8	1,2-Dimethylhydrazine
U101	105-67-9	2,4-Dimethy lphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2,4-Dinitrotoluene
U106	606-20-2	2,6-Dinitrotoluene
U107	117-84-0	Di-n-octylphthalate
U108	123-91-1	1,4-Dioxane
U109	122-66-7	1,2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U041	106-89-8	Epichlorohydrin
U001	75-07-0	Ethanal (I)
U174	55-18-5	Ethanamine,N-ethyl-N-nitroso-
U155	91-80-5	1,2-Ethanediamine,N,N-dimethyl-N'-2-pyridinyl-N'-(2thienylmethyl)-
U067	106-93-4	Ethane,1,2-dibromo-
U076	75-34-3	Ethane,1,1-dichloro-
U077	107-06-2	Ethane,1,2-dichloro-
U131	67-72-1	Ethane,hexachloro
U024	111-91-1	Ethane,1,1'-[methylenebis-(oxy)]bis[2-chloro-
U117	60-29-7	Ethane,1,1'-oxybis-(I)
U025	111-44-4	Ethane,1,1'-oxybis[2-chloro-
U184	76-01-7	Ethane,pentachloro-
U208	630-20-6	Ethane,1,1,1,2-tetrachloro-
U209	79-34-5	Ethane,1,1,2,2-tetrachloro-
U218	62-55-5	Ethanethioamide
U226	71-55-6	Ethane,1,1,1-trichloro-
U227	79-00-5	Ethane,1,1,2-trichloro-
U359	110-80-5	Ethanol,2-ethoxy-
U173	1116-54-7	Ethanol,2,2'-(nitrosoimino)bis-
U004	98-86-2	Ethanone,1-phenyl-
U043	75-01-4	Ethene,chloro-
U042	110-75-8	Ethene,(2-chloroethoxy)-
U078	75-35-4	Ethene,1,1-dichloro-
U079	156-60-5	Ethene,1,2-dichloro-, (E)-
U210	127-18-4	Ethene,tetrachloro-
U228	79-01-6	Ethene,trichloro-
U112	141-78-6	Ethylacetate (I)
U113	140-88-5	Ethylacrylate (I)
U238	51-79-6	Ethylcarbamate (urethane)
U117	60-29-7	Ethylether (I)

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U114	(1)111-54-6	Ethylenebisdithiocarbamic acid,salts & esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether
U115	75-21-8	Ethylene oxide (I,T)
U116	96-45-7	Ethylene thiourea
U076	75-34-3	Ethylidene dichloride
U118	97-63-2	Ethylmethacrylate
U119	62-50-0	Ethylmethane sulfonate
U120	206-44-0	Fluoranthene
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C,T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2,5-Furandione
U213	109-99-9	Furan,tetrahydro- (I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	Glucopyranose,2-deoxy-2-(3-methyl-3-nitrosoureido)-D
U206	18883-66-4	D-Glucose,2-deoxy-2-[[(methylnitrosoamino)carbonyl]amino]-
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine,N-methyl-N-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R,T)
U086	1615-80-1	Hydrazine,1,2-diethyl-
U098	57-14-7	Hydrazine,1,1-dimethyl-
U099	540-73-8	Hydrazine,1,2-dimethyl-
U109	122-66-7	Hydrazine,1,2-diphenyl-
U134	7664-39-3	Hydrofluoricacid (C,T)
U135	7783-06-4	Hydrogen sulfide
U096	80-15-9	Hydroperoxide,1-methyl-1-phenylethyl-(R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1,2,3-cd]pyrene
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead,bis(acetato-O)tetrahydroxytri

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG
U147	108-31-6	Maleicanhydride
U148	123-33-1	Maleichydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I,T)
U092	124-40-3	Methanamine,N-methyl-(I)
U029	74-83-9	Methane,bromo-
U045	74-87-3	Methane,chloro-(I,T)
U046	107-30-2	Methane,chloromethoxy-
U068	74-95-3	Methane,dibromo-
U080	75-09-2	Methane,dichloro-
U075	75-71-8	Methane,dichlorodifluoro-
U138	74-88-4	Methane,iodo-
U119	62-50-0	Methane sulfonic acid, ethyl ester
U211	56-23-5	Methane,tetrachloro-
U153	74-93-1	Methanethiol (I,T)
U225	75-25-2	Methane,tribromo-
U044	67-66-3	Methane,trichloro-
U121	75-69-4	Methane,trichlorofluoro-
U036	57-74-9	4,7-Methano-1H-indene,1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one,1,1a,3,3a,4,5,5a,5b,6-decachloroctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methyl butadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methylchlorocarbonate (I,T)
U226	71-55-6	Methylchloroform
U157	56-49-5	3-Methyl cholanthrene
U158	101-14-4	4,4-Methylene bis(2-chloroaniline)
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene chloride
U159	78-93-3	Methyl ethyl ketone (MEK) (I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R,T)
U138	74-88-4	Methyliodide
U161	108-10-1	Methyl isobutyl ketone (I)

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U162	80-62-6	Methyl methacrylate (I,T)
U161	108-10-1	4-Methyl-2-pentanone (I)
U164	56-04-2	Methyl thiouracil
U010	50-07-7	MitomycinC
U059	20830-81-3	5,12-Naphthacenedione,8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo hexopyranosyl)oxyl]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-,(8S-cis)-
U167	134-32-7	1-Naphthalenamine
U168	91-59-8	2-Naphthalenamine
U026	494-03-1	Naphthalenamine,N,N'-bis(2-chloroethyl)-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene,2-chloro-
U166	130-15-4	1,4-Naphthalenedione
U236	72-57-1	2,7-Naphthalenedisulfonicacid,3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis (azo)bis[5-amino-4-hydroxy]-, tetrasodium salt
U166	130-15-4	1,4,Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U217	10102-45-1	Nitric acid,thallium(1+)salt
U169	98-95-3	Nitrobenzene (I,T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1,2-Oxathiolane,2,2-dioxide
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine,N,N-bis(2-chloroethyl)tetrahydro-,2-oxide
U115	75-21-8	Oxirane (I,T)
U126	765-34-4	Oxirane carboxyaldehyde
U041	106-89-8	Oxirane,(chloromethyl)-
U182	123-63-7	Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	76-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene(PCNB)See 87-86-5PentachlorophenolF027
U161	108-10-1	Pentanol,4-methyl-
U186	504-60-9	1,3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U048	95-57-8	Phenol,2-chloro-
U039	59-50-7	Phenol,4-chloro-3-methyl-
U081	120-83-2	Phenol,2,4-dichloro-
U082	87-65-0	Phenol,2,6-dichloro-
U089	56-53-1	Phenol,4,4'-(1,2-diethyl-1,2-ethenediyl) bis-,(E)-
U101	105-67-9	Phenol,2,4-dimethyl-
U052	1319-77-3	Phenol, methyl-
U132	70-30-4	Phenol,2,2'-methylenebis[3,4,6-trichloro-
U170	100-02-7	Phenol,4-nitro-See 87-86-5Phenol,pentachloro-F027 See58-90-2Phenol,2,3,4,6-tetrachloro-F027 See 88-06-2Phenol,2,4,6-trichloro-F027
U150	148-82-3	L-Phenylalanine,4-[bis(2-chloroethyl)amino]-
U145	7446-27-7	Phosphoric acid, lead (2+) salt(2:3)
U087	3288-58-2	Phosphorodithioic acid,0,0-diethylS-methylester
U189	1314-80-3	Phosphorus sulfide (R)
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Piperidine,1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I,T)
U111	621-64-7	1-Propanamine,N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine,N-propyl-(I)
U066	96-12-8	Propane,1,2-dibromo-3-chloro-
U083	78-87-5	Propane,1,2-dichloro-
U149	109-77-3	Propane dinitrile
U171	79-46-9	Propane,2-nitro-(I,T)
U027	39638-32-9	Propane,2,2'oxybis[2-chloro-
U193	1120-71-4	1,3-Propanesultone See93-72-1Propanoicacid,2-(2,4,5-F027 trichlorophenoxy)-
U235	126-72-7	1-Propanol,2,3-dibromo-,phosphate(3:1)
U140	78-83-1	1-Propanol,2-methyl-(I,T)
U002	67-64-1	2-Propanone (I)
U007	79-06-1	2-Propenamide
U084	542-75-6	1-Propene,1,3-dichloro-
U243	1888-71-7	1-Propene,1,1,2,3,3,3-hexachloro-
U009	107-13-1	2-Propene nitrile
U152	126-98-7	2-Propene nitrile,2-methyl-(I,T)
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid,ethylester (I)
U118	97-63-2	2-Propenoic acid,2-methyl-,ethylester
U162	80-66-2	2-Propenoic acid,2-methyl-,methylester (I,T)
U194	107-10-8	n-Propylamine (I,T)
U083	78-87-5	Propylene dichloride
U148	123-33-1	3,6-Pyridazinedione,1,2-dihydro-
U196	110-86-1	Pyridine

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U191	109-06-8	Pyridine,2-methyl-
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione,5-[bis(2-chloroethyl)amino]-
U164	56-04-2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine,1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol
U202	(1)81-07-2	Saccharin, and salts
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7488-56-4	Selenium sulfide
U015	115-02-6	L-Serine,diazoacetate (ester) See93-72-1Silvex(2,4,5-TP)F027
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid, dimethyl ester
U189	1314-80-3	Sulfurphosphide (R) See93-76-52,4,5-TF027
U207	95-94-3	1,2,4,5-Tetrachlorobenzene
U208	630-20-6	1,1,1,2-Tetrachloroethane
U209	79-34-5	1,1,2,2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene (see58-90-22,3,4,6-Tetrachlorophenol F027)
U213	109-99-9	Tetrahydrofuran (I)
U214	563-68-8	Thallium (I) acetate
U215	6533-73-9	Thallium (I) carbonate
U216	7791-12-0	Thallium (I) chloride
U216	7791-12-0	Thallium chlorideTlcl
U217	10102-45-1	Thallium (I) nitrate
U218	62-55-5	Thioacetamide
U153	74-93-1	Thiomethanol (I,T)
U244	137-26-8	Thioperoxydicarbonicdiamide [(H(2)N)C(S)](2)S(2)tetramethyl-
U219	62-56-6	Thiourea
U244	137-26-8	Thiram
U220	108-88-3	Toluene
U221	25376-45-8	Toluene diamine
U223	26471-62-5	Toluene diisocyanate (R,T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U011	61-82-5	1H-1,2,4-Triazol-3-amine
U227	79-00-5	1,1,2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane See 95-95-42,4,5-Trichlorophenol F027 See 88-06-22,4,6-Trichlorophenol F027
U234	99-35-4	1,3,5-Trinitrobenzene (R,T)
U182	123-63-7	1,3,5-Trioxane,2,4,6-trimethyl-
U235	126-72-7	Tris(2,3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue

Hazardous Waste "U" List		
HW No.	**CAS No.**	**Substance**
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea,N-ethyl-N-nitroso-
U177	684-93-5	Urea,N-methyl-N-nitroso
U043	75-01-4	Vinyl chloride
U248	(1)81-81-2	Warfarin,when present at concentrations of 0.3% or less
U239	1330-20-7	Xylene (1)
U200	50-55-5	Yohimban-16-carboxylicacid,11,17-dimethoxy-18-[(3,4,5-tri-methoxybenzoyl)oxy]-,methy lester,(3 beta,16 beta,17 alpha,18 beta,20 alpha)-
U249	1314-84-7	Zinc phosphide,Zn(3)P(2),when present at concentrations of 10% or less.

APPENDIX 8:
USED OIL PROGRAM

USED OIL PROGRAM

I. INTRODUCTION

The Environmental Protection Agency's regulatory definition of used oil is as follows: Used oil is any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities. Simply put, used oil is exactly what its name implies--any petroleum-based or synthetic oil that has been used. During normal use, impurities such as dirt, metal scrapings, water or chemicals can get mixed in with the oil, so that in time the oil no longer performs well. Eventually, this used oil must be replaced with virgin or re-refined oil to do the job at hand EPA's used oil management standards include a three-pronged approach to determine if a substance meets the definition of used oil. To meet EPA's definition of used oil, a substance must meet each of the following three criteria:

- **Origin** — the first criterion for identifying used oil is based on the origin of the oil. Used oil must have been refined from crude oil or made from synthetic materials. Animal and vegetable oils are excluded from EPA's definition of used oil.

- **Use** — the second criterion is based on whether and how the oil is used. Oils used as lubricants, hydraulic fluids, heat transfer fluids, buoyants and for other similar purposes are considered used oil. Unused oil such as bottom clean-out waste from virgin fuel oil storage tanks or virgin fuel oil recovered from a spill; do not meet EPA's definition of used oil because these oils have never been "used." EPA's definition also excludes products used as cleaning agents or solely for their solvent properties, as well as certain petroleum-derived products like antifreeze and kerosene.

- **Contaminants** — the third criterion is based on whether or not the oil is contaminated with either physical or chemical impurities. In other words, to meet EPA's definition, used oil must become contaminated as a result of being used. This aspect of EPA's definition includes residues and contaminants generated from handling, storing and processing used oil. Physical contaminants could include metal shavings, sawdust or dirt. Chemical contaminants could include solvents, halogens or saltwater.

II. SCOPE

This program applies to all departments that collect, segregate, store or dispose of 55-gallon drums or less of used oil on campus. Anything greater than 55 gallons will be managed in the Vehicle Maintenance Office in Facilities Management. The campus must have at least one designated storage site. Steve Selby will manage the campus used oil program. He can be contacted at 812 465–1659.

III. RESPONSIBILITIES

Generators are responsible for managing used oil collection/storage areas and are solely responsible for all materials placed within their storage container. The generator will control what is placed in their used oil collection units and designate a single person who is ultimately responsible for managing the area. This designated person is ultimately responsible to ensure that container/tanks are not filled beyond capacity resulting in a spill situation. Additional containers, such as drums, should be used if additional capacity is necessary.
Generators are responsible for ensuring that halogenated hydrocarbons and hazardous wastes are not mixed with used oil. The Used Oil Recycling and Disposal program is not to be used for the disposition of anything other than used oil as defined by this policy.

IV. STANDARDS FOR THE MANAGEMENT OF USED OIL

The Environmental Protection Agency (EPA) has developed Standards for the Management of Used Oil. A used oil generator is any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject regulations. The use of used oil as a dust suppressant is prohibited,

V. ACCEPTABLE MATERIALS

Some shops might be tempted to use the used oil tank for all kinds of liquid waste…don’t do it! Always use separate containers for collecting used oil and used antifreeze. Don’t turn the used oil tank into

hazardous waste through careless mixing. The following are acceptable materials that can be recycled through US Filter and Recovery:

- Motor Oil
- Automatic Transmission Fluid
- Power Steering Fluid
- Diesel Fuel
- Gear Oil
- Turbine Engine Oil
- Hydraulic Oil
- Fuel Oil
- Kerosene (#2, #4, & #6)

VI. MIXTURES OF USED OIL AND HAZARDOUS WASTE

Used oil containing greater than one thousand parts per million (1,000 ppm) total halogens is presumed to be a hazardous waste and must be managed as hazardous waste and not used oil. The city of Evansville presumes that used oils removed from refrigeration units contains greater than 1,000 ppm and must be managed in accordance with the hazardous waste requirements. Any used oil contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units or used oil mixed with contaminated oil must be managed according to the city of Evansville's (Vanderburgh County?) hazardous waste regulations. This includes oil mixed with characteristic and listed hazardous wastes. A brief summary of USI's hazardous waste management requirements is in Section VIII of this program. Some examples of halogenated hydrocarbons are polychlorinated biphenyl (PCB) oils, FREON (Refrigerant oils or solvents), perchloroethylene (Solvent), trichloroethylene (Solvent), trichloroethane (Solvent), trichorotrifluoroethane (Solvent), chloroform and carbon tetrachloride.

USI may rebut the above presumption for metalworking oils/fluids no matter what their composition or how they are recycled or disposed. In order to rebut the presumption, analytical methods from SW-846, Edition III, must be conducted to show that the used oil does not contain significant concentration of halogenated hazardous constituents.

VII. USED OIL RECYCLING REQUIREMENTS

Once oil can no longer be used, proceed with the following:

1. Place all used oil in the designated storage areas. Storage sites must be approved through the Office of Risk Management.
2. Storage area must be identified with an easily readable sign stating "USED OIL S**TORAGE AREA**". Refer to **APPENDIX A**.
3. Label each container as "USED OIL." Labels can be obtained from the Office of Risk Management (812 465-7003). Refer to **APPENDIX B**.
4. Contain any container that shows evidence of leakage, spillage or damage.
5. Conduct a visual weekly inspection of the used oil storage area. Look for items listed in this section of this program.
6. Containers used to store used oil will comply with the following, according to the regulations:

    - Be in good condition (no severe rusting, apparent structural defects or deterioration);
    - Not leak (no visible leaks);
    - Have secondary containment;
    - Always be closed except when in use; and
    - Not be opened, handled or stored in a manner that may rupture the container or cause it to leak.

VIII. HAZARDOUS WASTE MANAGEMENT

1. Used oils that are identified as a hazardous waste and cannot be recycled in accordance with this program will be managed in accordance with hazardous waste management requirements
2. Hazardous waste should be placed in the designated drum in the lamp storage area.
3. Label the container as “Hazardous Waste”. Refer to **APPENDIX C**.
4. Store hazardous waste for no longer than 90 days from the date waste is first placed in a container. *Contact Risk Management before the 90-day expiration date to ensure that waste is off-site by the 90th day. Anything stored over 90 days places USI into a different and more stringent regulatory classification.*
5. Ensure the container is “closed” except when adding waste.
6. Storage area must be identified with an easily readable sign stating “**DANGER** -**HAZARDOUS WASTE STORAGE AREA UNAUTHORIZED PERSONNEL KEEP OUT**”. Refer to **APPENDIX D**.
7. Inspect hazardous waste container storage area at least weekly and maintain a log of all inspections.
8. Ensure communication equipment and emergency equipment are available where hazardous wastes are managed.

IX. PICK-UP/COLLECTION REQUESTS

When pick-up/collection service is needed, contact the Office of Risk Management (465-7003) or via e-mail at jhunt@usi.edu to submit a request.

X. EMERGENCY RESPONSE FOR USED OIL SPILLS

Upon detection of a release of used oil to the environment, USI personnel will conduct the following:

- Stop the release;
- Contain the released used oil;
- Contact the Energy and Environmental Management Office;
- Clean up and manage properly the released used oil and other materials; and
- If necessary, repair or replace any leaking used oil storage containers before returning them to service.

XI. TRAINING

The USI Office of Risk Management will provide training for the management of used oil to all employees who generate, store and dispose of used oil upon initial employment and when changes in regulations occur. This training is documented and maintained in the Office of Risk Management. Only employees that have attended the training session will be permitted to manage used oil. Please contact the Office of Risk Management to schedule a training date. A**PPENDIX E** will be used to track training attendance.

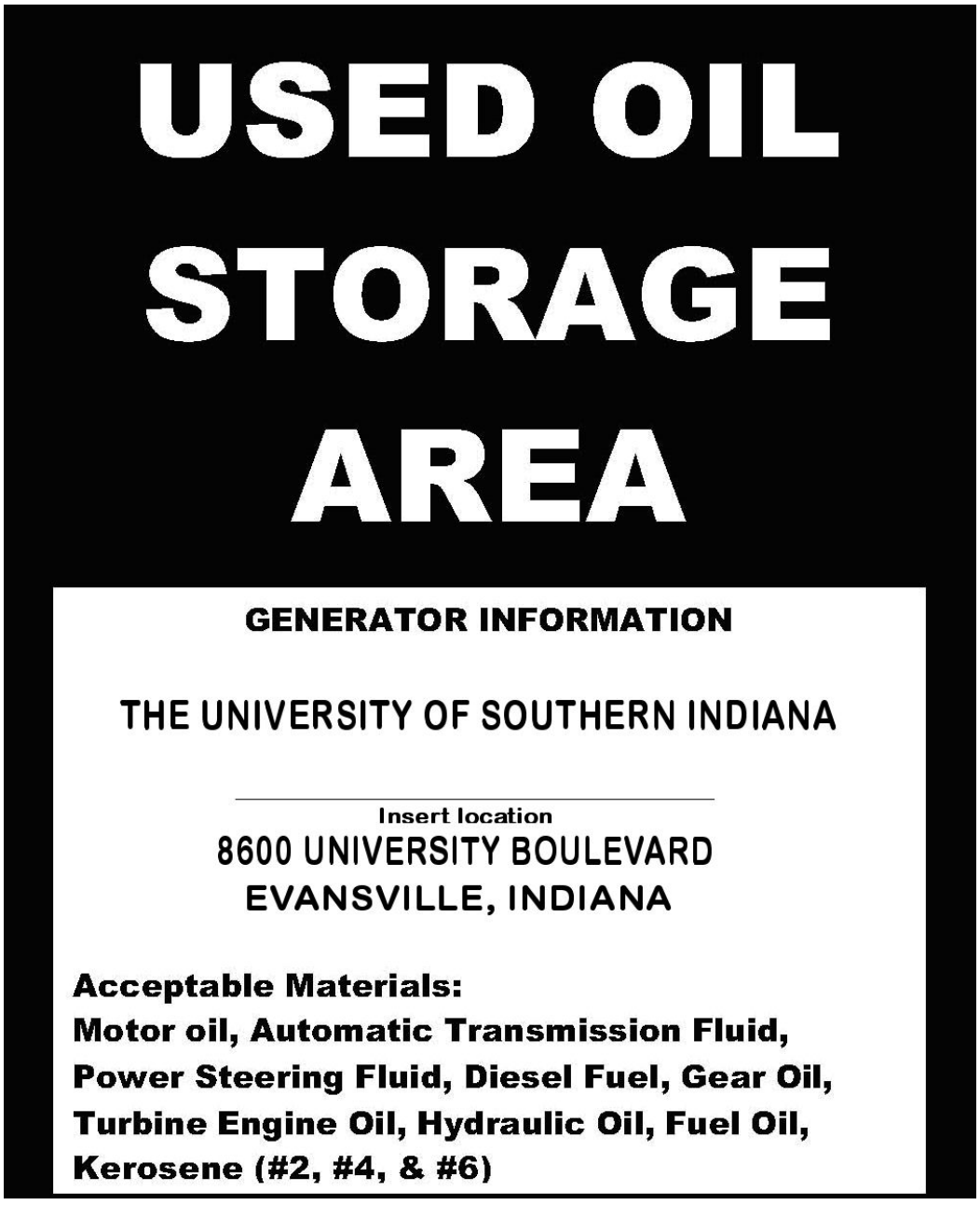
XII. CONTRACTOR’S RESPONSIBILITIES

Third-Party Building Management
Third-party building management companies must present to the Office of Risk Management a copy of their Used Oil Program. In the event that a program does not exist or does not fulfill the requirements of the regulations, the third-party building management company will adhere to USI’s Used Oil Program.

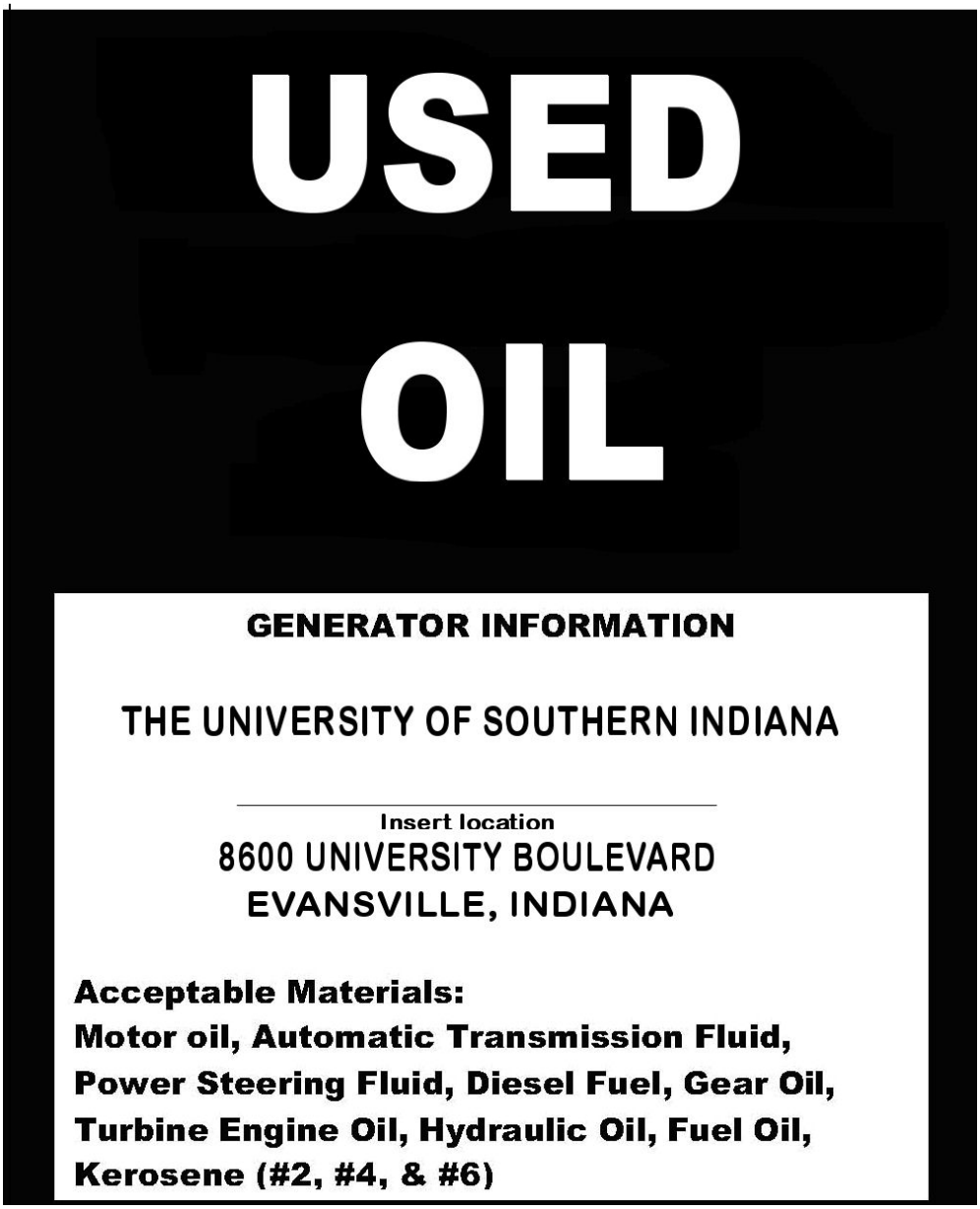
XIII. REFERENCES

A. 20 DCMR Part 49, Standards for the Management of Used Oil.
B. 20 DCMR Parts 40 through 54, Solid Wastes.
C. 40 CFR Part 279, Standards for the Management of Used Oil.
D. 40 CFR Parts 262 – 264, 266, Solid Wastes.

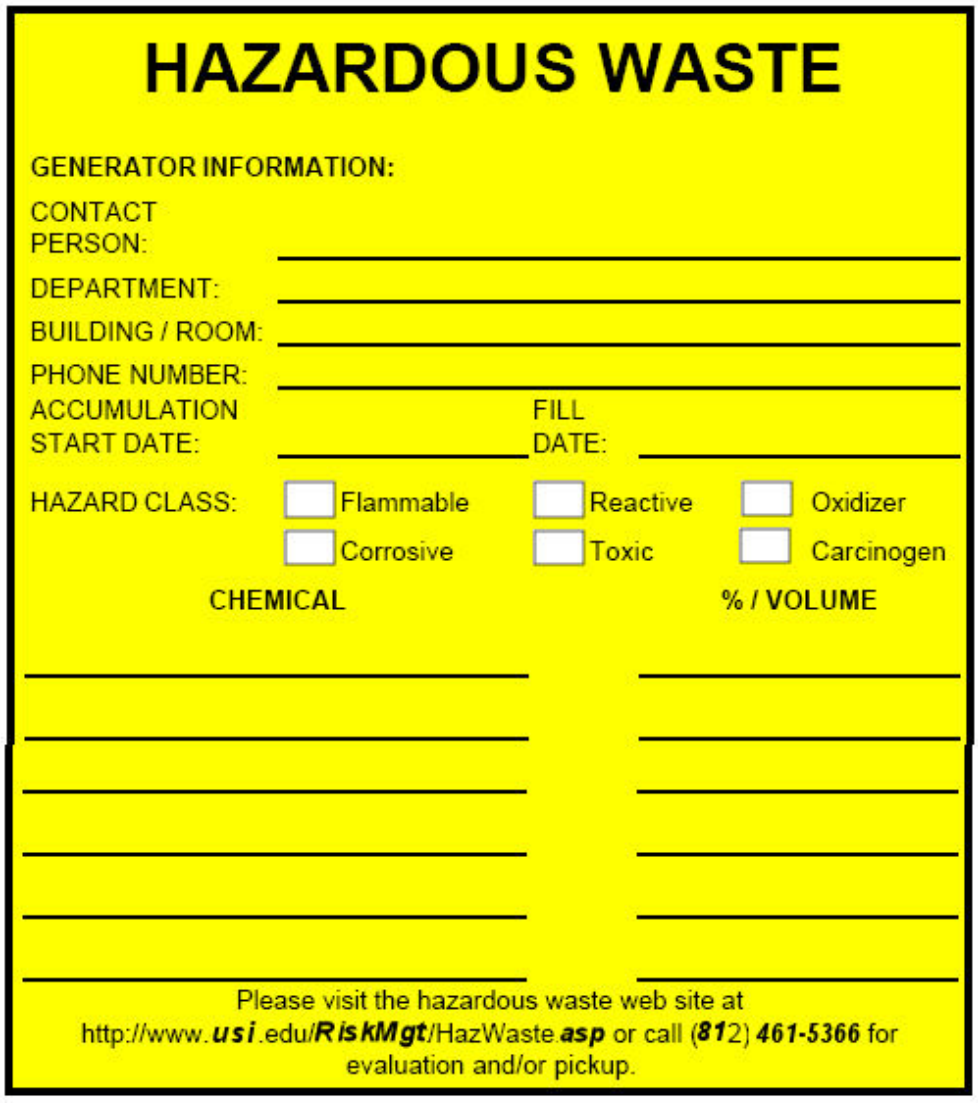
APPENDIX A
Used Oil Storage Area Sign



APPENDIX B
Used Oil Stickers



APPENDIX C
Hazardous Waste Label



HAZARDOUS WASTE

GENERATOR INFORMATION:

CONTACT PERSON: _____

DEPARTMENT: _____

BUILDING / ROOM: _____

PHONE NUMBER: _____

ACCUMULATION START DATE: _____ FILL DATE: _____

HAZARD CLASS: ☐ Flammable ☐ Reactive ☐ Oxidizer ☐ Corrosive ☐ Toxic ☐ Carcinogen

CHEMICAL	% / VOLUME

Please visit the hazardous waste web site at http://www.usi.edu/RiskMgt/HazWaste.asp or call (812) 461-5366 for evaluation and/or pickup.

:

APPENDIX D
Hazardous Waste Storage Area Sign

HAZARDOUS WASTE STORAGE AREA

UNAUTHORIZED PERSONNEL KEEP OUT

To dispose of hazardous waste submit Removal Request to
http://www.usi.edu/RiskMgt/HazMaterials.asp
In case of emergency call Security (7777 or 812 464-1845) and
Risk Management (812 461-5366)

APPENDIX E
Training Attendance Sheet
Used Oil Recycling and Disposal Training

Name (Please Print)	Department	Job Title	Job Description

APPENDIX 9:
MERCURY-CONTAINING LAMP PROGRAM

THE UNIVERSITY OF SOUTHERN INDIANA
MERCURY-CONTAINING LAMP PROGRAM

I. INTRODUCTION

Much of the indoor and outdoor lighting at The University of Southern Indiana comes from fluorescent and high-intensity-discharge lamps, also known as mercury-containing lamps. For purpose of this program, mercury-containing lamps will include all fluorescent and high-intensity discharge lights, bulbs, tubes and lamps. When the lamps burn out they must be handled in accordance with applicable disposal requirements.

II. SCOPE

This program covers all buildings on campus. Mercury-containing tubes will not be transported from one building to the other. The campus must have at least one designated storage site.

III. PERSONAL PROTECTIVE EQUIPMENT REQUIRED

A. USI Employees

The Office of Risk Management performs annual hazard assessments for determination of hazardous conditions. A written assessment is generated, which certifies workplace evaluation; the person certifying that the evaluation has been performed and the date(s) of the hazard assessment. If a hazardous condition exist, which cannot be avoided or engineered out by engineering controls, proper PPE will be selected. It is a departmental responsibility to provide a safe working environment including the necessary PPE.

Based on the hazard assessment for placing mercury-containing lamps in the appropriate boxes, the following PPE is required to be used to perform the task. Refer to **APPENDIX F** for the hazard assessment.

- Full Face Shield (29 CFR 1910.133 – “Eye and Face Protection”)
- Leather Gloves (29 CFR 1910.138 – “Hand Protection”)

B. Contractors, Sub-Contractors, or any employee of such contracted companies performing work on The University of Southern Indiana campus

The contractor shall provide their employees with personal protective equipment in accordance with all federal and local safety and health regulations.

IV. REGULATIONS REGARDING MERCURY-CONTAINING LAMPS

Since the city of Evansville adopted the Universal Waste Rule, there are two options for managing mercury-containing lamps under the regulations. The first option is to manage these lamps as a hazardous waste. The second option is to manage used lamps under the Universal Waste Rule. The campus has chosen to manage used lamps as universal waste. However, if a lamp breaks, then it must be managed in accordance with the hazardous waste regulations.

V. MERCURY-CONTAINING LAMP REQUIREMENTS

Once mercury-containing lamps have been removed from service proceed with the following:

1. Place all mercury-containing lamps in the designated storage areas.

- a.
- b.
-

1. Storage area must be identified with an easily readable sign stating "**WASTE MERCURY-CONTAINING LAMP STORAGE**." Refer to **APPENDIX A**.
2. Label each box as "**Waste Mercury-Containing Lamps**." Labels can be obtained from the Office of Risk Management (812 465-7003). Refer to **APPENDIX B**.
3. Label each box with the accumulation start date (the date the first waste lamp is placed into the box). Refer to **APPENDIX B**.
4. Store for no longer than one year from the accumulation start date.
5. At any given time, universal wastes (i.e., batteries, pesticides, thermostats, or mercury-containing lamps, calculated collectively) will not exceed the 1000-kilogram (kg) storage limit established by the City of Evansville
6. Contain any lamp that shows evidence of leakage, spillage or damage. The container must be closed, structurally sound and compatible with the contents of the lamps.
7. Stack boxes of lamps five feet in height or less.
   9. Conduct a weekly inspection of the lamp storage area and document on the inspection log (**APPENDIX C**). The inspection log should contain check marks by the items listed, inspector's name, date, and time of inspection.
8. Please submit a copy of the inspection log every 16 weeks to the Office of Risk Management (Support Services Building, ATTN: John Hunt). Maintain the storage location copies of the inspection logs for a minimum of two years to document weekly inspections. These copies should remain at the storage location.

9. Shipments of unbroken lamps must be accompanied by a Bill of Lading. Please send a copy of the Bill of Lading to the Office of Risk Management.

VI. HAZARDOUS WASTE MANAGEMENT

In the event that a mercury-containing lamp breaks, the material must be managed as hazardous waste.

1 Hazardous waste should be placed in the designated drum in the lamp storage area.
2 Label the container as "Hazardous Waste." Refer to **APPENDIX D**.
3 Store hazardous waste for no longer than 90 days from the date waste is first placed in a container.
4 Ensure the container is "closed" except when adding waste.
5 Storage area must be identified with an easily readable sign stating "**DANGER** -**HAZARDOUS WASTE STORAGE AREA UNAUTHORIZED PERSONNEL KEEP OUT**." Refer to **APPENDIX E**.
6 Inspect hazardous waste container storage area at least weekly and maintain a log of all inspections.
Ensure communication equipment and emergency equipment is available where hazardous wastes are managed.

IX. CONTRACTOR'S RESPONSIBILITIES

A. Renovation / Demolition Projects

All designated project areas that include mercury-containing lamps that have been removed from service must be managed under USI's Mercury-Containing Lamp program. Once lamps are removed from service, the contract Supervisor (or designated representative) will contact Supervisor, Material, Equipment and Storeroom at 465-7098 and request for lamp removal. FM will take the tubes to USI's designated Waste Mercury-Containing Lamp storage area.

Lamps should not remain on project sites for greater than one day. If lamps remain on project site for greater than one day, the site must be managed in accordance to Section V and in the event of a broken bulb Section VI.

B. Third-Party Building Management

Third-party building management companies must present to the Office of Risk Management a copy of their Mercury-Containing Lamp Program and training documentation for affected employees. In the event that a program does not exist or does not fulfill the requirements of the regulations, the third-party building management company will adhere to USI's Mercury-Containing Lamp Program.

X. REFERENCES

A. 20 DCMR Part 48 (incorporated by reference 40 CFR Part 273), Standards for Universal Waste Management

B. 20 DCMR Parts 40 through 54 (incorporated by reference 40 CFR Parts 262 – 264, 266), Solid Wastes.

C. 29 CFR 1910.133, Eye and Face Protection.

D. 29 CFR 1910.138, Hand Protection.

VII. ORDERING SUPPLIES AND SCHEDULING PICKUPS

These boxes come in three sizes, 2 feet by 3 feet long (2'X3'), 4 feet long (4'), and 8 feet long (8'). Departments must order the appropriate size for the used lamps they are managing. High-intensity-discharge lamps and other odd sizes may be placed in any of the above-mentioned boxes. However, U-shaped lamps should be placed in a separate box from the regular tubes and lamps. Used lamps should remain unbroken in order to contain the hazardous mercury found in these lamps.

To order supplies or schedule a pick up, contact the Supervisor, Material, Equipment and Storeroom in Support Services Services Building at 812 465-7098. The Custodial Service Supervisor and employees will fill the recycle containers in the (10) designated buildings and then transport them to Distribution Services for storage and then palletize for shipment to Veolia.

VIII. TRAINING

USI's Office of Risk Management must provide mercury-containing lamp and hazardous waste management training annually to all employees who handle lamps. This training is documented and maintained in the Office of Risk Management. Only employees that have attended the training session will be permitted to handle mercury-containing lamps. All new employees that will be handling these tubes must attend this training within 30 days of their initial employment date. Please contact the Office of Risk Management to schedule a training date. Refer to **APPENDIX F** for the Mercury-Containing Lamp Training Program. **APPENDIX G** will be used to track training attendance.

APPENDIX A Mercury-Containing Lamp Storage Area Sign

APPENDIX B Waste Mercury-Containing Lamp Stickers

Waste Mercury-Containing Lamps

Accumulation Start Date: _____

APPENDIX C Weekly Inspection Checklist

WASTE MERCURY-CONTAINING LAMP STORAGE AREA INSPECTION CHECKLIST Each week inspect the waste mercury-containing lamp storage area, checking off the inspection items. Completed checklists should be sent to the Office of Risk Management (Support Building, 101). Copies of checklist should be retained in the plastic sleeve.

INSPECTION ITEMS	WEEKLY INSPECTION CHECK															
	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12	WEEK 13	WEEK 14	WEEK 15	WEEK 16
All containers marked as "WASTE MERCURY-CONTAINING LAMPS "																
Accumulation start date recorded on label																
Containers have not been stored longer than one year																
All full boxes are sealed with tape around the box openings																
Boxes and lamps are free from leakage, spillage or damage																
Boxes are not stacked greater than 5 feet high																
All labels visible and legible																
Inspector's Name																
Date of Inspection																

Anyone completing this form and all employees occupationally exposed to waste mercury-containing lamps are required to attend training offered through USI's Office of Risk Management. To inquire about this course, please call 465-7003.

APPENDIX D Hazardous Waste Label

HAZARDOUS WASTE

GENERATOR INFORMATION:

CONTACT PERSON: _____

DEPARTMENT: _____

BUILDING / ROOM: _____

PHONE NUMBER: _____

ACCUMULATION START DATE: _____ FILL DATE: _____

HAZARD CLASS: ☐ Flammable ☐ Reactive ☐ Oxidizer ☐ Corrosive ☐ Toxic ☐ Carcinogen

CHEMICAL	% / VOLUME

Please visit the hazardous waste web site at http://www.usi.edu/RiskMgt/HazWaste.asp or call (812) 461-5366 for evaluation and/or pickup.

APPENDIX E Hazardous Waste
Storage Area Sign

HAZARDOUS WASTE STORAGE AREA

UNAUTHORIZED PERSONNEL KEEP OUT

To dispose of hazardous waste submit Removal Request to
http://www.usi.edu/Riskmgt/HazMaterials.asp

In case of emergency call Security (7777 or 812 464-1845) and
Risk Management (812 465-7003)

APPENDIX F

The University of Southern Indiana Hazard
Assessment & PPE Selection Form

Job Task Evaluated: Handling Mercury-Containing Lamps Date: October 15, 2005
Evaluator: John Hunt

Eye/Face Hazard	Yes/No	Task/Source	Assessment of Hazard	Personal Protective Equipment
Impact	Yes	Placing lamp into box. Moderate probability of lamp busting as it is being placed into the box for recycling.	Flying glass fragments	Face Shield
Heat	No	N/A	N/A	N/A
Chemical	Yes	Placing lamp into box. Moderate probability of lamp busting as it is being placed into the box for recycling.	Chemical exposure (mercury vapors)	Face Shield
Radiation	No	N/A	N/A	N/A
Light	No	N/A	N/A	N/A
Glare	No	N/A	N/A	N/A

Eye and Face Protection (29 CFR 1910.133)

Head Protection (29 CFR 1910.135)

Head Hazard	Yes/No	Task/Source	Assessment of Hazard	Personal Protective Equipment
Impact	No	N/A	N/A	N/A
Penetration	No	N/A	N/A	N/A
Burn	No	N/A	N/A	N/A
Chemical	No	N/A	N/A	N/A
Electric Shock	No	N/A	N/A	N/A

Foot Protection (29 CFR 1910.136)

Foot Hazard	Yes/No	Task/Source	Assessment of Hazard	Personal Protective Equipment
Impact	No	N/A	N/A	N/A
Chemical	No	N/A	N/A	N/A
Penetration	No	N/A	N/A	N/A

Hand Protection (29 CFR 1910.138)

Hand Hazard	Yes/No	Task/Source	Assessment of Hazard	Personal Protective Equipment
Chemical	Yes	Placing lamp into box. Moderate probability of lamp busting as it is being placed into the box for recycling.	Chemical exposure (mercury vapors)	Leather gloves*
Impact	Yes	Placing lamp into box. Moderate probability of lamp busting as it is being placed into the box for recycling.	Flying glass fragments	Leather gloves*
Penetration	No	N/A	N/A	N/A
Burn	No	N/A	N/A	N/A

* Gloves should not be worn while working on moving machinery such as drills, saws, grinders, or other rotating and moving equipment. Machine parts might catch the glove and pull it and the worker's hand into hazardous areas.

I, _____John Hunt _(Environmental Health & Safety Specialist)_____, certify that the assessment of the job category was conducted on _____October 15, 2005_____.

Contact The Office of Risk Management to schedule Mercury-Containing Lamp Training.

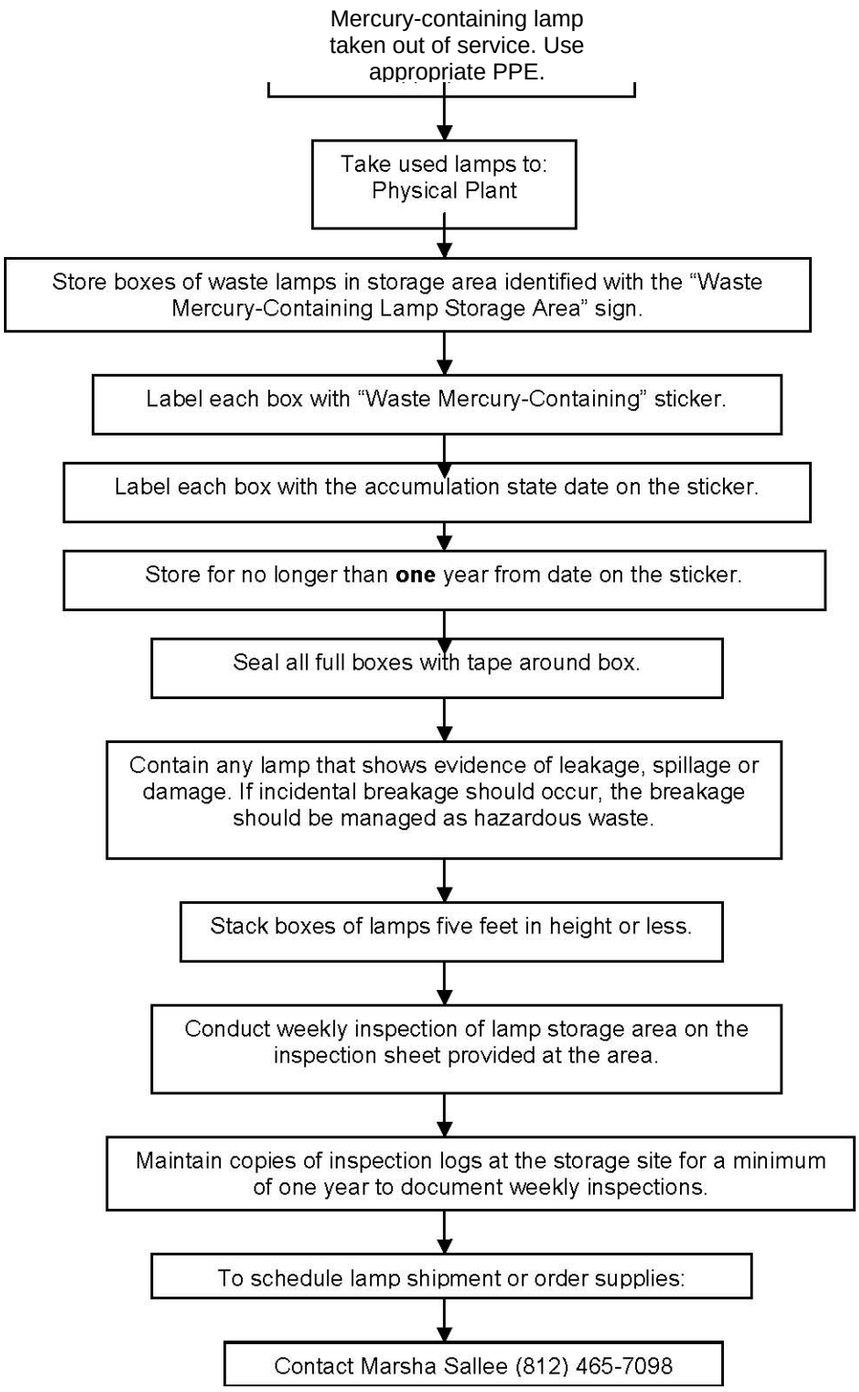
812 465-7003

APPENDIX H Training
Attendance Sheet

Mercury-Containing Lamp / RCRA Training

Name (Please Print)	Department	Job Title	Job Description

APPENDIX I USI Flowchart for Mercury-Containing Lamps



APPENDIX 10:
BATTERY RECYCLING AND DISPOSAL PROGRAM

The University of Southern Indiana
BATTERY RECYCLING AND DISPOSAL PROGRAM

I. INTRODUCTION

The University of Southern Indiana uses many different kinds of batteries on campus. Determining how to dispose of dead or unwanted batteries can be tricky. This program lists the common types of batteries used and proper disposal methods for each. If you have unwanted batteries not listed in this program, please contact Environmental Health and Safety at 812 461-5393 for disposal instructions.

II. SCOPE

This program covers the all buildings on the campus. Universal waste and hazardous waste items will not be transported from one campus to another.

III. PERSONAL PROTECTIVE EQUIPMENT REQUIRED

A. USI Employees

Environmental Health and Safety performs annual hazard assessments for determination of hazardous conditions. A written assessment is generated, which certifies workplace evaluation; the person certifying that the evaluation has been performed; and the date(s) of the hazard assessment. If a hazardous condition exists, which cannot be avoided or engineered out by engineering controls, proper PPE will be selected. It is a departmental responsibility to provide a safe working environment, including the necessary PPE.

Based on the hazard assessment for handling used batteries containing hazardous material (i.e., mercury, cadmium, lead, silver and zinc), the following PPE is required to perform the task. Refer to **APPENDIX F** for the hazard assessment.

Leather Gloves (29 CFR 1910.138 – “Hand Protection”)
Safety Goggles (29 CFR 1910.133 – “Eye and Face Protection”)

B. Contractors, Sub-Contractors or any employee of such contracted companies performing work on The University of Southern Indiana campus

The contractor shall provide their employees with personal protective equipment in accordance with all federal and local safety and health regulations.

IV. REGULATIONS REGARDING UNIVERSAL WASTE

Used batteries containing hazardous material (i.e., mercury, cadmium, lead, silver and zinc) are classified as *universal waste* rather than hazardous waste. This allows The University of Southern Indiana to recycle the batteries, while continuing to ensure that the batteries are handled in an environmentally sound manner.

V. TYPES OF BATTERIES AND DISPOSAL PROCEDURES

A. Alkaline Batteries:

Alkaline batteries are commonly referred to as disposable or non-rechargeable batteries. They are often used in flashlights and some electronic equipment. They usually come in sizes such as AAA, AA, C, D and 9-volt. Alkaline batteries are non-hazardous and can be placed in the regular trash; however, in an effort to become **environmentally friendly** you may choose to

collect these batteries in a 1-gallon container for recycling purposes. The container can be obtained by contacting Environmental Health and Safety at 812 461-5393. Once the container is full, contact Environmental Health and Safety to schedule a pick up.

B. Nickel-Cadmium (ni-cad) Batteries:

Ni-cad batteries are the most common type of rechargeable battery. These are often found in cellular phones and some equipment. They also come in standard sizes such as AA, but often come in widely assorted sizes and shapes. Most equipment that comes with a recharger probably uses ni-cad batteries. Some rechargeable batteries are **lead-gel batteries**. Handle these batteries the same as ni-cad batteries.

Ni-cad batteries are composed of nickel oxide, cadmium compounds and use potassium hydroxide as an electrolyte. If not recycled, ni-cad batteries must be handled as hazardous waste. When you buy a new ni-cad battery, ask the point of purchase to take your old battery. If the company supplying the new battery will not accept the old ones, label the battery as “used battery”, place the date on the label and contact Environmental Health and Safety, as soon as possible, at 461-5393 for pick up.

If your area generates a large amount of ni-cad batteries for recycling, follow the relevant guidelines in Section VI for proper management of universal waste according to the city of Evansville regulations.

If used batteries remain in your area for greater than a 24-hour period, then this area must be managed in accordance to the applicable universal waste regulations. Refer to Section VI for the universal waste management procedures.

NOTE: Sometimes rechargeable batteries are built into a machine or tool, such as in rechargeable flashlights. When these items no longer work or hold a charge, the complete unit must be managed as universal waste. Do not attempt to disassemble the equipment. Label the whole unit as “used battery” with the date and contact Environmental Health and Safety for collection (461-5393).

C. Button Batteries:

Button batteries are found in watches, calculators, hearing aids and other small electronic devices. They often contain mercury, silver or lithium and should be returned to the manufacturer when purchasing a new battery. If the manufacturer will not accept the item, label the battery as “used battery,” place the date on the label and contact Environmental Health and Safety as soon as possible for collection (461-5393).

If your area generates a large amount of button batteries for recycling, follow the relevant guidelines in Section VI for proper management of universal waste according to the District of Columbia regulations.

In addition, if used batteries remain in your area for greater than a 24-hour period, then this area must be managed in accordance to the applicable universal waste regulations. Refer to Section VI for the universal waste management procedures.

D. Lead-Acid Batteries:

Lead-acid batteries include most car and motorcycle batteries. These batteries contain regulated amounts of lead and must be recycled. Most often, the manufacturer will accept used lead-acid batteries. However, if the manufacturer will not accept the trade-in, label the battery as “used battery”, place the date on the label and contact Environmental Health and Safety as soon as possible at 461-5393 for pick up.

If your area generates a large amount of lead-acid batteries for recycling, follow the relevant guidelines in Section VI for proper management of universal waste according to the city of Evansville regulations.

If used batteries remain in your area for greater than a 24-hour period, then this area must be managed in accordance to the applicable universal waste regulations. Refer to Section VI for the universal waste management procedures.

E. Damaged or Leaking Batteries:

If used batteries containing hazardous material (i.e., mercury, cadmium, lead, silver and zinc) show evidence of leakage, spillage or damage that could cause leakage under reasonable foreseeable conditions, then the battery must be managed in accordance to the hazardous waste regulations. Once the battery leak has been contained, contact Environmental Health and Safety for clean-up and proper disposal. Refer to Section VII, Hazardous Waste Management.

VI. UNIVERSAL WASTE REQUIREMENTS FOR USED BATTERIES CONTAINING HAZARDOUS MATERIALS

According to the city of Evansville's Universal Waste regulations, incorporating by reference 40 CFR 273.2 (c), used and unused batteries become waste on the date the handler decides to discard it. USI will manage universal waste batteries in a way that prevents releases of any universal waste or component of universal waste to the environment. The following items describe how used batteries will be managed:

1. Place all used batteries containing hazardous material (i.e., mercury, cadmium, lead, silver and zinc) in the designated storage areas.

a.
b.
c.

2. Used battery storage areas must be identified with an easily readable sign stating "**WASTE BATTERY STORAGE**". Refer to **APPENDIX A**.

3. Label each battery or container in which the batteries are contained as "**USED BATTERY.**" Labels can be obtained from Environmental Health and Safety. Refer to **APPENDIX B**.
4. Label each battery or container in which the batteries are placed with the accumulation start date.
   - Individual battery - the date the handler decided to discard the battery.
   - Containers of batteries -the date the first battery is placed into the box. Refer to **APPENDIX B**
5. Store for no longer than one year from the accumulation start date.
6 At any given time, universal wastes (i.e., batteries, pesticides, thermostats or mercury-containing lamps, calculated collectively) will not exceed the 1000-kilogram (kg) storage limit established by the city of Evansville (20 DCMR 4801.2 (c)).
7. Contain any battery that shows evidence of leakage, spillage or damage. The container must be closed, structurally sound and compatible with the contents of the battery(ies). Do not package damaged batteries with undamaged batteries.
8. Conduct a weekly inspection of the lead-acid battery storage area and document on the inspection log (**APPENDIX C**). The inspection log should contain check marks by the items listed, inspector's name, date and time of inspection.
9. Please submit a copy of the inspection log every 16 weeks to Environmental Health and Safety Administrative Services Annex North, ATTN: Bryan Morrison). Maintain the storage location copies of the inspection logs for a minimum of two years to document weekly inspections. These copies should remain at the storage location.
10. Shipments of intact batteries must be accompanied by a bill of lading. Please send a copy of the bill of lading to Environmental Health and Safety.

VII. HAZARDOUS WASTE MANAGEMENT

In the event that a universal waste battery shows evidence of leakage, spillage or damage, the material

must be managed as hazardous waste.

1. Hazardous waste should be placed in a container that is structurally sound and compatible with the contents of the battery.

2. Label the container as “Hazardous Waste”. Refer to **APPENDIX D**.

3. Store hazardous waste for no longer than 90 days from the date waste is first placed in a container.

4. Ensure the container is “**closed**” except when adding waste.

5. Storage area must be identified with an easily readable sign stating “**DANGER HAZARDOUS WASTE STORAGE AREA UNAUTHORIZED PERSONNEL KEEP OUT**”. Refer to **APPENDIX E**.

6. Inspect hazardous waste container storage area at least weekly and maintain a log of all inspections.

7. Ensure communication equipment and emergency equipment is available where hazardous wastes are managed.

VIII. CONTAINER SUPPLIES

A. Alkaline Batteries:

Environmental Health and Safety will supply one-gallon or smaller containers to collect used batteries for recycling.

B. Used batteries containing hazardous material:

It is the individual department’s responsibility for supplying battery-recycling pallets or secondary containment. These pallets may be purchased from any lab safety supply catalog. Pallets must meet the Environmental Protection Agency’s (EPA) requirements for secondary containment of hazardous materials (40 CFR 264.175). Any questions may be directed to Environmental Health and Safety at 461-5393.

IX. TRAINING

USI’s Office of Environmental Health and Safety must provide battery recycling and hazardous waste management training annually to all employees who handle used batteries containing hazardous materials. This training is documented and maintained in Environmental Health and Safety. Only employees that have attended the training session will be permitted to handle these batteries. All new employees that will be handling batteries with hazardous materials must attend this training within 30 days of their initial employment date. Please contact Environmental Health and Safety to schedule a training date. Refer to **APPENDIX F** for the Battery Recycling and Disposal Training Program. **APPENDIX G** will be used to track training attendance.

X. CONTRACTOR’S RESPONSIBILITIES

A. Third-Party Building Management

Third-party building management companies must present to Environmental Health and Safety a copy of their battery recycling and disposal program and training documentation for affected employees. In the event that a program does not exist or does not fulfill the requirements of the regulations, the third-party building management company will adhere to USI’s battery recycling and disposal program.

XI. REFERENCES

A. 20 DCMR Part 48 (incorporated by reference 40 CFR Part 273), Standards for Universal Waste Management

B. 20 DCMR Parts 40 through 54 (incorporated by reference 40 CFR Parts 262 – 264, 266), Solid Wastes.

C. 29 CFR 1910.133, Eye and Face Protection.

D. 29 CFR 1910.138, Hand Protection.

APPENDIX A
Waste Battery Storage Area Sign

APPENDIX B
Used Battery Sticker

USED BATTERY

Accumulation Start Date:

_____

APPENDIX C
Weekly Inspection Checklist

LEAD-ACID BATTERY STORAGE AREA INSPECTION CHECKLIST

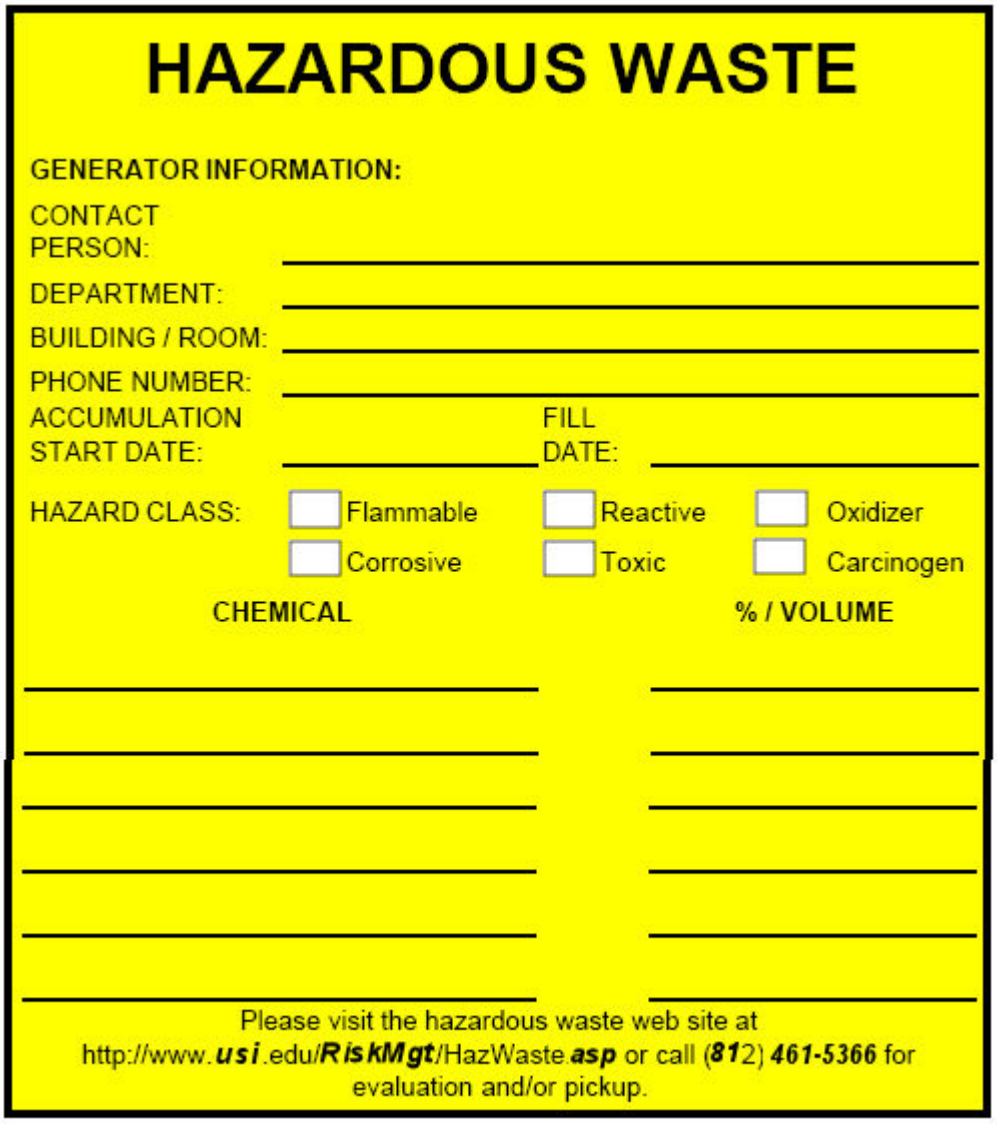
Each week inspect the used battery storage area, checking off the inspection items. Completed checklists should be sent to Environmental Health and Safety (Administrative Services Annex North). Copies of checklist should be retained in the plastic sleeve.

INSPECTION ITEMS	**WEEKLY INSPECTION CHECK**														
All containers marked as "USED BATTERY"	WEEK 1	WEEK 2	WEEK 3	WEEK 4	233K 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12	WEEK 13	WEEK 14	WEEK 15
Accumulation start date recorded on label															
Batteries are free from leakage, spillage or damage															
All labels visible and legible															
Inspector's Name															
Date of Inspection															
Time of Inspection															

Anyone completing this form and all employees occupationally exposed to used batteries containing hazardous materials are required to attend training offered through USI's Environmental Health and Safety. To inquire about this course, please call 461-5393.

APPENDIX D
Hazardous Waste Label

HAZARDOUS WASTE



APPENDIX E
Hazardous Waste Storage Area Sign

HAZARDOUS WASTE STORAGE AREA

UNAUTHORIZED PERSONNEL KEEP OUT

To dispose of hazardous waste submit Removal Request to
http://www.usi.edu/Riskmgt/HazMaterials.asp

In case of emergency call Security (7777 or 812 464-1845) and
Environmental Health and Safety (812 461-5393)

APPENDIX F
The University of Southern Indiana
Hazard Assessment & PPE Selection Form

Job Task Evaluated: Handling Lead-Acid Batteries Date: October 15, 2005
Evaluator: John Hunt

Eye and Face Protection (29 CFR 1910.133)

Eye/Face Hazard	Yes/No	Task/Source	Assessment of Hazard	Personal Protective Equipment
	No	N/A	N/A	N/A
Heat	No	N/A	N/A	N/A
Chemical	Yes	Placing battery onto pallet. Moderate probability of battery leaking as it is being placed onto the pallet for recycling.	Chemical exposure	Goggles
Radiation	No	N/A	N/A	N/A
Light	No	N/A	N/A	N/A
Glare	No	N/A	N/A	N/A

Head Protection (29 CFR 1910.135)

Head Hazard	Yes/No	Task/Source	Assessment of Hazard	Personal Protective Equipment
Impact	No	N/A	N/A	N/A
Penetration	No	N/A	N/A	N/A
Burn	No	N/A	N/A	N/A
Chemical	No	N/A	N/A	N/A
Electric Shock	No	N/A	N/A	N/A

Foot Protection (29 CFR 1910.136)

Foot Hazard	Yes/No	Task/Source	Assessment of Hazard	Personal Protective Equipment
Impact	No	N/A	N/A	N/A
Chemical	No	N/A	N/A	N/A
Penetration	No	N/A	N/A	N/A

Hand Protection (29 CFR 1910.138)

Hand Hazard	Yes/No	Task/Source	Assessment of Hazard	Personal Protective Equipment
Chemical	Yes	Placing battery onto pallet. Moderate probability of battery leaking as it is being placed onto the pallet for recycling.	Chemical exposure	Neoprene or natural rubber gloves*
Impact	No	N/A	N/A	N/A
Penetration	No	N/A	N/A	N/A
Burn	No	N/A	N/A	N/A

* Gloves should not be worn while working on moving machinery such as drills, saws, grinders or other rotating and moving equipment.

Machine parts might catch the glove and pull it and the worker's hand into hazardous areas.
I, John Hunt (Environmental Health & Safety Specialist), certify that the assessment of the job category was conducted on October 15, 2005.

Contact Environmental Health and Safety to schedule Used Battery Training.

461-5393

APPENDIX H
Training Attendance Sheet

Battery Recycling and Disposal Training

Name (Please Print)	Department	Job Title	Job Description

APPENDIX 11:
DISPOSAL PROCEDURES FOR SHARPS, GLASS and BIOHAZARD MATERIALS

APPENDIX 12:
WASTE STORAGE AREA LOCATIONS

APPENDIX 13:
WEEKLY INSPECTION SHEET

Building: _____ Semester / Year: _____

Room #: _____

CHEMICAL WASTE AREA INSPECTION CHECKLIST

Each week inspect waste storage area, checking off the inspection items. Completed checklists should be sent to Environmental Health and Safety, Administrative Services Annex North. Copies of checklist should be retained in the area.

INSPECTION ITEMS	WEEKLY INSPECTION CHECK															
	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12	WEEK 13	WEEK 14	WEEK 15	WEEK 16
Containers marked as "HAZARDOUS WASTE"																
Accumulation start date recorded on all containers																
Containers free from leakage and spillage																
Containers free from rust, bulges and damage																
Containers closed when not adding waste																
Containers compatible with waste																
Incompatible wastes separated																
All labels visible and legible																
Spill kits with appropriate materials on hand																
Number of containers in storage at this site																
Inspector's Name																
Date of Inspection																

Anyone completing this form and all employees occupationally exposed to hazardous waste are required to attend hazardous waste management training offered through USI's Environmental Health and Safety. To inquire about this course, please call 461-5393. If you have questions concerning this form, or other hazardous material concerns, please contact the Environmental Health and Safety at 461-5393.

COMMENTS or CORRECTIVE ACTIONS:

APPENDIX 14:
HAZARDOUS WASTE HANDLER NAMES AND JOB TITLES

LABORATORY SAFETY TRAINING

29 CFR 1910.1450

and HAZARDOUS WASTE MANAGEMENT TRAINING

29 CFR 1910.120

Name (please print)	Department	Job Title	Job Description	Training Date	Trainer

Name (please print)	Department	Job Title	Job Description	Training Date	Trainer

APPENDIX 15:
JOB DESCRIPTIONS FOR HAZARDOUS WASTE HANDLERS

Apprentice Engineer, Plant Operations
To assist in the operation and maintenance of high and low pressure power plant equipment under close supervision.

Assistant Director for Shop Operations, Facilities
Manages the operations and maintenance of University facilities with regard to scheduling normal and emergency maintenance, repairs, alterations and materials control; participates in the development of goals and objectives for the Facilities Management Department.

Building Maintenance Team Supervisor, Facilities
To coordinate, plan, and oversee the scheduling of maintenance and repairs to University buildings and facilities which involves the use of skilled crafts and trades person to execute the Facilities Management Preventive Maintenance, minor repairs and emergency programs; to serve as the primary contact for special assignments as directed by the Supervisor of Building Maintenance; and to participate in maintenance and repair activities, as necessary.

Carpenter, Physical Plant
To perform rough and finished carpentry work in making and repairing items and structures.

Crew Leader, Environmental Services, Physical Plant
To lead, coordinate, and work with crews in housekeeping or linen activities in University buildings.

Crew Leader, Grounds, Physical Plant
To lead and coordinate a crew and to perform skilled work in the maintenance of USI landscaping and grounds.

Driver, Heavy Vehicle, Transportation Section, Physical Plant
To operate, load and unload solid waste or transport equipment with a loaded weight of 10 tons or more.

Driver Helper, Transportation Section, Physical Plant
To move, load, and unload furniture, equipment, and supplies.

Electrician, Physical Plant
To maintain, repair and install electrical systems and equipment.

Energy Management Systems Operator, Plant
To monitor and operate heating, ventilation and air-conditioning equipment through the Energy Management Computer.

Engineer First Class, Plant Operations
To supervise and participate in the operation and preventive maintenance of all heating, cooling and ventilation equipment.

Engineer Third Class, Plant Operations
To operate and perform preventive maintenance on heating and air conditioning equipment.

Foreman, Electrical & Maintenance Svcs, Plant Operations
To supervise and coordinate the installation/maintenance of water/gas facilities and electrical-mechanical life safety equipment within the University.

Foreman, Engineering Operations, Plant Operations
To supervise the operation and maintenance of high and low pressure steam boilers, hot water boilers, air conditioning units and ancillary systems.

Foreman, Housekeeping, Physical Plant
To supervise work of service workers in Housekeeping

Foreman, Painting, Physical Plant
To supervise, assign and assist in painting duties.

Foreman, Trouble Service, Physical Plant
To supervise, plan and assign routine and emergency duties of tradesman on the Trouble Service Crew.

Graduate Research Assistant
To arrange and conduct research laboratory activities.

Graduate Teaching Assistant
To arrange, supervise and conduct undergraduate laboratory activities handling and generating hazardous chemicals.

Groundsperson, Physical Plant
To perform semi-skilled work of a routine nature in the maintenance of University and Medical Center grounds.

Junior Maintenance Mechanic, Physical Plant
To assist in the general repair and maintenance of building operating equipment.

Landscape Gardener / Equipment Operator, Physical Plant
Performs a variety of landscape and turf maintenance duties requiring the use of specialized equipment.

Lead Expeditor, Building Maintenance, Facilities Management
To continuously receive, document and arrange for emergency and minor building maintenance service, and provides functional supervision over other Expeditor positions.

Linen Service Worker, Linen Service
To perform routine, moderately heavy work in sorting and loading clothing and linen supplies before and after laundering.

Locksmith, Physical Plant
To install, maintain and repair physical security hardware.

Maintenance Coordinator, Plant Operations
To inspect, award, and coordinate HVAC maintenance and repair work by outside contractors and to receive, schedule and assign all work tickets.

Maintenance Mechanic, Physical Plant
To perform general repair and maintenance of building operating equipment.

Manager, Facilities Maintenance Program, Physical Plant
To develop facilities inspections and maintenance programs (PM and FIMP) that support the recurring and preventative maintenance to University Facilities and Operating Systems, and to manage the Physical Plant Facilities Maintenance Management Group (FMMG).

Painter, Physical Plant
To prepare surfaces for painting and apply paint.

Plasterer, Physical Plant
To perform maintenance and repair work to walls and other areas by plastering.

Plumber, Physical Plant
To perform installation, maintenance and repair work related to plumbing fixtures, equipment and facilities.

Professor
To teach undergraduate and graduate laboratory courses and to perform research laboratory activities

Senior Carpenter, Physical Plant
To perform rough and finished carpentry work in making and repairing items and structures and to supervise, assign, and assist in carpentry duties on large jobs as directed.

Senior Electrician, Physical Plant
To maintain, repair, and install electrical systems and equipment, and supervise, assign, and assist in large jobs as directed.

Senior Locksmith, Physical Plant
To install, maintain and repair physical security hardware and to supervise, assign and assist in locksmithing duties on large jobs as assigned.

Sr. Maintenance Mechanic, Physical Plant
To supervise and participate in the operation, maintenance and repair of building operating equipment.

Senior Painter, Physical Plant
To prepare surfaces for painting and apply paint, and to supervise, assign and assist in painting duties on large jobs as directed.

Senior Plumber, Physical Plant
To perform installation, maintenance, and repair work related to plumbing fixtures, equipment, and facilities and to supervise and participate in the installation, maintenance and repair of plumbing fixtures, equipment, and facilities on large jobs as assigned.

Senior Service Worker, Physical Plant and Environmental Services
At least 60% of effort assigned to more complicated custodial work in University buildings utilizing specialized equipment and materials. Acts as lead person in small specialized work team tasks as necessary.

Senior Signmaker, Physical Plant
To design, manufacture and install graphic signs of various types throughout University facilities, and to supervise subordinates in the production and installation of graphic signs.

Senior Trades Helper, Physical Plant
To perform under supervision maintenance repair work on buildings in a variety of skilled and semi-skilled tasks.

Service Worker, Physical Plant
To perform routine custodial work in university buildings.

Signmaker, Physical Plant
To design, manufacture and install graphic signs of various types throughout University facilities.

Small Engine Maintenance Mechanic, Physical Plant
To perform preventative maintenance and repair of small gasoline and electric engines.

Special Police Officer I, University Security
To provide basic security and protection over persons and various University buildings within the University of Southern Indiana community, and to receive practical on-the-job and formal training necessary to attain a Special Police Commission from the City of Evansville.

Special Police Officer II, University Security
To provide basic security and protection over persons and various University buildings within the University of Southern Indiana community by enforcing the laws of the City of Evansville and the USI administrative ordinances.

Special Police Officer III, UPD, University Security
To provide basic security and protection over persons and various University buildings within the University of Southern Indiana community by enforcing the laws of the city of Evansville and the USI administrative ordinances, and to provide work leadership over lower level Officers.

Special Police Corporal, UPD, University Security
To provide, and assist in the immediate supervision of the security and protective services over persons and various University buildings and/or property within the University of Southern Indiana Community, by enforcing the laws of the City of Evansville and USI administrative ordinances.

Trades Helper, Physical Plant
To perform under supervision minor maintenance and repair work on buildings and equipment in a variety of semi-skilled tasks.

Water Treatment Technician (One Apprentice Engineer), Plant Operations
To assist in the operation and to perform preventive maintenance on heating and air conditioning equipment.

Window Washer, Facilities
To wash windows throughout the University, which are located in buildings across the main campus.

Safety Manager, Office of Risk Management
To develop, administer and promote the University's safety program, and to assist in implementing and maintaining the University's risk management program.

Senior Occupational / Environmental Health Safety Specialist, Office of Risk Management
To perform various activities to ensure occupational and environmental health and safety within the University and to participate in the development of employee safety orientation and training sessions.

APPENDIX 16:
DEFINITIONS

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").

Chemical Waste Removal Request Form

This form must be completed and submitted before each pick up. It may be accessed via the Internet at http://www.usi.edu/RiskMgt/HazMaterials.asp.

Hazardous Waste

Hazardous wastes are regulated by the Environmental Protection Agency (EPA) through the Resource Conservation and Recovery Act (RCRA), 40 CFR 260-70. Hazardous waste is defined as any waste or combination of waste which because of its quantity, quality, concentration, physical, chemical or infectious characteristics could cause or significantly contribute to adverse effects in the health and safety of humans or the environment if improperly managed. Specific definitions of the general characteristics of hazardous waste are found in 40 CFR 261.2. They include any wastes exhibiting a general characteristic of ignitability 40 CFR 261.21, corrosivity 40 CFR 261.22, reactivity 40 CFR 261.23 or toxicity 40 CFR 261.24 (according to Toxicity Characteristic Leaching Procedure (TCLP) testing). Also included are all wastes specifically listed by the Environmental Protection Agency (EPA) in 40 CFR Part 261, Subpart D as a toxic or acutely toxic hazardous waste or wastes derived from specific or non-specific sources.

Hazardous Waste Label

A specified label that must be attached to each container of hazardous waste. The label has the words "**Hazardous Waste**" displayed and requires the date in which it was determined a hazardous waste in standard English nomenclature.

LD50 (Lethal Dose 50)

The dose that has been determined to be lethal to 50% of the test population.