

THE UNIVERSITY OF MICHIGAN -
FLINT

*Hazardous
Waste
Management
Program*

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*NEVER TAKE CHANCES WHEN IT COMES TO MANAGING HAZARDOUS
MATERIAL AND WASTE. ASK EHS FOR ASSISTANCE.*

ENVIRONMENT, HEALTH AND SAFETY DEPARTMENT (EHS)
766-6763

PUBLIC SAFETY DEPARTMENT
911 from any campus telephone or 762-3335

UM-FLINT HAZARDOUS WASTE MANAGEMENT PROGRAM

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UM-FLINT HAZARDOUS WASTE PROGRAM OVERVIEW

It is imperative that waste that is determined to be hazardous is handled and disposed of correctly. Individuals are prohibited from disposing of hazardous materials in a dumpster, compactor, down a drain, onto the ground or anywhere other than in a manner outlined in this document and referenced documents. **It is the responsibility of each and every employee to ensure that hazardous waste is managed in a safe, responsible and environmentally sound manner as indicated in this document.**

The University of Michigan-Flint Environment, Health and Safety Department (EHS) has developed these guidelines to assist employees that are responsible for properly managing waste materials to comply with University policies as well as comply with state and federal regulations.

EHS is responsible for coordinating the accumulation, transportation, disposal and recycling of hazardous waste at the University of Michigan - Flint. All activities **MUST** be coordinated through the EHS Department.

Questions concerning the identification, packaging, accumulation, handling, storage, labeling, transportation, training, or any other related issues should be directed to the EHS Department at (810) 766-6763. Also refer to the Drug and Laboratory Inc. guidance document.

For **spill emergencies** involving hazardous waste or hazardous materials, please refer to the guidelines established in the UM-Flint Emergency Response Plan (ERP)

Immediately **report any activities or conditions** that may violate these policies and guidelines to Public Safety or EHS.

UM-FLINT WASTE MANAGEMENT POLICY

1. The University of Michigan-Flint is committed to maintaining a safe environment for faculty, staff, students and visitors as well as protecting the environment that we share with the surrounding community.
2. University employees and students are prohibited from disposing of hazardous waste materials in the dumpsters, compactors, down any storm or sanitary drain, on the ground, or arranging for transportation and/or disposal of products with an unauthorized environmental contractor.
3. University employees are required to:
 - (a) Report all hazardous material/waste spills to their immediate supervisor,
 - (b) Report all non incidental hazardous material/waste spills to the Department of Public Safety and the Environment, Health and Safety Department,
 - (c) Follow the emergency spill procedures outlined in the UM-Flint Emergency Response Plan, your department's Chemical Hygiene Plan, and as directed in the Hazard Communication Program.
4. Employees who observe activity contrary to the waste management policies of the University must immediately report the activity to the following individuals:
 1. Immediate Supervisor,
 2. UM-Flint, Environment, Health & Safety Dept., and
 3. UM-Flint, Department of Public Safety
5. Only the Environment, Health and Safety Department, or their designee, can approve the destruction/disposal of hazardous material/waste and authorize the use of an environmental contractor for disposal/recycling of hazardous waste materials on the UM-Flint campus.

DEFINITIONS

Waste

A waste is any solid, semi-solid, liquid or contained gaseous material that you no longer use and either recycle, throw away, or store until enough is accumulated to treat or dispose of. Waste material also includes debris from a spill and some broken or leaking containers. Products which are returned to the manufacturer due to a defect are not considered a waste product. In addition, material which is still capable of being used consistent with its intended use and is accordingly used is also not considered a waste.

Hazardous Waste

Preventing the unintended disposal of hazardous waste requires the identification of suspect hazardous waste material prior to disposal. Although hazardous waste characterization confirmation will be completed by the environmental contractor, employees involved in identifying, handling, and otherwise managing hazardous waste materials, spill debris or like material, are required to have a general familiarity and understanding of the characteristics of hazardous waste.

Determining whether a waste meets the regulatory definition of a "hazardous waste" can be complicated. It involves determining whether a the waste is excluded from the regulations, exhibits one or more of the hazardous characteristics described below (ignitability, corrosivity, reactive, or toxic), and or the waste is a listed waste. Flow charts have been developed to assist generators through the waste determination process. Copies of these flow charts as well as a copy of the lists and the section of the regulations defining a hazardous waste are included in the document.

There are three categories of hazardous waste under state and federal law. they are as follows:

1. Listed Waste
 - **"F" and "K" Listed Wastes** are waste materials that are generated from specific processes or sources.

- **"P" and "U" Listed Wastes** are waste from discarded or off specification commercial chemical products. "P" listed wastes are *acutely hazardous* and regulated at 1 kilogram.

The US Environmental Protection Agency has determined acutely hazardous wastes to be very dangerous in small amounts. Acutely hazardous waste are regulated in the same manner as large amounts of hazardous waste. If the University generates more than 1 kilogram (approx. 2.2 pounds) of acutely hazardous wastes in a calendar month or stores more than that amount for any period of time, the University will be subject to all the regulations that apply to generators that generate more than 1000 kilograms of hazardous waste per calendar month.

A list of acutely hazardous waste are published in the state and federal regulations and available by contacting the Environment, Health and Safety Department at 766-6763. Notify EHS if you plan to generate or you have generated more than 1 kilogram (2.2 pounds) of acutely hazardous waste.

2. Characteristic Waste

A product is generally considered to be a characteristic hazardous waste as defined under the regulations if it exhibits one or more of the following characteristics;

1 *IGNITABILITY* - Products that are easily combustible or flammable are considered ignitable. These materials have a flash point of 141 degrees F as determined by either the Pensky Martens Closed Cup Tester specified in ASTM Standard D-93-79 or D-93 80 or as determined by the Setaflash Closed Cup Tester specified in ASTM Standard D-3278-78. Examples of ignitable materials may include, but not be limited to, paint waste, solvents, oxidizers such as pool chemicals, camping fuels, carburetor cleaners, pyrophoric oxidizers and some aerosol cans which use a flammable/combustible propellant (e.g., butane, propane).

2. *CORROSIVITY* - Products that have a pH of 2 or lower or have a pH of 12.5 or greater are considered to be corrosive. These products will dissolve metal and other materials and/or burn the skin. The use of pH indicator paper is not adequate for making the final waste determination. Examples of corrosive material may include, but not be limited to, waste rust removers, waste acid or alkaline, cleaning fluids, waste battery acid involved in a spill (non-leaking lead acid batteries are exempt as a

hazardous waste if recycled), drain cleaner, concrete cleaner, and some selected pool chemicals (i.e. muratic acid).

3. *REACTIVITY* - Waste products which exhibit the characteristic of reactivity are not stable under standard room temperature and pressure or react violently with water or other materials forming dangerous vapors or gases which may be harmful to human health. Examples would include, but not be limited to, chlorine compounds, organic peroxides and some pool chemical supplies.

4. *TOXICITY* A waste product exhibits the toxicity characteristic if after completing the analytical test Method 1311, the toxicity characteristic leaching procedure (TCLP) demonstrates that the waste product contains any of the contaminates listed in the table below at the concentration equal to or greater than the respective values shown in the table. Examples would include pesticides, biocides, and some solvents and metals.

3. Severely Toxic Waste

A list of severely toxic hazardous waste are published in the state regulations and available by contacting the Environment, Health and Safety Department at 766-6763.

Mixed Waste

Mixed waste refers to waste that meets the definition of a hazardous waste as well as considered radioactive waste. These materials **MUST** be segregated from all other waste materials and disposed of in accordance with the University of Michigan's Radiation Safety Manual and Low Level Radiation Waste (LLRW) procedures.

Researchers are strongly urged **NOT** to mix chemical or hazardous waste with radioactive waste unless it is unavoidable due to laboratory procedures. EHS and Radiation Safety should be contacted to coordinate the proper management and disposal of these materials.

Infectious Medical Waste

Infectious medical waste means any of the following:

- (a) Cultures and stocks of infectious and associated biologicals, including laboratory waste, biological production waste, discarded live and attenuated vaccines, cultures dishes and related devices.
- (b) Liquid human and animal waste, including blood and blood products and body fluids, but not including urine or materials stained with blood or bodily fluids.
- (c) Pathological waste such as human organs, tissues, body parts other than teeth, products of conception, fluids removed by trauma or during surgery or autopsy or other medical procedures and not fixed in formaldehyde.
- (d) Sharps such as needles, syringes, and interavenous tubing with needles attached.
- (e) Contaminated waste from animals that have been exposed to agents infectious to humans, these being primarily research animals.

EXAMPLES OF SOME HAZARDOUS WASTE MATERIALS

Biology	Formaldehyde, Copper, Mercury solutions, solvents, spill clean up debris
Chemistry	Solvents, radioactive materials, spill clean up debris,
Physics/ Engineering	Solvents, mercury, spill debris
Theater and Art	Waste paints, solvents, spill clean up debris
Photography Facilities Management	Silver rich photo graphic solutions, metals, acids, etc. Waste oils, pesticides, off specification cleaners, solvents, paints, thinners, contaminated soil, fuel, asbestos,
Northbank Center	Waste oils, pesticides, off specification cleaners, solvents, paints, thinners, contaminated soil, fuel, asbestos

OVERVIEW OF HAZARDOUS WASTE REGULATIONS

The **Resource Conservation and Recovery Act of 1976 (RCRA)** is the federal statute that defines hazardous waste and required controls that must be employed when generating, handling, transporting, and treating or disposing of hazardous waste. RCRA and its amendments establish and assign strict "cradle to grave" responsibility for proper hazardous waste management to generators of the hazardous waste. This concept has dramatically changed the role of generators in managing their waste from the moment it is generated to its final disposal.

Initially, RCRA regulated only generators of large quantities of hazardous waste. In 1984 the **Hazardous and Solid Waste Amendments (HSWA)** were enacted by Congress. HSWA established "small quantity generator" requirements. This brought more individuals and businesses under the regulatory requirements. The overall regulations and amendments encourages owners and operators to continue to reduce the volume of hazardous waste generated by reducing the regulatory requirements as the quantities generated are decreased.

The State of Michigan responded to the federal mandate by enacting the **Solid Waste Management Act** (MCL 299.401 et seq.) and the **Hazardous Waste Management Act** (MCL 299.501 et seq.). Essentially, the State of Michigan adopted the federal guidelines with some modifications.

In summary, the regulations require generators (the University) to identify and characterize all hazardous waste generated in order to properly manage the material. The regulations require employers to provide training to employees who work with hazardous waste material and to develop an emergency plan that addresses hazardous waste related emergencies. Additional requirements address packaging, labeling/marketing and general management of hazardous waste containers and storage areas, as well as offering for transportation to licensed transporters and treatment and disposal facilities. Finally, the regulations establish recordkeeping requirements. Specifically, completing the Uniform Hazardous Waste Manifest that accompanies hazardous waste material from point of generation to the final disposal facility for the purpose of tracking the waste.

A related statute/regulation that has seriously impacted the management of hazardous material and hazardous wastes is the **Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)** also known as "Superfund". Superfund established, among many other things, strict and

joint/several liability upon "potentially responsible parties" or owners/operators who knowingly or unknowingly improperly managed their hazardous materials resulting in or contributing to the release of hazardous substances into the environment. Essentially what this means is that an individual can be held solely responsible for the cleanup of a contaminated site that was caused entirely or in part by that individual.

This law is one of the most far-reaching environmental statutes to be enacted. Its scope is retroactive covering any activities prior to its enactment that may have caused or contributed to the release of hazardous substances into the environment. This law drives many of the current business decisions about how potentially hazardous materials and wastes will be managed.

Both the federal and state hazardous waste regulations establish three types of hazardous waste generators based upon the quantity of hazardous waste that is generated per month. The three types of generators and the quantity generated per month are:

- **Conditionally Exempt Small Quantity Generator (CESQG)**
generates less than 100 kilograms (220 pounds) of hazardous waste per month
- **Small Quantity Generator (SQG)**
A small quantity generator is a facility which generates between 100 and 1,000 kilograms (between 220 and 2,200 pounds which also equates to approximately 5 full 55 gallon drums) or less than 1 kilogram of acutely hazardous waste, per month.
- **Large Quantity Generator (LQG)**
Generates greater than 1,000 kilograms (2,000 pounds which equates to approximately 5 full 55 gallon drums) or greater than 1 kilogram (2.2 pounds) of acutely hazardous waste, per month.

The greater the amount of hazardous waste generated by an owner/operator of a site, the greater the regulatory requirements and restrictions of managing the hazardous waste.

Key point to remember, all hazardous waste generators, regardless of their generator status, are legally and financially responsible for waste they generate forever. Additionally, a generator may wind up paying for cleaning up other generators waste if they contributed to the problem.

GENERAL SMALL QUANTITY GENERATOR (SQG) REQUIREMENTS

The Environment, Health and Safety Department has determined that the University of Michigan-Flint is a Small Quantity Generator because it generates between 100 and 1000 kilograms of hazardous waste per month. This requires the University of Michigan-Flint to do the following:

- Completely identify all hazardous waste they generate;
- Obtain a US EPA identification number.
- Complete a Uniform Hazardous Waste Manifest form for all hazardous materials shipped off site. Manifest forms may be obtained through the EHS Department, your transporter, or from the State of Michigan Department of Environmental Quality (DEQ) which is responsible for regulating and enforcing these activities.
- Offer waste for shipment only to hazardous waste transporters that have an US EPA transporter identification number. Additionally, send waste to a hazardous waste facility, or other facility approved by the US EPA or state to receive the waste;
- Follow applicable Department of Transportation (DOT) labeling, marking, and placarding requirements for shipping wastes (49 CFR 170-178);
- Never accumulate hazardous waste on site for more than 180 days, or 270 days if the hazardous waste is to be shipped more than 200 miles from the point of generation. If this time period is exceeded, then a hazardous waste storage permit must be obtained.
- Never accumulate greater than 6,000 kilograms of hazardous waste at any single time;
- Follow the emergency preparedness requirements as outlined in this document and referenced in the UM-Flint Emergency Response Plan.
- Clearly mark the containers with the University's EPA ID number, the date when the waste first began to accumulate and additional information as found on UM-Flint HW labels i.e. hazardous

components and waste codes. Labels are available from EHS Department.

- Never generate more than 1 kilogram (2.2 pounds) of acutely hazardous waste per month or accumulate the same amount at any given time.
- Store hazardous waste in a designated area(s) of the campus. These storage areas must be:
 - a. out of the heavy traffic flow;
 - b. easily accessible for pick up, transport, and inspection;
 - c. clearly marked and labeled;
 - d. located near an alarm, telephone, fire extinguisher, spill control equipment; and
 - e. allow for segregation of incompatible materials
- Closely inspect and document on the UM-FLINT HW CONTAINER AND STORAGE AREA INSPECTION SHEET the condition of containers and storage area on a routine basis (one time per week).
- Monitor the volume of hazardous waste generated so that the total quantity accumulated never exceeds 6,000 kilograms (13,200 pounds or approximately 30 full, 55-gallon drums).
- Arrange for the preparation, pick up, transportation and disposal of the hazardous waste at least once every 180 days (6 months) or just prior to the accumulation of 6,000 kilograms, whichever occurs first.
- Maintain accurate and complete records of all transactions involving the generation, transportation and disposal of hazardous waste. These records must be easily accessible and kept indefinitely. State and federal regulation require that documents are kept for at least three years.
- Maintain and update as appropriate an emergency response plan addressing emergency response action for safely responding to an emergency involving a hazardous waste spill. These procedures are incorporated into the Campus Emergency Response Plan.
- Implement methods to reduce the volume and the toxicity of hazardous waste generated at the facility as reasonably possible

Medical Waste – The Michigan Medical Waste Regulatory Act of 1990

The objective of the Michigan Medical Waste regulatory Act is to establish a program to regulate the handling and disposal of medical waste and to safeguard the public health by preventing to the extent possible public exposure to risk of injury, infection or disease from improperly disposed infectious medical waste.

The MMWR Act of 1990 establishes specific requirements for containing, storing, labeling, and disposal of infectious medical waste. Waste management methods are identified for each medical waste type. Facilities that produce medical waste are required to register with the State Department of Public Health.

Contact the Environment, Health and Safety department to assist in the identification, storage and disposal of medical waste generated in your department or unit. Also refer to UM-Flint's Bloodborne Pathogens Program Guidelines when handling medical waste materials.

RESPONSIBILITIES

The following responsibilities have been outlined for departments and employees to ensure that we are successful in managing hazardous waste generated at UM-Flint in a safe, responsible and environmentally sound manner. It is important to understand that we all share equally in this responsibility.

Department Responsibilities

Departments, in conjunction with EHS, shall determine whether or not they generate hazardous waste or infectious medical waste as defined by state and federal regulations.

Departments generating hazardous waste or infectious medical waste must designate an individual(s) as *hazardous waste coordinators* to ensure compliance with the regulatory requirements and University guidelines and policies.

Departments shall coordinate general hazardous waste training with EHS. In addition, they must provide departmental function-specific training to all individuals that may generate, handle, or store hazardous waste or infectious medical waste in their department.

Department head/supervisor shall enforce compliance with the waste management guidelines as outlined in this UM-Flint Hazardous Waste Management Program as well as their departments specific waste management policies and procedures.

Ensure that appropriate safety, emergency and personal protective equipment are readily available, tested where appropriate and are operational. This includes but is not limited to fire extinguishers, safety showers/eye washes, protective goggles, gloves, aprons, spill kits, air monitors, etc.

Prepare for and develop a contingency plan to manage foreseeable emergencies that could occur involving the generation, handling or storage of hazardous waste or infectious medical waste.

Accumulate, contain, store, label, and otherwise prepare and manifest hazardous waste or infectious medical waste generated in compliance with regulatory requirements as well as UM-Flint requirements.

Designate specific hazardous waste storage area(s). Ensure that these storage areas are:

- a. out of the heavy traffic flow;
- b. easily accessible for pick up, transport, and inspection;
- c. clearly marked and labeled;
- d. located near an alarm, telephone, fire extinguisher, spill control equipment; and
- e. allow for segregation of incompatible materials

Follow the emergency spill procedures outlined in the UM-Flint Emergency Response Plan, your department's Chemical Hygiene Plan, and as directed in the Hazard Communication Program.

Implement methods to reduce the volume and the toxicity of hazardous waste generated at the facility as reasonably possible

Never accumulate hazardous waste on site for more than 180 days, or 270 days if the hazardous waste is to be shipped more than 200 miles from the point of generation.

Never generate more than 1 kilogram (2.2 pounds) of acutely hazardous waste per month or accumulate the same amount at any given time. Notify EHS if you plan to generate or you have generated more than 1 kilogram (2.2 pounds) of acutely hazardous waste.

Clearly mark the containers with the University's EPA ID number, the date when the waste first began to accumulate and additional information as found on UM-Flint HW labels i.e. hazardous components and waste codes. Labels are available from EHS Department

Maintain accurate and complete records of all transactions involving the generation, transportation and disposal of hazardous waste. These records must be easily accessible and kept indefinitely

Store hazardous waste in a designated area(s) of the campus. These storage areas must be:

- a. out of the heavy traffic flow;
- b. easily accessible for pick up, transport, and inspection;
- c. clearly marked and labeled;

- d. located near an alarm, telephone, fire extinguisher, spill control equipment; and
- e. allow for segregation of incompatible materials

Closely inspect and document on the UM-FLINT HW CONTAINER AND STORAGE AREA INSPECTION SHEET the condition of containers and storage area on a routine basis (one time per week). Departments can develop their own department specific inspection sheet.

Monitor the volume of hazardous waste generated so that the total quantity accumulated never exceeds 6,000 kilograms (13,200 pounds or approximately 30 full, 55-gallon drums).

Environment, Health and Safety Responsibilities

Assist departments to determine whether or not they generate hazardous waste or infectious medical waste.

Assist departments in understanding and complying with the state and federal waste regulations as they pertain to a department's operations.

Routinely inspect hazardous waste storage areas. Provide a report to the appropriate department head and HW coordinator outlining the findings of the inspection.

Arrange for the transportation and disposal of all hazardous waste or infectious medical waste. Refer to the UM-Flint waste management policies.

Act as the liaison for the UM-Flint Campus and any regulatory agency in regards to hazardous waste and other related environment, health and safety issues.

Store hazardous waste in a designated area(s) of the campus. These storage areas must be:

- a. out of the heavy traffic flow;
- b. easily accessible for pick up, transport, and inspection;
- c. clearly marked and labeled;
- d. located near an alarm, telephone, fire extinguisher, spill control equipment; and
- e. allow for segregation of incompatible materials

Arrange for the preparation, pick up, transportation and disposal of the hazardous waste at least once every 180 days (6 months) or just prior to the accumulation of 6,000 kilograms, whichever occurs first

Maintain accurate and complete records of all transactions involving the generation, transportation and disposal of hazardous waste. These records must be easily accessible and kept indefinitely. State and federal regulation require that documents are kept for at least three years.

Maintain and update as appropriate an emergency response plan addressing emergency response action for safely responding to an emergency involving a hazardous waste spill. These procedures are incorporated into the Campus Emergency Response Plan.

Implement methods to reduce the volume and the toxicity of hazardous waste generated at the facility as reasonably possible

Public Safety Responsibilities

Become familiar with hazardous waste or infectious medical waste storage area locations.

Act as the Incident Commander (IC) during emergency releases of hazardous waste. Refer to the Campus Emergency Response Plan (ERP) and any departmental emergency plans where appropriate.

Report all hazardous material/waste related emergencies to EHS.

Ensure employees are trained in spill response (HAZWOPER).

Departmental Hazardous Waste Coordinators

Responsible for managing hazardous waste within their department.

Train employees in identifying hazardous waste and potentially hazardous waste.

Train employees in safe and proper handling and storage of hazardous waste.

Monitor the department's hazardous waste program in conjunction with the Environment, Health and Safety Department.

Implement methods to reduce the volume and the toxicity of hazardous waste generated at the facility as reasonably possible.

University Employees

University employees will ensure that hazardous waste is NOT disposed of in the dumpsters, compactors, down any storm or sanitary drain, on the ground.

Employees shall become familiar and comply with the requirements of this document as well as their department's waste management guidelines and policies.

Report all incidental hazardous material/waste spills to their immediate supervisor.

Report all non-incidentals (also known as "emergency release") hazardous material/waste spills to the Department of Public Safety and the Environment, Health and Safety Department.

Follow the emergency spill procedures outlined in the UM-Flint Emergency Response Plan, your department's Chemical Hygiene Plan, and as directed in the Hazard Communication Program.

Report activities that violate the University's waste management policies to your immediate supervisor, the Environment, Health & Safety Dept., and the Department of Public Safety.

Implement methods to reduce the volume and the toxicity of hazardous waste generated at the facility as reasonably possible

IDENTIFY SUSPECT HAZARDOUS WASTE

Determining whether a waste material is potentially hazardous requires a thorough review of the product label, the shipping carton or DOT hazardous material labels, the inbound bill of lading, if available, and/or the material safety data sheet (MSDS) for the particular product or material in question.

MSDSs are located in your Department. They may also be obtained by contacting the Environment, Health and Safety Department at:

Telephone (810)766-6763,
FAX (810) 766-6711, or
E-mail address
mjlane@umflint.edu
ardyceb@umflint.edu

Review hazardous waste material product labels, shipping containers, bill of lading, MSDS and look for:

1. MSDS/product label warnings or cautions related to storing, handling or disposal of the material.
2. Label warnings against mixing the product with water or any other material
3. Labels using any of these key words:

hazardous	oxidizer	dangerous when wet	explosive
irritant	poison	compressed gas	peroxide
blasting agent	corrosive	flammable solid	combustible
poison gas	chlorine.	flammable liquid	toxic
4. Product shipping containers which identifies products as a DOT hazardous material i.e. ORM-D Consumer Commodity, Flammable, Corrosive, etc.

If it is still unclear whether a waste material may be characterized as a hazardous waste based upon the information available from the label, MSDS, etc., contact the Environment, Health and Safety Department at 766-6763.

HAZARDOUS WASTE STORAGE AREA MANAGEMENT

It is imperative that a safe storage area is designated for the accumulation and storage of hazardous and potentially hazardous waste. The Environment, Health and Safety manage the Hazardous Material Storage Building that was specifically designed to store hazardous materials and wastes. Individual department may establish "satellite accumulation areas" that may be used to temporarily store smaller volumes of hazardous waste at or near the points of generation.

Satellite Accumulation Areas

Satellite Accumulation areas in departments must meet the following requirements:

1. Out of the heavy traffic flow;
2. Containers must be labeled "Hazardous Waste", list the hazard components, and appropriate waste code(s);;
3. Well ventilated and away from sources of ignition;
4. Total volume of accumulation area can not exceed 55 gallons;
5. Must be located at or near the point of generation;
6. Must be under the control of the operator;
7. Once the 55 gallon limit is reached, full containers must be removed from the satellite accumulation areas and transferred to a hazardous waste storage area which complies with the requirements outlined below.
8. Accumulation start date begins at the time the container is filled and transferred to the hazardous waste storage area..

Hazardous Waste Storage Areas

The designated hazardous waste storage areas must meet the following requirements;

1. Out of the heavy traffic flow;
2. Easily accessible for pick-up, transportation, and inspection;
3. Well ventilated and free of any possible sources of ignition;
4. Labeled "**Hazardous Waste**";
5. "**No Smoking**" signs must be posted;
6. Located near an alarm, telephone, fire extinguisher, spill control equipment;

7. Allow for the segregation of incompatible materials detailed in a later section.
8. The floor is impermeable to the hazardous wastes.
9. Any ignitable or reactive waste should be shaded from sunlight.
10. Drums and/or containers should be protected from precipitation or other outside elements.
11. All applicable flammable and combustible fire codes must be met.
12. Access to the hazardous waste storage area should be restricted to authorized employees only.
13. Spill Containment is required for LARGE quantities of waste.

If you require assistance in selecting an accumulation or general hazardous waste storage area for hazardous waste, contact the EHS Department. Additionally, you may make arrangements with the EHS Department to store hazardous materials/waste in the hazardous material storage building (see the Hazardous Material Storage Building Policy and Procedures).

Required Hazardous Waste Storage Area Signs

Two specific signs are required to be conspicuously placed where hazardous waste is handled and/or stored. they are the following:

1. NO SMOKING
2. HAZARDOUS WASTE STORAGE AREA
AUTHORIZED EMPLOYEES ONLY

USE & MANAGEMENT OF HAZARDOUS WASTE STORAGE CONTAINERS

All departments that accumulate and store containers of hazardous waste must comply with the following requirements for the use and management of their hazardous waste storage containers. It will be the responsibility of department to ensure that the following requirements are carefully being followed.

Containers can be obtained through a local supplier and/or lab pack distributor. The EHS Department can assist in selecting and/or obtaining containers for accumulating and storing hazardous waste. Departments may be recharged for containers depending upon the circumstances. In many cases, arrangements for containers are made through the permitted hazardous waste transporter or disposal facility which the EHS Department has selected to transport and dispose of the waste.

Condition of Containers

Containers must be structurally sound, clean and capable of sealing while materials are being stored. Hazardous waste must never be placed into an unwashed container or a container that contained or contains incompatible waste.

The container(s) must be made, of or lined with, a material which will not react with the hazardous waste.

If a container holding hazardous waste is not in good condition or if it begins to leak, immediate steps must be taken to transfer the hazardous waste from this container to the container that is in good condition.

Inspection of Containers/Storage Area(s)

The containers and storage area(s) must be inspected and results of the inspection must be documented at least weekly for indications of leaks and the deterioration of containers. Initial appropriate action to remedy any leaking or deteriorated containers must be taken immediately.

A container holding hazardous waste must always be closed during storage except when it is necessary to add or remove waste. A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

Segregation

All hazardous waste materials, potentially hazardous waste materials or materials suspected to be hazardous must be segregated from the general trash. All hazardous materials are prohibited from being disposed of into the regular trash, compactor, dumpster, on the ground or down the drain.

These materials shall be segregated and allowed to accumulate in a prearranged storage area(s) until which time enough has accumulated to warrant contacting the EHS Department who in turn will contact a hazardous waste hauler licensed in the State of Michigan to transport the material to a permitted treatment and disposal/recycling facility.

The initial phase to segregating any hazardous or potentially hazardous material which requires disposal from the rest of the general trash is to carefully review the product label and/or the material safety data sheet. However, other considerations may be required. For example, if two chemicals have been combined under one reaction during a process or laboratory experiment to form a new and different substance that may or may not be hazardous or have the same hazardous characteristic(s).

Accumulation

Certain restrictions apply to the quantity and time period for which hazardous waste may accumulate at a facility. These restrictions are dependent upon whether or not your facility is classified as a conditionally Exempt small quantity generator (CESQG), a small quantity Generator (SQG), or a large quantity generator (LQG).

The University of Michigan-Flint is considered a SQG and therefore, may not accumulate hazardous waste for more than 180 days (or for more than 270 days if the waste must be transported or offered for transportation over a distance of 200 miles or more). The University may not accumulate in excess of 6,000 kilograms on site at any given time of hazardous waste or 1 kilogram (2.2 pounds) of acutely hazardous waste.

Incompatible Hazardous Waste

Many hazardous wastes when mixed with other waste or materials at a hazardous waste facility, can produce effects which are harmful to human health and the environment such as;

1. Heat or pressure
2. Fire or explosion
3. Violent reaction
4. Toxic dust, mists, vapors or gases, or
5. Flammable vapor or gases.

Hazardous waste must not be placed in any unwashed container that previously held an incompatible waste or material. A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments, must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device. The purpose of this is to prevent fires, explosions, gaseous emissions, leaking or other discharge of hazardous waste or hazardous waste constituents which could result from the mixing of incompatible waste or materials if containers break or leak,

Contact EHS to obtain a compatibility chart that can be referenced to determine a chemical's compatibility with other chemicals (Mixtures and unknowns may be more difficult to determine).

Never mix chemicals unless you absolutely know that they are compatible. The individual handling the waste must have knowledge concerning the process generating the waste as well as CAREFULLY and THOROUGHLY read the product label and/or material safety data sheet in order to understand the waste and the potential hazards or potential incompatible materials associated with those wastes. Extreme caution should be taken at all times when consolidating and mixing chemicals

NEVER MIX HAZARDOUS WASTE WITH RADIOACTIVE WASTE MATERIALS! This poses many problems for storing and disposal of the mixture. Call Environment, Health and Safety if you have any questions.

Hazardous Waste Spill Emergencies

All spills and releases must be immediately reported to your supervisor. Follow the guideline outlined in your department's emergency response plan, Chemical Hygiene Plan and the campus Emergency Response Plan.

PACKAGING AND PREPARING TO SHIP HAZARDOUS WASTE

Each department generating hazardous waste must properly package the hazardous waste prior the EHS Department arranging for the treatment and/or disposal. The proper method of packing depends upon the type of waste material. , Drug and Laboratory Disposal has compiled a guidance document to assist UM in preparing and transporting hazardous waste. The document is titled *Manifesting Guidance Document*. Additionally, The University of Michigan's Occupational Safety and Environmental Health Department (OSEH) has developed and posted on their homepage (<http://www.umich.edu/~oseh/>) some guidelines for packaging, labeling, and otherwise preparing waste for transportation and final treatment and disposal.

Part of a transporters responsibility is not to accept hazardous materials for transport which are not properly packaged. Therefore, transporters and treatment, storage and disposal (TSD) facilities should be able to assist a great deal as part of their service. In addition to packing the material properly, each container of hazardous waste which is offered for shipment, must be marked with a 6" X 6" yellow hazardous waste shipping label (see attachment).

The Department of Transportation requires that the markings referenced above must meet the requirements listed below.

1. Must be durable, in English and printed on or affixed to the surface of the package or on a label, tag or sign.
2. Must be displayed on a background of sharply contrasting color.
3. Must be unobscured by labels or attachments.
4. Must be located away from any other marking (such as advertising) that could substantially reduce its effectiveness.

In addition to marking each container of hazardous waste, the department must properly label and package each package in accordance with the Department of Transportation Regulations (DOT) for hazardous materials under 49 CFR Part 172.

PREPAREDNESS AND PREVENTION

Any facility which uses hazardous materials or generates hazardous waste, must take special precautionary measures to prevent any serious injuries, accidents or emergencies involving hazardous material and/or hazardous waste.

Areas handling, storing or otherwise working with hazardous materials and hazardous waste must be maintained and operated to minimize the possibility of a fire, explosion or any unplanned or sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil or surface water which could threaten human health or the environment.

All UM-Flint departments storing hazardous waste materials are required to have the following equipment available and operational;

- Internal communications or alarm system capable of providing emergency instructions.
- Portable fire extinguishers easily accessible in the event of a small fire. In addition, automatic sprinklers or water spray systems with adequate water supply shall be available where necessary e.g., Hazardous Material Storage Bldg. and Chemistry's Chemical Storage Room.
- A telephone and posted telephone numbers for UM-Flint Public Safety, (762-3333 or 911 from any campus phone), EHS (766-6763), and the telephone number for the person responsible for managing the waste materials in your department. Public Safety and EHS will maintain a list of emergency phone numbers for the local fire departments, police department, authorized environmental contractors, and the National Emergency Response Center.
- Spill control and clean up equipment (including appropriate PPE).
- A current copy of the Emergency Response Plan that contains the Hazardous Material Spill Emergency Procedures.

All equipment described above must be tested and maintained as necessary to ensure its proper operation in time of an emergency.

Additional requirements to ensure the safe handling of ignitable, reactive or incompatible waste includes separating and protecting these wastes from sources of ignition and reaction including but not limited to, open flames, smoking, welding or cutting processes, hot surfaces, sparks and frictional heat. **Unstable chemicals should not be moved by untrained employees.** It may be necessary to make arrangements with an outside contractor to ensure safe handling of highly unstable chemicals. Contact EHS.

TRAINING REQUIREMENTS

A critical element for complying with the University's policy and regulatory requirements is to ensure that all persons that may work with hazardous waste materials are trained and familiarized with the hazardous waste management policies and procedures.

Each department shall be responsible to ensure that individuals working with waste materials have a thorough understanding of the policies, procedures and the expectations required of them when managing hazardous wastes. Training should cover the following items:

- Regulatory requirements
- Identification of a hazardous waste
- Proper storage practices
- Spill emergency procedures (incidental vs. emergency response spill)
- Preparing and packaging waste for disposal
- Arranging for disposal
- Recordkeeping requirements

Training should occur for employees and students that may be working with hazardous waste at the following times;

- At the initial time of hire; and
- When first transferred into a position that requires managing or handling potential hazardous waste materials.
- Whenever a process or procedure for handling any particular waste may change.

The Environment, Health and Safety Department is available to assist in training employees. However, it is each departments responsibility to ensure compliance with the hazardous waste management program as well as identify individuals requiring training.

THE UNIVERSITY OF MICHIGAN - FLINT

Hazardous Waste Management Guidelines

EPA ID #s

EPA ID #MID 085 043 891

UM-Flint Riverfront Campus
303 East Kearsley
Flint Michigan 48502

EPA ID # MID 981 792 922

UM-Flint at the Mott Memorial Building
WFUM/TV 28
Flint, Michigan 48502

EPA ID # MIR 000 102 970

Northbank Center - UM-Flint
432 North Saginaw
Flint, Michigan 48502