

Introduction

Welcome to the Hazardous Waste Handling and Packing (CS055) Course Material. This course is required every year for anyone generating, handling, packing, or electronically signing a manifest requesting hazardous waste for pickup and disposal. This training only covers hazardous waste policies and procedures. If you handle any other type of waste, it may require other training, see [UAB's Department of Environmental Health and Safety \(EHS\)](#).

Objectives

After this course, participants should be able to:

1. Describe the terminology associated with hazardous waste materials.
2. Demonstrate the proper way to handle, label, and pack hazardous waste materials.
3. Execute the basic requirements for a Satellite Accumulation Area.
4. Implement the proper procedures for responding to spills.
5. Complete the Hazardous Waste Manifest without any errors.

What is Hazardous Waste?

Hazardous Waste

Cradle to Grave

When dealing with hazardous waste, Regulatory Agencies hold UAB legally responsible from the time its created until it is no longer hazardous. No matter what the status is when creating, packing, and disposing of hazardous chemical waste, the Regulatory Agencies can still hold companies and universities liable is called the Cradle to Grave Responsibility.

Department heads, faculty members, and laboratory directors, as generators of hazardous waste, are legally and ethically responsible for assuring that the management of hazardous chemical waste from each component under his/her supervision follows the proper management and disposal procedures.

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Hazardous Waste

Hazardous waste is any material:

- Discarded or abandoned.
- Used and is no longer fit for its intended use.
- Listed as hazardous waste in the regulations.
- Exhibiting one or more of the characteristics of hazardous waste (e.g., ignitable, corrosive, reactive, or toxic).

Classifications

Hazardous chemical waste is classed as either “Listed” or “Characteristic.”

- Listed Waste
 - Any waste that is listed by name or generating process by either the EPA or ADEM. This group may include:
 - Some expired drugs
 - Some expired chemicals
 - Unopened bottles
 - Various unneeded pure materials
 - Unused off-specification commercial chemical products
- Characteristic Waste
 - Any waste that exhibits one or more of the following four characteristics as defined in the regulations:
 - Ignitable: flashpoint < 140°F
 - Corrosive: pH ≥ 12.5 or ≤ 2
 - Reactive: waste materials that may ignite, explode, or give off toxic gases when exposed to water, mildly acidic, basic solutions, heat, friction, or shock.



Listed and Characteristic Waste may be placed together as long as they are in the same hazard class and packed properly. For more information, contact EHS at (205) 934-2487.

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- Toxic: waste materials that are harmful to both living creatures and the environment or fail the [Toxicity Characteristic Lechate Procedure \(TCLP\) Test](#) for 43 specific hazardous constituents

Procedures for Hazardous Waste Disposal

Separating

After waste is created or generated, no matter what its type, it must be separated at the point of generation and packed according to its waste stream!

Packing

Here are some general tips to follow when packing hazardous waste.

- Containers that hold hazardous waste must be labeled “hazardous waste.” This does not apply to the outside of a box that has a manifest taped on it. The manifest states that it is a hazardous waste.
 - It does apply to individual containers inside boxes.
- Segregate the waste into the correct hazard classes, and pack the same hazard classes together.
- Use the appropriate containers for the hazardous waste generated. This includes the bottle and the box.
- Use packing materials when necessary (especially with glass). You can use shredded boxes, vermiculite, shredded paper, plastic, bubble wrap, foam boards, plastic peanuts, or separators for packing as long as the packing material is compatible with the hazardous waste inside.
- Leave a 10 percent headspace at the top.
- Fold box tops flat and tape, but not until you have completed the manifest and highlighted the items in the box. The highlighted items on the manifest must match the items inside.
- If the top does not fold flat and close properly, you must use a bigger box.

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Special Hazardous Chemicals

Shock-sensitive water-reactive compounds and lecture bottles (single-use gas cylinders) require special handling. Chemicals that have the potential to react with each other should not be packed in the same box.

Pack the following materials separately:

- Acids from bases.
- Flammables from oxidizers, acids, bases, and poisons.
- Oxidizers from flammables, other organics, and reducers.

When dealing with these compounds, call the EHS Support Facility at (205) 934-3797 for further instructions and schedule a pickup.

Labeling

Hazardous Waste

The words Hazardous Waste is required to be visible on the box.

Manifest

The manifest is required to be taped on top of the box securely and legible. EHS Support Facility will pick up within four weeks. If you need your hazardous waste pick up expedited, please contact UAB EHS at (205) 934-2487.

Other Information

There should be information on the hazardous waste package that describes the associated hazard on the inside (toxic, corrosive, reactive, or flammable).

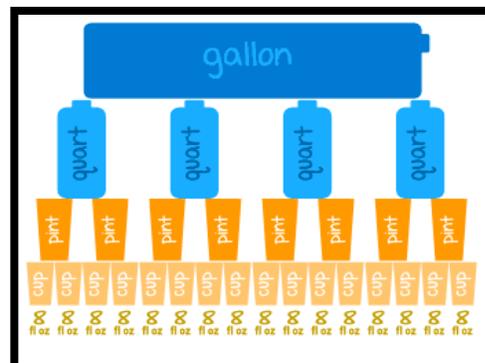
Hazardous Waste Management in Your Area



Keep all waste containers closed unless you are actively adding or removing waste! This protects you and those working around these containers from exposure due to spillage.

Satellite Accumulation Area

If generating only small amounts of hazardous waste regularly, collect it at or near the point of generation (and under the control of the operator generating the waste) in Satellite Accumulation Containers. The containers must be stored in a designated single location in your workplace and away from daily lab traffic. Identify the area with a [Satellite Accumulation Area sign](#).



EPA and [ADEM](#) regulations allow you to accumulate as much as 55 gallons of hazardous waste or one quart of acutely hazardous waste (P listed) in Satellite Accumulation Areas. However, as a Best Management Practice, it is advised to get your hazardous waste containers picked up from your lab before you reach that limit. If you do exceed either of these hazardous waste storage thresholds, you must immediately date the containers and have them moved to the EHS Support Facility within three days of that date.

Containers of five gallons (20 L) or larger must have secondary containment.



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No matter what the size, the container must be:

- Compatible with the material stored in them
- Labeled and identified as “hazardous waste.”
- Closed except when waste is being added or removed
- Managed in such a way as to prevent accidental release of the contents
- Labeled with the approximate percentage of each component if it is a mixture
- Labeled to identify the primary hazard of the content (i.e., flammable, corrosive, toxic, etc.)

“Satellite
Accumulation
Area” Sign



Containers are in good condition and are closed

Containers labeled with the words “Hazardous Waste”

Full chemical name and Percentage are documented on the label

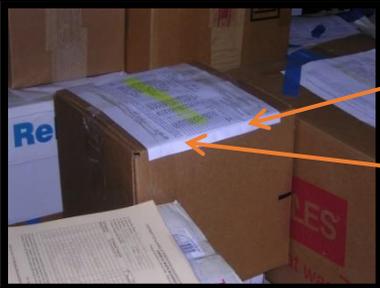
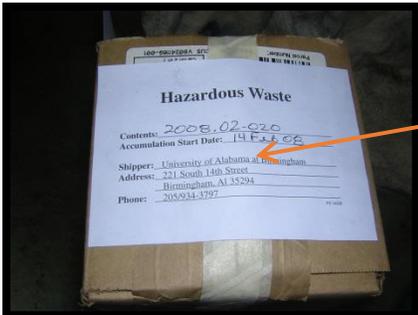
Primary Hazard

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You may have more chemicals than lines on the page. Use another manifest. Again, make sure that you have the right manifest, and that you add the page numbers at the top when you are through.

Please number the pages if you have multiples. The second part (of Page) is not necessary since we have moved online. If some chemicals are still unopened, please note which ones on the manifest.

To have the hazardous waste picked up, please follow these instructions:

	<p>E-mail one copy of the manifest to chemwasteman@uab.edu. (If you do not know how to submit a manifest electronically, instructions can be found on the EHS website.)</p>
	<p>Attach a copy of the manifest to each box.</p> <p>Highlight the items on the manifest contained in that box.</p>
	<p>Specify where the waste is to be picked up.</p>
	<p>Ensure that the UAB EHS Support Facility personnel will have access to the area where the waste is held for pick-up.</p>



Call the EHS Support Facility if your waste is not picked up in a reasonable period.

Emergencies

Spills

Small or Large

At UAB, spills are classified as small or large based on the volume of the spilled material.

- Spills of 500 ml or less are considered small
- Spills of 500 ml or more are considered large
- Spills of less than 500 ml may be considered large spills if the material involved is particularly hazardous



Spills of less than 500 ml may be considered large spills if the material involved is particularly hazardous. Instructions for handling both small and large spills can be located on the [EHS](#)

Spill Kits

Commercial kits are available, but a basic kit for most spills up to 500 ml can be put together with inexpensive materials. Be sure to replace kit contents as necessary. Items required for your spill kit are the following:

- Five-gallon bucket(s) with lid (this is used to store your kit)
- Latex/Surgical gloves
- Safety glasses, goggles, for face shield
- Disposable lab coat
- Aprons or gowns
- Absorbent material to contain spill (paper towels, spill booms or pillows, vermiculite)
- Small disposable plastic broom and dustpan
- Zipper seal type bags (1-gallon size)
- Waste disposal bag
- A small bottle of detergent cleaning solution
- Disinfectant
- Hazardous waste sticker
- Biohazard sticker

Clean-Up Procedure

Small Chemical Spill Clean-Up Procedure

1. Alert people in the immediate area of the spill and restrict access
2. Locate spill kit
3. Don appropriate PPE: consult SDS for special precautions
 - a. Long sleeve lab coat, back fastening gown, or jumpsuit
 - b. Disposable gloves
 - c. Disposable shoe covers
 - d. Safety goggles, mask, or a full-face shield

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4. Use kit material to absorb liquid then dispose of as chemical waste
 - a. If powder form carefully sweeps into the dustpan.
 - b. Avoid generating dust
5. Dispose of as chemical waste

Large Chemical Spill Clean-Up Procedure

1. Contain the spill (if you can do so without risk to yourself or others)
2. Warn others in the immediate area
3. Notify the PI or Supervisor
4. Evacuate the area if necessary
5. Contact Chemical Safety at (205) 934-2487 immediately and provide:
 - a. Your Name
 - b. Extension
 - c. Location of spill
 - d. Quantity
 - e. Name of chemical spilled
6. Chemical Safety will contact the Emergency Spill Response Team. They are uniquely trained to handle hazardous chemical spills.

Mercury Spills

1. Use kit material to collect broken thermometer and loose mercury carefully
2. Place into a sealable container
3. Contact Chemical Safety at (205) 934-2487. The Department of Environmental Health and Safety (EHS) is equipped with a mercury vacuum to remove spilled mercury effectively.

For more information, check out [Biological or Chemical Spill Response](#).

Injuries

You should follow your lab Specific Standard Operating Procedure (SOP) to minimize the risk of causing an injury to yourself or anyone else. If an injury does occur that requires medical attention, you must fill out an [OJI Form](#).

Personal Protective Equipment (PPE)

Whether you are separating, handling, or packing hazardous materials or cleaning up a hazardous materials spill, you must wear the appropriate Personal Protective Equipment (PPE). When handling hazardous waste, you should always wear the bare minimum PPE (a cleaned buttoned lab coat, the appropriate gloves, and splash goggles). Some hazardous waste requires more PPE. Read the labels or Safety Data Sheet (SDS). If you still are not sure, call the UAB Department of Environmental Health and Safety (EHS) at (205) 934-2487.

Eyes

Wear splash goggles when working with liquid chemicals. When the splash hazard is high, or the chemicals are particularly dangerous, wear a face shield with splash goggles. If there is a chance of solid objects striking the eye, you should wear safety glasses.

Safety Glasses



Face Shield



Splash Goggles



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Respiratory System

In rare instances, a respirator might be necessary. If you are not sure, call EHS at (205) 934-2487. Remember, respirator fit testing is required annually.

Outerwear

Lab coats offer some protection from chemical splash by giving the substance something to react with before it reaches the skin and giving you time to remove the lab coat. The lab coat should be clean and buttoned before working with hazardous materials and removed before leaving the area.



When working with hazardous drugs or highly toxic substances, wear a closed front, impervious gown with the sleeves tucked into the gloves.

Gloves

Gloves have different chemical resistances based on thickness and material. For example, latex gloves are suitable for most aqueous solutions but are inappropriate for organic solvents. However, no one type of glove will protect against all types of chemicals. Always check gloves for holes and tears before use. Change disposable type gloves as soon as they become contaminated.

Footwear

Shoes that enclose the entire foot are not an option – they are required. Sandals, flip-flops, and other open-toed or open-heeled shoes leave your feet exposed to possible chemical burns and cuts from broken glass. They should never be worn around hazardous waste. These shoes are not considered appropriate for working in a hazardous waste area. The foot is too exposed for health and safety purposes.



Conclusion

This concludes the Hazardous Waste Handling and Packing (CS055) Course Material. Annual recertification is required if you continue to work with hazardous waste. If you haven't completed the assessment yet, you should do so now. The passing score is 90% or higher.

Other Required Training

- Universal Waste: If you handle, store, pack, and manifest Universal Waste, you must also complete the [Handling, Storing, Packing, and Manifesting Universal Waste \(CS056\)](#) training course.
- Low-Level Radioactive Waste: If you handle, pack, or manifest Radioactive Waste Materials, you must also complete the [Radiation Safety Waste Handling and Packing \(RS105\)](#) training course.
- Biohazardous Infectious Waste (Medical Waste): If you generate or handle medical waste in/from research laboratories at UAB, you must also complete the [Medical Waste Management for Labs \(BIO301L\)](#) training course.

EHS Decision Tree

EHS has many training courses available to all UAB active employees and students. This includes topics such as in-depth radiation training, biosafety, bloodborne pathogens, chemical safety, controlled substances, building life safety, hazardous and medical waste, universal waste, PPE, hazard communication, etc.

We have a [decision tree](#) to assist you in choosing the right course to match the knowledge/skills you may need at work every day as well.

If you have any questions or comments, please feel free to contact EHS at (205) 934-2487.