Introduction

Goals of this Course

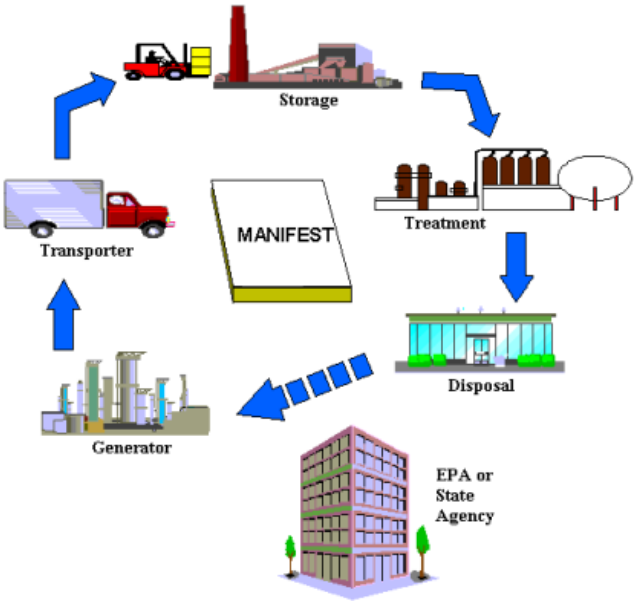
When working with hazardous wastes, we ask that you:

- identify hazardous wastes and the risks associated with handling and packing them
- pack and label hazardous materials so that the manifests and wastes are accepted upon pick up
- lower the number of incidents, including injuries, spills, and rejections, that may occur during handling and packing

These goals are for the course, but we want to encourage you to work toward improving them each time you work with hazardous waste as a part of your job.

Cradle to the Grave

When dealing with hazardous waste, regulatory agencies hold UAB legally responsible from the time it is created until it is no longer hazardous. No matter what the status is when the hazardous chemical waste is created, packed, and disposed of, the regulatory agencies can still hold companies and universities liable. This is called **cradle-to-grave responsibility**.



Types of Waste

There are six types of waste at UAB:

- hazardous chemical waste
- universal waste
- low level radioactive waste
- biohazardous infectious waste (medical waste)
- nonhazardous waste or common trash
- used oil / used cooking oil as a type of waste

Medical Waste

While medical waste **IS** considered hazardous waste, it is handled through a separate waste stream – called **Medical Waste**.

This type of waste is handled through the outside vendor Stericycle. It **SHOULD NOT** be mixed with the hazardous chemical waste especially at the point of generation.

Medical waste includes:

- sharps
- syringes, with or without needles
- microbiological waste
- renal dialysis waste
- some animal waste
- human blood and body fluids and surgical waste

Remember if you are responsible for handling medical waste in your area, you will need to complete the **Medical Waste Management for Labs Course – BIO301L.** If you are not sure whether you need to take the course, please contact OH&S.

Universal Waste

To prevent toxic materials from reaching municipal waste landfills, the EPA passed special rules for the handling, shipment, and storage of universal waste in the mid-nineties.

What is universal waste? Universal waste is something that almost every company uses:

- CRTs (cathode-ray tubes)
- used batteries
- fluorescent light tubes
- devices containing mercury

What's the difference in hazardous waste and universal waste? Why does it matter? Universal waste requires different packing requirements and its own manifest.

If you are responsible for handling universal waste in your area, you will need to complete the **Handling, Storing, Packing, and Manifesting Universal Waste – CS056.** If you are not sure whether you need to take the course, please contact OH&S.

Hazardous Waste

What is Hazardous Waste?

What is hazardous waste? While the Environmental Protection Agency (EPA), Alabama Department of Environmental Management (ADEM), and the Jefferson County Commission describes it in detailed technical terms, on the next page is a list of what we need you to remember.

Hazardous waste is any material that:

- **has been discarded**
- **has been abandoned**
- **is listed as hazardous waste in the regulations**
- **exhibits the characteristics of hazardous waste (e.g., it is ignitable, corrosive, reactive, or toxic)**

Who Is Responsible for UAB's Hazardous Waste?

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 disposal process.

And last, but not least, you – the person handling and packing the waste. You are the link to ensuring that the hazardous waste is properly separated, packed, and picked up to move to its next destination safely.

Classifications of Hazardous Waste

Hazardous chemical waste is classed as either "listed" or "characteristic".

- ***Listed Waste***
    - Listed waste is any waste that is listed by name by either the EPA or ADEM. This group may include:
    - Some expired drugs, some expired chemicals, unopened bottles, and various unneeded pure materials.
- ***Characteristic Waste***
    - This waste exhibits one or more of the following four characteristics as defined in the regulations:
        - Ignitable - waste materials that will easily catch fire and burn
        - Corrosive - waste that could cause permanent tissue damage and/or corrode steel

- Reactive - waste materials that may ignite, explode, or give off toxic gasses when exposed to water or mildly acidic or basic solutions
    - Reactive waste may also ignite or explode when subjected to heat, friction, or shock.
- Toxic - waste materials that are harmful to both living creatures and the environment.

Listed and characteristic waste may be packed together as long as they are in the same hazard class and packed properly. For more information, call OH&S or visit the website.

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. These materials should **always** be packed separately from other chemicals.

When dealing with these compounds, call the OH&S Support Facility for further instructions.

Waste Management

Separating Waste

Separating Waste

After waste is created or generated, no matter what its type, it must be separated at the point of generation and be packed according to its own waste stream – universal, biohazardous, hazardous chemical, low level radioactive, and nonhazardous (common trash).

Before you begin packing, remember **do NOT mix the streams**! Each waste has its own stream and should not be mixed.

Hazardous Waste Management in Your Area

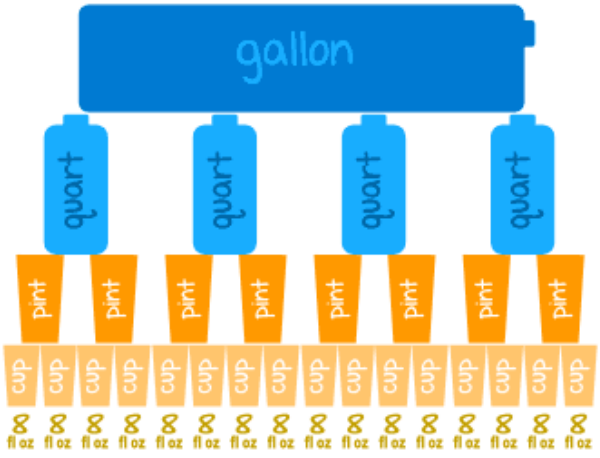
All waste containers must be kept closed unless you are actively adding or removing waste! This protects you, and those working around these containers.

If only small amounts of hazardous waste are generated regularly, it may be collected at or near the point of generation in **satellite accumulation containers**. The containers must be stored in a designated single location in your work place and away from daily lab traffic.

The area must be identified 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 disposed of 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 OHS Support Facility within 3 days of that date.

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

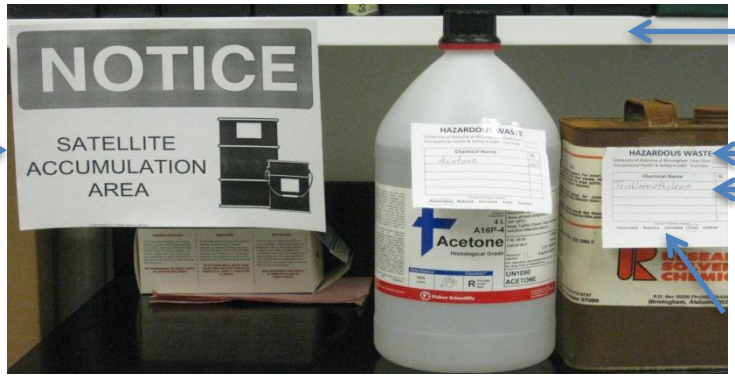


*For purposes of illustration **only***

No matter what the size, the container must be:

- Compatible with the material stored in them
- Labeled as waste and marked in such a way that the contents are clearly identified
- 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

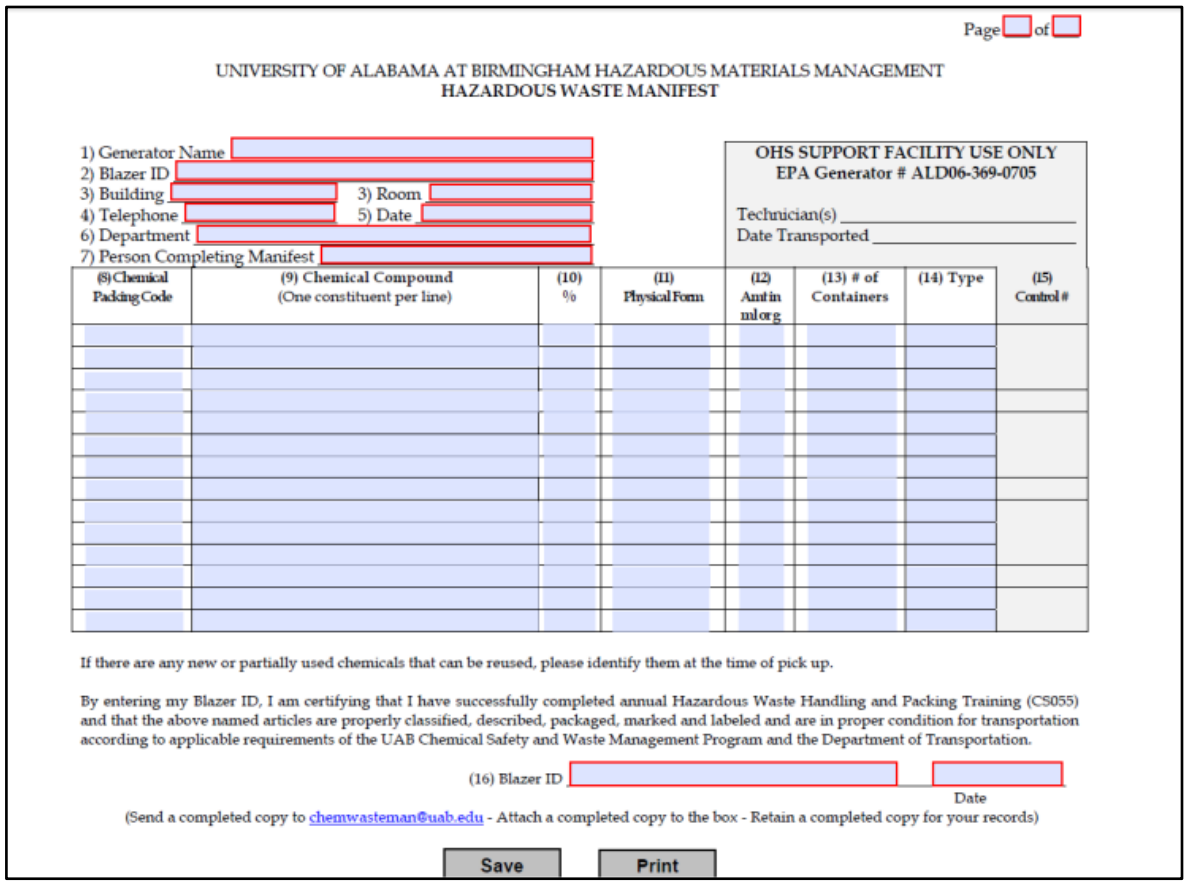
Containers labeled with the words "Hazardous Waste"

Full chemical name and Percentage are documented on the label

Primary Hazard

Online Manifests

Hazardous chemical and universal wastes require manifest forms for pickup and transportation to the UAB's OH&S Support Facility. There are two different manifests – one for Universal and one for Chemical. Make sure that you are using the appropriate manifest before you begin. These are available on the OH&S website.



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UNIVERSITY OF ALABAMA AT BIRMINGHAM HAZARDOUS MATERIALS MANAGEMENT
HAZARDOUS WASTE MANIFEST

1) Generator Name
2) Blazer ID
3) Building 3) Room
4) Telephone 5) Date
6) Department
7) Person Completing Manifest

OHS SUPPORT FACILITY USE ONLY
EPA Generator # ALD06-369-0705

Technician(s) _____
Date Transported _____

(8) Chemical Packing Code	(9) Chemical Compound (One constituent per line)	(10) %	(11) Physical Form	(12) Anti in nl org	(13) # of Containers	(14) Type	(15) Control #

If there are any new or partially used chemicals that can be reused, please identify them at the time of pick up.

By entering my Blazer ID, I am certifying that I have successfully completed annual Hazardous Waste Handling and Packing Training (CS055) and that the above named articles are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to applicable requirements of the UAB Chemical Safety and Waste Management Program and the Department of Transportation.

(16) Blazer ID _____ Date

(Send a completed copy to chemwasteman@uab.edu - Attach a completed copy to the box - Retain a completed copy for your records)

Save Print

If your manifesting a mixture, put each chemical and its percentage in the mixture on separate lines. All of the chemicals in the mixture must have percentages that add up to 100%.

If the manifested chemical is not a mixture, it should be listed as 100% per container.

Liquids **MUST** be listed as milliliters (ml) and solids **MUST** be listed as grams (g).

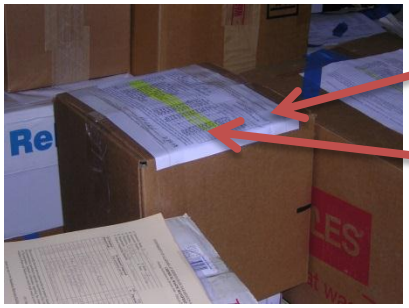
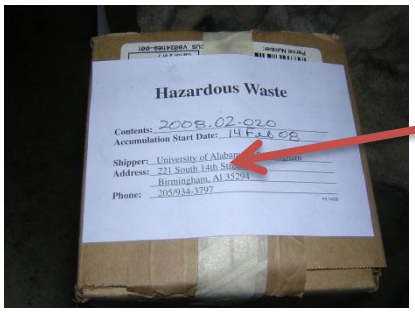
Abbreviations of chemicals **WILL NOT** be accepted on the manifest.

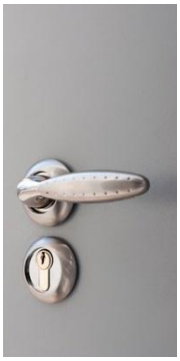
You may have more chemicals than lines on the page. **Use another manifest**. Again, make sure that you have the right manifest **and** that you add the page numbers at the top when you are through.

Do not complete the Page of Page area as is. Please just 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 or those on the website.

	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 OH&S website.)
	Attach a copy of the manifest to each box. **Highlight the items on the manifest that are contained in that box**.
	Specify where the waste is to be picked up.

	Ensure that the OH&S Support Facility personnel will have access to the area where the waste is held for pick-up.
	Call the OH&S Support Facility if your waste is not picked up in a reasonable period.

Packing Hazardous Waste

Packing the hazardous waste is not hard as long as you know how to do it correctly. 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 hazardous waste. It does apply to individual containers inside boxes.
- Segregate the waste into 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, use a bigger box.

Need help packing a box? Refer to the No Rejects! Handling, Packing, and Pickup Tips PDF.

Occupational Health and Safety

Hazardous Materials Spills

Hazardous materials spills are an unfortunate consequence of laboratory work.

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

- Spills of 500 ml or less are generally considered small, spills of more than 500 ml are considered large.
- 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 OH&S website.

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 or PPE.

When handling hazardous waste, you should always wear the basic PPE – a buttoned lab gown or disposable gown, the appropriate gloves, and a splash goggles. This is considered the **bare minimum**.
Some hazardous waste requires more PPE. Read the labels or Safety Data Sheet (SDS). If you still are not sure, ask someone or call OH&S.

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**, wear safety glasses.

Splash Goggles

Face Shield

Safety Glasses

Respiratory System

In rare instances, a respirator might be necessary. If you are not sure, call OH&S. 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 the 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 course. Annual recertification is required if you continue to work with hazardous waste.

Before you take the assessment, you are **required** to complete the Reality Check. The Reality Check is to ensure that you understand what is acceptable and what is not regarding the handling and packing of hazardous waste. Once you finish the Reality Check, the assessment will be available. 80% or higher is required to pass.