Introduction

Welcome to the **Hazardous Waste Handling and Packing (OHS_CS055)** training course. This course is **required** every year for anyone that generate, handles, packs, or electronically signs a manifest requesting hazardous waste for pickup and/or disposal.

This training only covers hazardous waste policies and procedures. If you handle any other type of waste, it may require other training. Please visit the **OH&S website** for more information.

Objectives

At the conclusion of 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 that 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 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.

Hazardous Waste

Hazardous waste is any material that:

- Has been discarded or abandoned.
- Has been used and is no longer fit for its intended use.
- Is listed as hazardous waste in the regulations.
- Exhibits 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.

- **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

Listed and characteristic waste may be placed together as long as they are in the same hazard class and packed properly. For more information, call OH&S at (205) 934-2487 or visit the **website**.

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 be packed according to its **own 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 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.

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. The following materials should **always** be packed separately:

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

When dealing with these compounds, call the OH&S Support Facility at (205) 934-3797 for further instructions.

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 clearly legible. OH&S Support Facility will pick up with 4 weeks. If you need your hazardous waste pick up to be expedited, please contact UAB OH&S at (205) 934-2487.

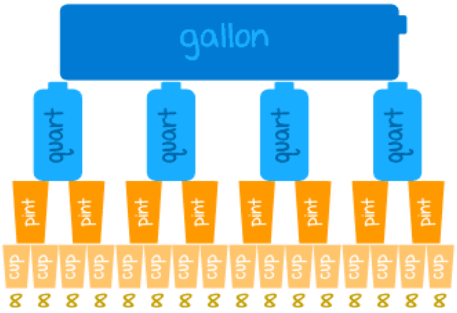
Other Information

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

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 from exposure due to spillage.

Satellite Accumulation Area



For purposes of illustration

If only small amounts of hazardous waste are generated regularly, it may be collected at or near the point of generation (and under the control of the operator of the process generating the waste) 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**.

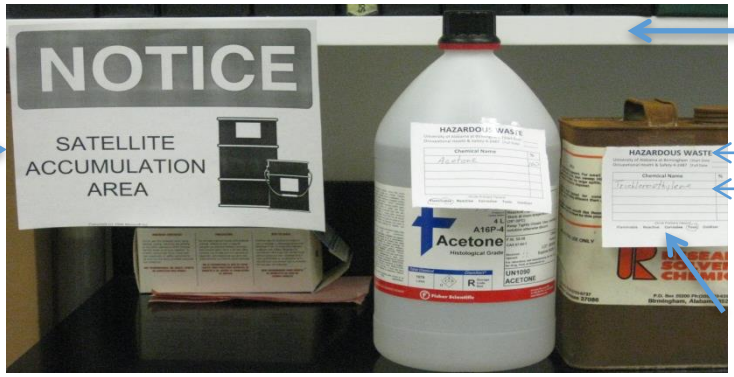
EPA and **ADEM** regulations allow you to accumulate as much as 55 gallons of hazardous waste or **one quart of acutely hazardous waste (P listed)** in Satellite Accumulation Areas. However, as a **Best Management Practice**, it is advised to get your hazardous waste containers picked up from your lab 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 OHS Support Facility within 3 days of that date.

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

No matter what the size, the container must be:

- Compatible with the material stored in them
- Labeled as "hazardous 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



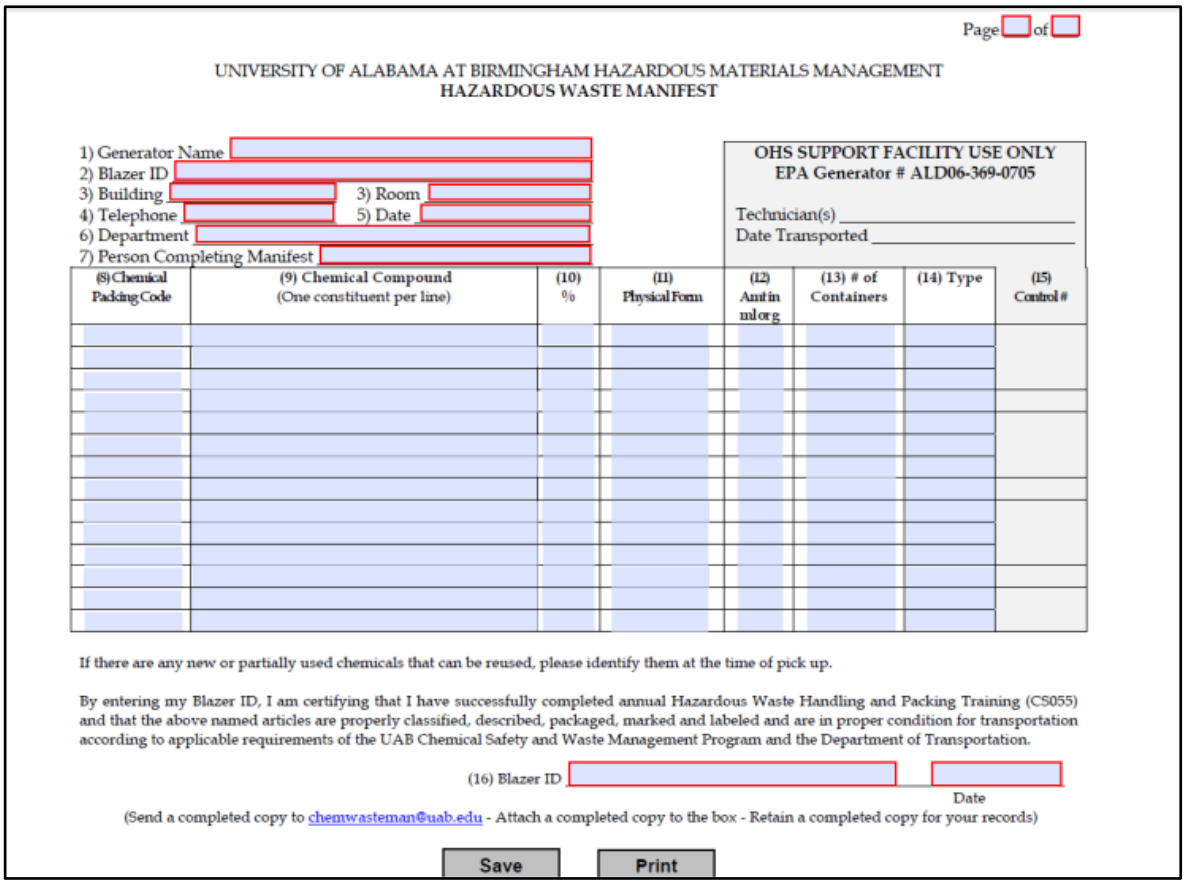
Containers are in good condition and are closed

Containers labeled with the words "Hazardous Waste"

Full chemical name and Percentage are documented on the label

Primary Hazard

The Hazardous Waste Manifest



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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) Amt in ml or g	(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

Hazardous wastes requires a manifest form for pickup and transportation to the UAB OH&S Support Facility. Make sure that you are using the appropriate manifest before you begin. There are available on the **OH&S website**.

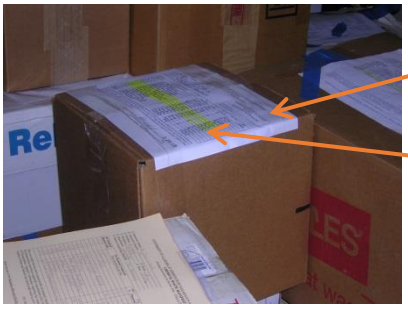
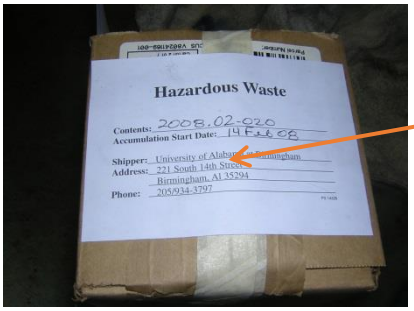
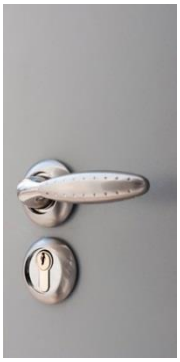
If you are manifesting a mixture, put each chemical and its percentage in the mixture on separate lines. All of the chemicals in the mixture must have percentages that add up to 100%. If the manifested chemical is not a mixture, it should be listed as 100% per container. Liquids **must** be listed as 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.

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:

	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 UAB 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.

Occupational Health and Safety

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 **OH&S website**.

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 dust pan
- Zipper seal type bags (1 gallon size)
- Waste disposal bag
- 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 immediate area of 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 full-face shield

4. Use kit material to absorb liquid then dispose as chemical waste
    a. If powder form carefully sweep into dust pan.
    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 especially trained to handle hazardous chemical spills.

Mercury Spills

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

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 Occupational Health and Safety at (205) 934-2487.

UAB OH&S offers a PPE training course called **Personal Protective Equipment (OHS_OHS100)**. It isn't required but is **strongly recommended**.

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.

Splash Goggles

Face Shield

Safety Glasses

Respiratory System

In rare instances, a respirator might be necessary. If you are not sure, call OH&S 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 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 (OHS_CS055)** training course. 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/or manifest Universal Waste, you must also complete the **Handling, Storing, Packing, and Manifesting Universal Waste (OHS_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 (OHS_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 (OHS_BIO301L)** training course.

Want to Learn More?

OH&S 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 OH&S at (205) 934-2487.