

Disposal of Materials

Contaminated and Non-Contaminated Containers, Glass, and Sharps

Laboratory materials destined for disposal pose a complex challenge to laboratory workers. Improper management can result in exposure, injury, environmental damage and regulatory non-compliance. This guide will illustrate the goals of proper disposal and the methods to accomplish it here at UT.

Three Goals of Proper Disposal to Prevent:

1. Physical injury from sharp or breakable materials
2. Exposure to chemical, biological, or radiological hazards
3. Improper disposal that may affect the environment or result in regulatory non-compliance

Contaminated Materials

General Contaminated Materials

Materials contaminated with biohazards, chemical hazards, and radiological hazards must be managed as waste according to each program. Please note special conditions for sharps and glass later in this document.

<i>Contaminant Type</i>	<i>Dept. or Office</i>	<i>Phone</i>	<i>Link</i>
Biohazards	Biosafety Office	865-974-5547	https://biosafety.utk.edu/waste/
Hazardous chemicals	Environmental Health & Safety	865-974-5084	https://ehs.utk.edu/index.php/hazardous-materials/hazardous-waste/
Radiological hazards	Radiation Safety	865-974-5580	https://radiationsafety.utk.edu/waste/
Mixed Waste	Environmental Health & Safety	865-974-5084	https://ehs.utk.edu/index.php/hazardous-materials/hazardous-waste/

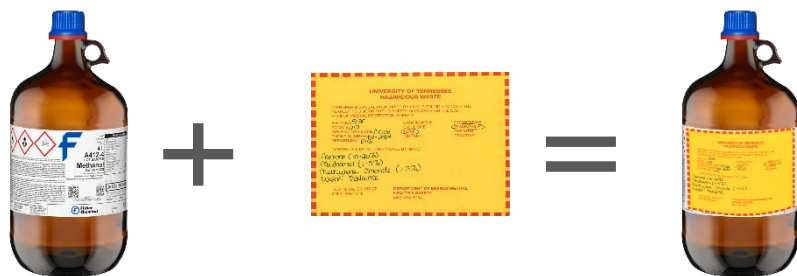
Empty Chemical Containers

Definition of an Empty Container

Under the EPA hazardous waste regulations, a hazardous product container is generally considered empty if its contents have been **removed by commonly employed practices** such as pouring, pumping, or aspirating, and no more than one inch or one percent of residue remains on the bottom of the container (whichever is the lesser amount). If the container is greater than or equal to 110 gallons, no more than 0.3 percent by weight of the total container capacity can remain.

Container Reuse

Empty chemical containers make excellent hazardous waste containers and laboratory personnel are encouraged to do so. If reused, it is important that to ensure that the hazardous wastes collected in them are compatible with the container or any residues that may remain. If a lab does not have a need they may be donated to EHS and made available to other labs that need empty containers. Empty containers such as empty 4L solvent bottles may be donated during waste room hours.



Recycling?

Recycling of glass, plastic, or metal hazardous chemical containers, even if empty, is **not permitted** at UT.



Containers Containing Acutely Hazardous Chemicals



Containers that held acutely hazardous chemicals must be triple rinsed to be considered empty or brought to EHS for disposal as-is. Containers that are triple rinsed must have the rinse material collected and disposed of as hazardous waste. Please consult the University of Tennessee's Hazardous Waste Management Policy on the EHS web-site for the proper procedures to dispose of hazardous waste. To determine whether waste is hazardous or acutely hazardous please check the EHS web-site for a list of [acutely hazardous waste chemicals](#). If rinse material is anticipated to be excessive you may wish to consider disposing of the chemical container containing acutely hazardous chemical as a hazardous waste.

Compressed Gas Cylinders

Containers which held compressed gas are empty when the pressure in the container reaches atmospheric pressure (i.e. the cylinder is completely depressurized). Although the cylinder is considered empty, the empty cylinder must be managed as hazardous waste. Please bring empty cylinders (owned by UT and not rented by Airgas) to EHS, or contact EHS for guidance. Cylinders that are rented by Airgas or other companies should be returned to the supplier.



Aerosol Cans

Aerosol container must be completely empty of product and propellant to be considered completely empty. The spray mechanism or nozzles must be in place and functional. Aerosol cans formerly containing pesticides, flammable propellants or acutely hazardous chemicals, although considered empty, will need to be managed as a hazardous waste.



Defacing Labels

Once a chemical container has been emptied, the original label must be **thoroughly covered or defaced** before it can be put into the regular trash. Covering or defacing labels will help other personnel know the container is empty and has been properly managed in your laboratory or workspace. Good methods for defacing a label include:

- Using a good broad marker to completely cover all hazard warning information and marking the container "EMPTY" before discarding in the dumpster.
- Using opaque tape (e.g. duck-tape or opaque packing tape) to completely cover the label.
- Using spray paint or other similar method to cover the label.
- Physically removing the label is rarely easily achievable but is a possible method.

Effective defacing examples



Heavy Marker Defacing



Cover with tape or other materials; label "EMPTY"



Label completely removed

Sharps and Broken Glass

These guidelines apply to the disposal of sharp objects that are contaminated with any of the following hazardous materials: biological hazards (e.g., infectious agents, human blood/body fluids), hazardous chemicals, radioactive materials, and **all** blades, needles and syringes regardless of how they were used. Federal, State and local laws regulate proper disposal of sharps.

These regulations serve several purposes:

1. Prevent personal injury.
2. Prevent contamination of personnel or the environment.
3. Ensure proper containment of laboratory and infectious waste during collection, transfer, and disposal.

What Are Sharps?

Sharps are any object with corners, edges, or projections that when inappropriately handled or disposed are capable of cutting or piercing skin or conventional waste containers.

Examples of sharps include:

- Hypodermic needles, syringes, tubing
- Blades (scalpels, razors)
- Sharp dental wires and appliances
- Microscope slides and cover slips
- Glass capillary tubes
- Pasteur pipettes
- Plastic pipette tips contaminated with hazardous materials
- Broken laboratory glassware.



How Do I Collect Sharps?

All sharps containers must meet these minimum standards:

- rigid
- non-breakable and puncture resistant
- impervious to moisture and leak proof

In addition, all biologically infectious sharps must:

- have a lid which can be permanently closed
- red in color and/or labeled with a universal biohazard symbol

Collection Procedure:

Sharps containers **must be**:

- stored near where the waste is generated and segregated from other waste

Sharps containers **must not**:

- be filled greater than 2/3 full
- be discarded in the regular trash
- contain free liquids

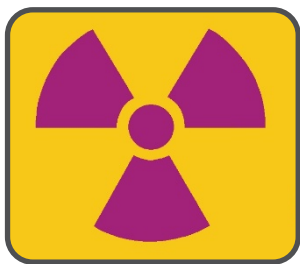


Managing the five types of waste sharps that are generated on campus safely



Sharps with chemical contamination

Collect in an opaque, puncture-proof container that can be closed/sealed. The container should be submitted to EHS with the appropriate UT hazardous waste label/description per EHS policy. The sharps container should not be red/orange or bear the biohazard label as our chemical waste contractor will not accept those. Please contact EHS at 865-974-5084 for guidance and information on where to take these containers for disposal.



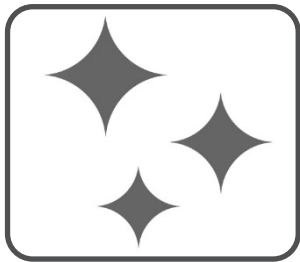
Sharps with radiological contamination

Collect in an opaque, puncture-proof container that can be closed/sealed. The container should be submitted to Radiation Safety with the appropriate hazardous label/description per Radiation Safety policy. The sharps container should not bear the biohazard label, or a UT hazardous waste label. Please contact 865-974-5580 or radiationsafety@utk.edu for additional information.



Sharps with biological/infectious contamination

Collect in an FDA-approved sharps container bearing the universal biohazard waste symbol. These can be ordered from Fisher Scientific, VWR or a number of other lab suppliers. Please refer to biohazardous sharps waste management at <http://biosafety.utk.edu/waste/> or contact Office of Biosafety at 865-974-5547.



Uncontaminated sharps

Although there are no additional hazards (beyond the physical injury risk) and hazardous waste regulations do not typically address uncontaminated sharps, best practices indicate collecting them in rigid puncture-resistant containers (boxes, jars, etc.) Ensure that the container closes and seal well enough to prevent any contents from falling out through cracks or seams. These containers may be placed in the trash as long as they will not be likely of bursting upon further handling.



Uncontaminated lab glassware and empty glass containers

Lab glassware can be triple-rinsed and disposed of as non-contaminated glassware, with the exception of empty glassware once containing acutely toxic (p-listed) waste, which must be managed as a hazardous waste (for a list of these substances, visit the hazardous waste section of the ehs website ehs.utk.edu; for guidance on hazardous waste disposal, please contact EHS). Collect them in a puncture-proof container (e.g., plastic container or broken glass box), labeled as broken glass, and taken to the dumpster for disposal. Questions? Contact EHS 865-974-5084.