

## Chemical Waste FAQ

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## 1. What do I do if I spill a hazardous material?

**If the spill is an imminent threat to life and health (yours or anyone else): Call 911!**

Any spill or release involving a hazardous material (including oil and ethylene glycol), protect the drain!

A. If any quantity of a spilled or released hazardous material (including oil, ethylene glycol) enters the sink, floor drain, or sanitary sewer system immediately call ULPD at 852-6111. Be prepared to provide the following information:

- Your name and phone number to reach you (if they need to call you back).
- The location of the spill or release.
- The name of the hazardous material released.
- The approximate amount released.

B. If the spill is greater than 1L/1 Qt or you do not know the hazards of the material or you are unsure of how to clean up released material, notify co-workers in area, secure area and call ULPD at 852-6111 (24/7).

C. If you know the hazards of the material, less than 500 ml/1 Pt has spilled, and you can clean it up with available equipment: clean it up yourself and manage/collect the material as hazardous waste.

## 2. What chemical waste is regulated hazardous waste?

Most all chemical wastes from laboratories are presumed to be a regulated hazardous waste. If the chemical waste exhibits one or more of the following EPA four hazardous characteristics or is listed, the waste is determined to be a regulated hazardous waste.

- **Ignitability** - Ignitable wastes can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C (140 °F). Examples include ethanol and acetone wash solutions, diesel fuel, and used solvents.
- **Corrosivity** - Corrosive wastes are liquid wastes, such as acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers, such as storage tanks and drums.
- **Reactivity** - Reactive wastes are unstable under "normal" conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water. Examples include n-butyl lithium, silane, lithium-sulfur batteries, and explosives.
- **Toxicity** - Toxic wastes are harmful or fatal when ingested or absorbed (e.g. contains mercury, lead, cadmium, chromium, etc.). When toxic wastes are land disposed, contaminated liquid may leach from the waste and pollute ground water. Toxicity is defined through a laboratory procedure called the. The TCLP helps identify wastes likely to leach concentrations of contaminants that may be harmful to human health or the environment.

Additionally, by definition, EPA determined that some specific wastes are hazardous. These wastes are incorporated into lists published by the Agency. These lists are organized into three categories:

- **The F-list** (non-specific source wastes). This list identifies wastes from common manufacturing and industrial processes, such as solvents that have been used in cleaning or degreasing operations. This includes common used waste solvents such as xylene, toluene, acetone, ethyl acetate, methylene chloride, trichloroethane.
- **The K-list** (source-specific wastes). This list includes certain wastes from specific industries, such as petroleum refining or pesticide manufacturing. Certain sludges and wastewaters from treatment and production processes in these industries are examples of source-specific wastes.
- **The P-list and the U-list** (discarded commercial chemical products). These lists include specific commercial chemical products in an unused form. Some pesticides and some pharmaceutical products become hazardous waste when discarded.

### 3. Why do I need to collect a chemical waste if it is not deemed to be a regulated hazardous waste?

Although the chemical may not be determined to be a regulated hazardous waste, it could still be toxic to human health, animal health, and the environment if not disposed properly. These include chemicals that have acute or chronic carcinogenicity, mutagenicity, and teratogenicity. Moreover, some chemicals could be deemed hazardous or a nuisance to our city's waste water treatment plants. These include chemicals that contain concentrated dyes, emanates a strong, offensive odor, any oxygen demanding pollutant, detergents, surface active agents, or other substances which might cause excessive foaming to the POTW.

### 4. Is there any chemical waste that I can sink dispose in my lab?

There are three liquid waste exceptions in which labs are allowed to sink dispose with running water:

- If your waste is simply a very dilute aqueous acidic or basic waste containing no other hazardous materials or toxic metals, and the pH is between 5.0 and 11.0
- 10% bleach solutions used to inactivate biological materials
- Expired sodium chloride and potassium chloride solutions

\* Toxic metals include arsenic, barium, cadmium, chromium, **copper**, lead, **nickel**, mercury, selenium, silver, **zinc**

### 5. Where can I get containers to collect my chemical waste?

If you do not have the original product container for the chemical used to generate the waste, you can reuse another chemical container. Ensure that you triple rinse the container with water and allow it to dry. Also, deface or cover the previous product label. The container must be compatible with the waste you are putting in it. Glass is generally preferred except for Hydrofluoric Acid. High density polyethylene (HDPE) may be used for wastes, except for concentrated chlorinated solvent wastes.

If you have high volume/high frequency chemical waste streams, DEHS can provide 2.5 gal/10 L poly containers for liquid waste and 5-gallon/20 L plastic bag-lined poly buckets for chemical solid waste. To

request a DEHS waste container, please email your request to [cathy.price@louisville.edu](mailto:cathy.price@louisville.edu), be sure to specify what type of container and the name of chemical waste to be collected.

## 6. Can multiple labs on the same floor share the same chemical waste collection container?

**NO!** Chemical hazardous waste must be kept at or near the process generating the waste. The EPA and state inspectors interpret this as the same room the hazardous waste is generated in.

## 7. How do I safely store my chemical waste in my laboratory?

- **Each chemical waste container must be labeled or marked with the words “Hazardous Waste” or “Chemical Waste”\* followed by the waste chemical(s) name.** Abbreviations for chemical waste containers are acceptable, as long as all personnel in the lab knows what it means (i.e. “Et Br” = “ethidium bromide”).
- **Chemical waste container lids must be on at all times (except when adding waste)** and have screw caps or tight lids (no parafilm or foil).
- Chemical waste containers must not leak, be cracked, or rusty
- No beakers, flasks, or food/beverage containers
- Sealed plastic bags are acceptable for solid materials

\* As a courtesy, DEHS provides 5” x 5” blank printed “Chemical Waste” labels free of charge to research and clinical labs. To obtain labels, University personnel can visit the DEHS Radiation Safety Office located in Library Commons room 102 (in between City Café and the HSC Post Office), the DEHS Administration office located at 1800 Arthur St, or email your request to [cathy.price@louisville.edu](mailto:cathy.price@louisville.edu) to receive by Campus Mail (be sure to include your building and room number where you receive campus mail).

## 8. How do I get my chemical waste picked up?

When you have chemical waste requiring pick up, you must first attach a DEHS uniquely numbered Chemical/Hazardous Waste Label to each container\*.

Next, complete the online DEHS Chemical and Hazardous Waste Pickup Form located on the DEHS Waste disposal web page <https://louisville.edu/dehs/ohs/waste-pickup>.

Once the required information is completed, the web based form is submitted to the Hazardous Waste Coordinator. Within seconds, you will receive electronic confirmation of your request. The Hazardous Waste program is committed to completing pickup of your waste within 10 working days.

\* Multiple small containers ( $\leq 75$  ml) of the exact same chemical waste can be placed into a zip-lock bag or small box. Only one DEHS uniquely numbered label needs to be attached. For QTY/Unit field enter the approximate volume or weight of all the containers.

## 9. Where can I obtain the DEHS uniquely numbered chemical/hazardous waste labels?

University personnel can visit the DEHS Radiation Safety Office located in Library Commons room 102 (in between City Café and the HSC Post Office), the DEHS Administration office located at 1800 Arthur St, or

email your request to [cathy.price@louisville.edu](mailto:cathy.price@louisville.edu) to receive by Campus Mail (be sure to include your building and room number where you receive campus mail).

#### **10. Is there a charge to have my lab chemical waste picked up?**

DEHS does not typically charge\* departments and units for chemical and hazardous waste pick up.

\* Exceptions: Stabilization of any reactive or peroxide-forming chemical which indicates or shows signs of degradation (i.e. bulging container, crystallization, etc.) and vendor lab analysis of "unknown" chemical waste may be charged back to department. DEHS will notify PI and department chairperson in these cases.

#### **11. What are considered peroxide forming chemicals? Is there a list?**

A peroxide is a compound containing an oxygen–oxygen single bond or the peroxide anion,  $O_2^{2-}$ . A wide variety of organic compounds can spontaneously form peroxides by a free radical reaction of the hydrocarbon with molecular oxygen. Under normal storage conditions, some of these chemicals, such as isopropyl ether and butadiene, can form peroxides that accumulate in the chemical container and may explode when subjected to heat, friction, or mechanical shock. Other organic chemicals, such as diethyl ether, dioxane, and tetrahydrofuran should be tested for peroxides prior to distillation or evaporation.

For a list of other commonly used peroxide-forming chemicals visit the DEHS Waste Disposal web-page.

#### **12. Can I mix different chemical wastes in the same container?**

Yes, if the wastes are compatible. There are a variety of ways to determine whether or not two or more waste streams are compatible. In general if two chemicals or solutions have similar hazard properties than they are probably compatible. For example, non-halogenated flammable organic solvents, such as xylene, acetone, and alcohols, are compatible

Broad generalizations about properties can be deceiving though, two compounds can be classified as 'corrosive' yet be on opposite ends of the pH scale and highly incompatible (i.e. acid waste must not be combined with basic waste). Product safety data sheets (SDS/MSDS) provide a good source of compatibility information. University personnel can also contact the DEHS Hazardous Waste Coordinator at 852-2956 for guidance.

#### **13. Are there certain chemical wastes I cannot mix?**

Yes! Some compounds are significantly more expensive to dispose of than others. In particular any type of mercury or radioactive contamination increases the cost of disposal several fold. Lab personnel should contact the DEHS Radiation Safety Office at 852-5231 regarding the generation and collection of any radioactive/chemical mixed waste.

In addition to mercury and mercury-compound containing waste and radioactive material, lab personnel cannot combine the following chemical waste with other lab chemical waste:

- Nitric acid
- Concentrated sulfuric acid
- Sodium azide solutions > 5%
- Piranha waste (sulfuric acid/hydrogen peroxide)
- Chromic acid waste

Additionally, the waste collection container for the above wastes, cannot exceed 1 Gallon/4 L in size and the container can only be filled to  $\frac{3}{4}$  capacity.

#### **14. My PI or Lab Manager has decided to "thin out" some of our chemicals in inventory, we may have over 50 items to submit, do I have to use the online form?**

Not necessarily. DEHS encourages labs to go through their inventory annually to identify items that they may no longer need (but are still usable to others) or are expired. Contact the DEHS Hazardous Waste Coordinator for an on-site waste consult at [cathy.price@louisville.edu](mailto:cathy.price@louisville.edu) or 852-2956.

#### **15. My PI is leaving the university (transferring elsewhere, retirement) and will not be taking chemicals, we may have over 50 items to submit, do I have to use the online form?**

Not necessarily. Contact the DEHS Hazardous Waste Coordinator for an on-site waste consult at [cathy.price@louisville.edu](mailto:cathy.price@louisville.edu) or 852-2956.

#### **16. What can I do with my unused (surplus) chemicals?**

Unused or unopened reagent chemicals may be candidates for the DEHS surplus chemical redistribution program, CHEMEX. DEHS maintains an inventory of surplus chemicals that are available to the university community, free of charge. The program is an integral part of the University's waste minimization program. Researchers are given a direct means of improving the environment by reducing the volume of chemical materials disposed of as hazardous waste. For details regarding unused chemical eligibility, visit the DEHS CHEMEX web-page <http://louisville.edu/dehs/waste-program/chemex>

#### **17. Where can I get unused (surplus) chemicals?**

Unused or unopened reagent chemicals can be obtained through the DEHS surplus chemical redistribution program, CHEMEX. DEHS maintains an inventory of surplus chemicals that are available to the university community, free of charge. The program is an integral part of the University's waste minimization program. Researchers are given a direct means of improving the environment by reducing the volume of chemical materials disposed of as hazardous waste. To view available chemicals, visit the DEHS CHEMEX web-page <http://louisville.edu/dehs/waste-program/chemex>

#### **18. What do I do with empty chemical containers?**

DEHS encourages labs to repurpose empty chemical containers to collect chemical waste when possible. As long as the chemical was not highly toxic\* or reactive, empty plastic, metal, and fiberboard waste containers can be placed into recycling. Prior to placement into the recycling bin, these types of chemical containers must be triple rinsed, allowed to dry, and the label defaced and obliterated.

Unfortunately, empty glass chemical containers must be managed as “glass trash” and placed in with other broken glassware.

\* Empty highly (acute) toxic chemical containers (EPA P-List) and empty reactive chemical containers must be submitted as chemical hazardous waste. To view list of EPA P-List chemicals please visit the DEHS Waste Disposal web page or contact the DEHS Hazardous Waste Coordinator at 852-2956 or [cathy.price@louisville.edu](mailto:cathy.price@louisville.edu)

### **19. Can I submit my full box of “Broken Glassware” or “Glass Trash” via the DEHS Chemical and Hazardous Waste pick up form?**

No, only empty EPA P-Listed or reactive chemical containers are to be submitted for pick up by DEHS. Full broken glassware and glass trash boxes are picked up by University Custodial Services. Requirements for these boxes are as follows:

- Box must be clearly marked or labeled to convey its hazard (i.e. broken glassware or glass trash)
- Box cannot exceed 20 lbs/9 Kg
- Box must be securely taped closed

Personnel should place full, marked, and closed boxes next to the normal trash can for pickup by university Custodial Services. Personnel should not place full boxes out in the hallway.

### **20. What if I don't know what is in the chemical waste I'm disposing?**

University personnel are responsible for identifying and labeling the chemical containers in their work areas and maintaining those labels. Please make every effort to identify the contents of an "unknown" waste prior to calling for its disposal. The DEHS Hazardous Waste Coordinator can be of assistance in helping you to identify some unknowns. Truly "unknown" materials that cannot be identified are often quite expensive to dispose of; the cost of its analysis would be charged back to the department.

### **21. Where does my chemical waste go once DEHS picks it up?**

DEHS transports chemical waste back to the university's Federal and state permitted treatment, storage, and disposal facility (TSDF). This facility, named the Environmental Protection Services Center (EPSC), is located on Belknap Campus. All chemical waste generated from the university's three campuses is safely stored and managed until it can be shipped off site (usually twice a year). Depending on the nature and type of your chemical waste, its final disposition can vary. Some waste streams can be recycled, some can be used in fuel-blending (a form of recycling), some are incinerated off-site, and a few are stabilized and disposed in permitted hazardous waste landfills. DEHS ensures that contracted hazardous waste entities adhere to strict governmental regulations with respect to its offsite shipments of hazardous chemical waste.