
The Waste-Paper

“Waste is a terrible thing to mind”

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Secondary Containment

Secondary containers help prevent the spread of chemical spills, including spills involving chemical wastes. Spilled chemicals may present a hazard to those occupying the lab or work area and may result in a release to the environment (drains, onto soil, etc.).

Secondary containment is highly recommended when moving chemicals through buildings or outdoors. It is also recommended for most hazardous waste containers, particularly those stored near sinks or drain or on the floor.

There are a number of products available for this purpose, including, but not limited to:

- **Trays** for under vacuum pumps or oil-containing equipment.



- **Polypropylene tubs** available free from EHS.

Polypropylene is resistant to a wide variety of acids, bases and solvents. The tubs hold 10.8 liters of liquid – two standard 4-liter bottles and two half-liter bottles each. Contact EHS at x8-5294 to request secondary containment tubs.

- **Bottle carriers** or tubs when transporting chemicals. These are available through chemical stockrooms.



- **“Party buckets”** made of polypropylene for 5-gallon carboys or large containers.



Secondary containment may also be used to ensure incompatible chemicals are kept separate during storage. Solvent, corrosive, and oxidizer waste containers should all be separated by secondary containment to

avoid unintended reactions.

An Ounce of Prevention...

Many types of laboratory equipment such as refrigerators and freezers hold critical research materials. Whether temperature-sensitive reagents or the product of your research activities, their integrity depends on properly maintained equipment.

Besides the potential loss of valuable materials, failure of a refrigerator or freezer used for storage of unstable temperature-sensitive materials could result in over pressurization of containers or other hazardous conditions. Thus, please consider a few words on preventative maintenance and replacement schedules.

Refrigerators, freezers and other laboratory equipment should be periodically evaluated with regard to age, temperature control and obvious signs of wear (e.g., torn or missing seals, loud compressor cycles, etc.). Remember, the costs associated with cleaning and disposing of a failed refrigerator full of chemicals is the financial responsibility of your lab!

Periodically check lines from water-cooled equipment to prevent flooding due to line failure; inspect cords from electrical equipment to identify fraying or other damage; and inspect heating devices to prevent the possibility of sparks that could ignite flammable liquids.

Equipment malfunctions should be reported promptly to a senior lab member. Do not continue to use the equipment. Be sure to check the manufacturer’s literature for recommended inspection and preventive maintenance schedules.

A small investment in periodic equipment inspection



and preventive maintenance can pay big dividends in the long run by avoiding adverse impacts on your research.

Neutralized Means Not Hazardous. Right?

A lab worker decides to be a good environmentalist and reduce waste by rendering a post-reaction acid solution non-hazardous. Careful neutralization of the acid is performed until reaching a pH of 7. The researcher disposes of the waste down the drain, not thinking of the toxic barium salts that were formed from the reaction.



This is a hypothetical, but realistic scenario that can happen without careful consideration of byproducts formed from neutralizing hazardous chemicals. Even though it is no longer corrosive, other hazards such as ignitability, reactivity and toxicity may remain. The Environmental Protection Agency (EPA) defines hazardous wastes by specific compounds but also within specific material parameters or “characteristics.” Improperly disposing of materials that meet any of the EPA definitions is illegal and can result in regulatory action and fines to the University.

“Dilution is not the solution to pollution” is a common catch-phrase that is associated with drain disposal. In addition to working within the regulations of the EPA, there are limits imposed on the discharge of organic, toxic and corrosive materials by the NJ Department of Environmental Protection (NJDEP) and the local sewer operating authority. Keep in mind that anything disposed down the drain is combined with building waste water that is processed at the local municipal water treatment facility and ultimately discharged to the environment.

Personal safety is also a major concern when neutralizing, specifically corrosive or reactive materials. Strong corrosives can react violently, generating copious amounts of heat and gas. The same holds true for air or water reactive materials. It is wiser to dispose of these materials untreated as hazardous waste rather than risk the safety of yourself and others

in the lab. A neutralization that progresses out of control can result in fire or an explosion.

Careful thought and common sense play critical roles in deciding whether neutralizing a hazardous material is a beneficial practice overall. You must determine if the reaction can be carried to completion safely and if the resulting material is truly non-hazardous. EHS can assist labs with this determination. If you are unsure of your current or anticipated practices of neutralizing waste, contact Jim Boehlert or Steve Elwood. For more information, see *Elementary Neutralization* at <http://web.princeton.edu/sites/ehs/chemwaste/elementaryneutralization.htm>.

**Next Waste Pickup:
Thursday,
January 31, 2008**

*Bring wastes to designated
collection point on
Wednesday, January 30*

<i>EHS HAZARDOUS WASTE CONTACTS</i>	
Main Office	8-5294
Steve Elwood (Chemical & Radioactive Waste)	8-6271
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EHS Web Page http://www.princeton.edu/ehs	