

# Schepartz Lab Chemical Safety and Hazardous Waste Protocols

updated Oct 2007

## General reminders pertaining to the office and lab areas

1. Do not leave any food, water bottles, coffee cups, etc. on your **desk at any time**.
2. Safety glasses and gloves **must be worn** at all times when working in the lab (**even if you are doing biology experiments or in the cell lab**)
3. A lab coat **must be worn** when working with hazardous materials and should be worn generally. Keep a separate lab coat for the cell lab that should not be removed from that area.
4. Stand on stools (NOT CHAIRS) to reach high shelves.
5. Do not block safety showers, eye washes, and fire extinguishers with stools, chairs, or any other items.

## Segregation of hazardous chemicals

1. Hazardous chemicals must be separated in storage according to their class and compatibility as follows:

### **Solids – separate storage areas for:**

- oxidizers
- flammable solids
- water reactives
- others

### **Liquids – separate storage areas for:**

- flammable/combustible
- inorganic acids
- organic acids (ex: acetic acid separated from other acids)
- caustics/bases
- oxidizers

### **Gases – separate storage areas for:**

- toxic
- oxidizers
- flammable

## 2. Rules and suggestions for segregating chemicals:

- \* Segregating chemicals is as simple as isolating them on different shelves or putting one or more of a similar class in a secondary container (like a tray or beaker)
- \* Keep all flammables in the flammables cabinet segregated as necessary by shelf or with a secondary container
- \* Keep all acids and bases in the corrosives cabinet segregated as necessary by shelf or with a secondary container

If you are unsure about the storage of any chemical, consult the list of compatible chemicals on the center flammables cabinet in 303A and the guide for chemical storage outside each office.

## Storage and handling of hazardous chemicals

**1. All flammables must be stored in the flammables cabinet or in the flammables rated refrigerator/freezer in 301.** DO NOT keep flammable chemicals in any other refrigerator/freezer. This includes reaction intermediates/products that are in flammable solvents.

2. Acids, bases, and other corrosives must be stored in the corrosives cabinet

**3. No hazardous chemicals should be stored on your bench or the floor.** If you are working with any of these chemicals, keep them in your hood if possible or on your bench for short periods of time.

**4. No hazardous chemicals should be stored above eye level.** All liquids should be no higher than the first shelf at your bench. Use the second shelf for solids like salts, silica gel, or other materials.

5. All containers should be properly labeled, particularly those containing hazardous chemicals. It is a good general practice to label everything with its contents, but hazardous chemicals in particular must have legible labels.

**6. All hazardous chemicals should be dated upon receipt.** Those that can form peroxides such as THF and ether should be discarded one year from the date of receipt...**NO EXCEPTIONS**. Please check the table in section 3.2.5 of the OEHS manual for a list of other chemicals that fall in this category (the list includes aldehydes, ethers, alkenes and others).

(<http://www.yale.edu/oehs/Documents/chem/chemical%20hygiene.pdf>)

7. **Cross off the labels** on every empty bottle and label each as trash. If you do not want them for your own use, either put them in the cabinet in the HPLC room or under the hood in 305A.

8. We should not keep old chemicals around unless there is a use for them.

## Dealing with Hazardous Waste

[http://www.yale.edu/oehs/Documents/waste/hazwaste\\_manual\\_chemical\\_section.pdf](http://www.yale.edu/oehs/Documents/waste/hazwaste_manual_chemical_section.pdf)

1. Hazardous waste should be kept in appropriate secondary containers and segregated as listed above according to class (i.e. acids separate from bases separate from flammables, etc;). Don't store any other stock chemicals or empty containers with the hazardous waste.

**2. Always keep the cap on hazardous waste containers when not in use!!**

Similarly, always close the lids to the funnels on the synthesizer waste containers and make sure these containers are appropriately labeled.

**3. Label all hazardous waste with a red tag** (available in 305A): fill out the tag completely and **DO NOT USE ANY ABBREVIATIONS**. *Use tape or a plastic sleeve* (in 305A) to ensure that the tag does not fall off at any time.

4. For silica gel waste, use one of the white stickers in 305A.

**5. ALWAYS make sure that the HPLC carboys are labeled with the stickers available in the HPLC room.** After you use the HPLC, you should replace the cap on the waste container.

6. Any aspiration flasks should be treated as hazardous waste storage containers, labeled appropriately (approximate percentages to the best of your ability), and stored in a secondary container even when empty. **These flasks should be emptied immediately after each use.** If you use these flasks for biological purposes only, just label them with a sticker that says "BL1 waste".

7. All sharps should be placed in the appropriate red boxes. This includes needles, razor blades, and **ALL SYRINGES** (even if they do not have needles). If you want to keep a razor blade or scalpel around for general use, make sure it is safely covered and stored (perhaps stick it in a foam block).

8. Once your hazardous waste containers are full, place them in the appropriate satellite waste collection area (in each lab: in the flammable cabinet under the office window; in the HPLC room: in the blue tray; for sharps: in the box in 311).

## Special Considerations for Ethidium Bromide

- Highly dilute aqueous solutions less than 10 mg/l (i.e. <10 ug/mL) can be disposed of in the sanitary sewer.
- Alternatively, you may use an EB deactivation procedure:
  - 1) In a fume hood, dilute the EB solution to a final concentration of <30 mg/L (=30 ug/mL).
  - 2) Add 10 ml of household chlorine bleach for every 1 mg of EB.
  - 3) Stir at room temperature for 2 hours.
  - 4) The product solution is the physiologically inactive 2-carboxybenzophenone and can be rinsed down the sanitary sewer with a 20-fold excess of water.

## **Special consideration for the HPLC Room**

1. **Keep all syringes in the appropriate drawer** (next to Waters) or discard the plastic ones in a sharps container.
2. **Replace the cap on the HPLC waste containers after each use.**
3. Keep extra bottles with remaining water or acetonitrile on the bench top, not on the floor, and keep empty bottles in the cabinet under the sink.
4. Don't leave your samples or bottles of acetonitrile/water around the room.
5. Keep all waste bottles in a secondary container and label them appropriately.

## **Special considerations when using the Rotovaps**

1. **Empty the trap after each use.**
2. **Clean out the trap and bump bulbs after each use.**

## **Locations of Important Items**

1. MSDS sheets: Veronica's desk or online (OEHS website)
2. Spill kits/spill pads: 305A
3. Dust pan/broom: 305A

4. Fire extinguisher/eye wash/safety shower: across from each office
5. First aid kits: 303 glass cabinets

## **Other Useful Information**

1. It is okay to keep expired biological reagents if they will not form any dangerous by-products and if you can still use them. Otherwise, they should be discarded.
2. You should know what safety training you are required to have and make sure that you do this each year (there is online training or you can attend the session before the BMS symposium).



LOCATIONS OF IMPORTANT ITEMS:

SAFETY SHOWER/EYE WASH – OUTSIDE EACH OFFICE

FIRE EXTINGUISHER – OUTSIDE EACH OFFICE

SPILL KIT/SPILL PADS – 305A

BROOM/DUST PAN – 305A

FIRST AID KITS – 303 GLASS CABINETS