
The Waste-Paper

The Hazardous Waste Disposal Monthly Update

Volume 7 Issue 10

October 2005

Environment Audit Next Week!

As a reminder, the University has hired Woodard and Curran, an environmental consulting firm, to conduct a multi-media environmental audit of Princeton University operations. The auditors will be on site Tuesday, October 25 through Friday, October 28.

Auditors will visit your laboratory or work area to review chemical storage and chemical waste management, including interviewing anyone present in the work area.

Over the past month, EHS has conducted pre-audit inspections of labs and other areas where chemicals are used and stored and hazardous waste is generated. For the most part, the work areas appeared to be in good shape. However, where problems were noted, the following were the most common issues:

- **Chemical Labeling:** All chemicals must be labeled in such a manner that anyone working in the area could identify the contents.
- **Waste Labeling:** All containers of hazardous waste must bear a label with the words "Hazardous Waste" and a list of the chemical constituents. **Do not** use ambiguous labels, such as *Organic Waste*, *Aqueous Waste*, *Solvent Waste*, etc. The chemical names must be listed.
- **Used Oil Labeling:** Used oil must be labeled "USED OIL". Do not use hazardous waste labels.
- **Closed Containers and Funnels:** All containers of hazardous waste must be closed except when filling. Funnels may not be left in open containers. Funnel caps must be closed.
- **Secondary Containment:** Waste containers stored near sinks and drains and those stored on the floor should be in secondary containers, such as trays, tubs or buckets.

When the auditors come to your work area, please do not run away. They will likely ask questions about how you handle chemical wastes, what goes down the drain, how you would clean up a spill, etc. Please respond with brief, honest answers.

For more information, please contact Steve Elwood (selwood@Princeton.edu) at 258-6271 or Robin Izzo (rmizzo@Princeton.edu) at 258-6259.

Spill Kits

Do you know where the nearest spill kit is located? Each lab or work area should have access to sufficient quantities of absorbents or other types of materials to control a spill.

EHS provides general use spill kits in all laboratory buildings and most other buildings where chemicals are stored or used. The EHS spill kit includes all of the materials needed to clean up spills of most any material **except hydrofluoric acid and mercury**. Most are located near the elevator on the 100 level. After using the spill control materials in the EHS kits, please contact EHS at 258-5294 to request that the materials be replenished.



If you use hydrofluoric acid, be sure to have HF compatible spill control materials, such as PowerSorb, available. If you use mercury, consider replacing with non-mercury alternatives. Otherwise, keep a supply of mercury spill materials (HgX, Mercury-Absorb, etc.) on hand. Mercury sponges are not very effective. For more information on cleaning up mercury spills, please see <http://web.princeton.edu/sites/ehs/chemwaste/mercury.htm>.

Next Waste Pickup:
October 27, 2005

Bring waste to collection area on
October 26, 2005

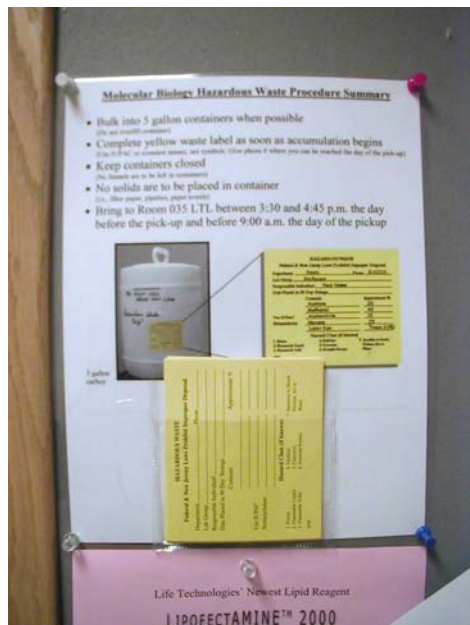
Frick Loading Dock: 1PM – 2 PM

E-Quad Room-7: 2 PM to 3 PM

LTL Loading Dock: Noon to 4:30 PM

Waste Posters

EHS provides posters that include brief instructions on how to manage hazardous waste along with a pouch to hold waste labels. If you do not have one in your laboratory, contact Joan Hutzly at Hutzly@Princeton.edu or 258-6251. Include the location of your laboratory, since the instructions are specific to the building or department.



Drain Disposal

Confused about what can go down the drain and what must be collected as hazardous waste? The sewer authority has strict rules against disposing of most hazardous chemicals via the drain. The following materials may be drain disposed via the sanitary sewer:

- Acids or bases with pH between 3 and 11.
- Alcohols in concentrations less than 26% (e.g., no longer flammable)
- Chemicals on our Non-Hazardous Waste List, available at <http://web.princeton.edu/sites/ehs/chemwaste/nhaz.htm>
- Other chemicals for which permission is granted through EHS or Bob Ortego, Environmental Compliance Manager (rfo@Princeton.edu or 258-1841).

Never dispose of chemical waste via a storm sewer. Please see the *Policy on Drain Disposal of Chemical Waste* at <http://web.princeton.edu/sites/ehs/policies/draindisposal.htm> for more information.

Question of the Month

How do I dispose of piranha solutions?



Piranha solutions are used to remove organic residues from substrates, particularly in microfabrications labs. The traditional piranha solution is a 3:1 mixture of sulfuric acid and 30% hydrogen peroxide. The solution may be mixed before application or directly applied to the material, applying the sulfuric acid first, followed by the peroxide. Piranha solutions are extremely energetic and may react violently if not handled with extreme caution.

Due to its instability, **do not store piranha solutions or collect as hazardous waste.** Mix small batches of fresh solution for each use. After the material has cooled, aspirate or pour off the excess solution and dispose this small amount via the drain, flushing the drain with copious amounts of water.

The following are some additional recommendations for handling piranha solutions:

- Always use glass (preferably Pyrex) containers. Piranha will melt plastics.
- Mix the solution in a hood with the sash between you and the solution. Wear gloves and eye protection.
- When preparing the piranha solution, always add the peroxide to the acid.
- Piranha solution is very energetic and potentially explosive. It is very likely to become hot, more than 100 degrees C. Handle with care.
- Leave the hot piranha solution in an open container until cool.
- Never store piranha solutions. Piranha stored in a closed container will over-pressurize and rupture the container.
- Adding any acids or bases to piranha or spraying it with water accelerates the reaction. This includes Photoresist, which is a strong base.
- Mixing hot piranha with organic compounds may cause an extremely violent reaction. This includes acetone, photoresist, isopropyl alcohol, and nylon

For more information, contact Robin Izzo at rmizzo@Princeton.edu or 258-6259.

The Waste-Paper is distributed to departmental contact persons in hard copy or e-mail approximately one week in advance. If you would like to be added to the distribution, contact Marcia Leach at marcians@princeton.edu or 8-5296.

EHS HAZARDOUS WASTE CONTACTS	
Main Office	8-5294
Steve Elwood (Chemical & Radioactive Waste)	8-6271
Marcia Leach (Waste-Paper)	8-5296
Don Robasser (Biohazardous Waste)	8-6256
EHS Web Page	http://www.princeton.edu/ehs