

### *Training Topic of the Month:*

## Particularly Hazardous Substances

Among the most common areas of deficiency found in the EH&S laboratory inspections are those items associated with the use of Particularly Hazardous Substances (PHS). The OSHA Laboratory Safety Standard requires that special attention be given to workers who use PHSs. They are defined by OSHA as:

- **"Select" carcinogens: materials with STRONG evidence of carcinogenicity**, like chloroform, chromic acid, benzene, formaldehyde, methylene chloride
- **Materials of high acute toxicity**, like cyanide or hydrofluoric acid
- **Reproductive hazards, mutagens or teratogens**, like lead or ethidium bromide
- **Explosive or highly reactive materials**, like sodium azide, picric acid or ethyl ether.
- **Unknowns similar to the above items**



The following steps **must** be taken for the proper handling of PHS; they are part of our Chemical Hygiene Plan, as implemented by the Laboratory Safety Committee **and are enforceable by OSHA**.

1. Identify all PHS materials in your area. There is a fairly comprehensive list of PHS items on the EH&S web site which should help you out. Check out <http://ehs-alert.fms.bap.cmu.edu/EHSWebSite/pdf/cmuphstabe.pdf>
2. For each PHS in use, the laboratory must prepare a Standard Operating Procedure (SOP), outlining in

detail the way the lab will use the PHS material. The procedure will include the following items:

- Identifying health hazard information
- Outlining storage and handling information
- Identifying protective equipment and engineering controls
- Specifying a designated area for the use of the material
- Describing the decontamination and waste management aspects of the material's use
- Identifying the steps to be taken in the event of an emergency (first aid, fire, spill)

The format for the SOP has been prepared by the Laboratory Safety Committee and is available at <http://ehs-alert.fms.bap.cmu.edu/EHSWebSite/LaboratorySafety/PHSformblank.xls> Contact me if you have any questions about procedure preparation.

3. Finally, each person using the PHS must be approved by the laboratory PI to do so, and must read the SOP and sign off on its requirements.

We ask that all laboratories send EH&S a copy of the final procedure and also to make it available in the laboratory for reference by lab personnel and EH&S.

### **got microscope?**

*If anyone has a microscope that is not being used and you would like to donate it to a worthy cause, please let me know ([markb2@andrew.cmu.edu](mailto:markb2@andrew.cmu.edu)). One of my many tasks at the University is with management of asbestos containing materials. Having a microscope handy would be extremely helpful for me to use to screen suspect material for asbestos content. In my previous life (pre-Carnegie Mellon) I performed such analyses. While the screening is not an **official** test (those will still be done but usually take several days), it may help speed up a facility project or renovation, or just resolve a concern about a material in a timely fashion. Any scope will do, provided it has an integral light source and can achieve at least 100 X. Thanks in advance!*

### **Laboratory Safety and Hazardous Waste Training**

September 12, 2007	9:30 AM to Noon	Mellon 348	September 27, 2007	9:30 AM to Noon	Hamburg 1002
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To register, go to: [http://ehs-alert.fms.bap.cmu.edu/EHSWebSite/Training/ClassDescriptons/training\\_laboratory\\_safety.htm](http://ehs-alert.fms.bap.cmu.edu/EHSWebSite/Training/ClassDescriptons/training_laboratory_safety.htm)

## Spotlight PHS: Hydrofluoric Acid

Hydrofluoric acid is significantly more hazardous than many of the other acids used on campus. What makes HF so hazardous is that when it comes into contact with the skin, it immediately penetrates and moves past the epidermis, leaving few signs of burns on the skin's surface. The hydrogen then separates from the fluoride and attaches itself to the body's enzymes. The fluoride bonds with the calcium and magnesium in the body, destroying cell membranes and nerves on its way to the

bones. Since the acid damages the nerves, sometimes there is no pain for several hours after exposure while the acid spreads throughout the body. Death has been reported with an exposure site no bigger than the sole of the foot. It is necessary to have a tube of the antidote for exposure (calcium gluconate) present in ALL laboratories where HF is used. **One of most common inspection non-compliance issues is with labs where the antidote is expired.** Please take a few minutes right now to find your tube of gel (is it hard to find?) and check the expiration date. New gel can be ordered through Mellon Stores at 8-3212.

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## *Environmental Subject of the Month:*

### Hazardous Waste Generation (Part 1)

It is important to be mindful of your laboratory's EPA requirements for the proper accumulation of hazardous waste. These are your hazardous waste container REQUIREMENTS:

1. Containers must be compatible with the material going into them
2. Containers must be labeled with the words "Hazardous Waste" and the container contents (ask EH&S for labels to help with this)
3. Containers must be closed with a screw top lid at ALL times, except when materials is actually being put inside
4. Containers must be setting in a secondary containment bin or tray when there is a drain or sink nearby
5. Containers must remain **IN THE ROOM WHERE THE WASTE WAS GENERATED** until removed by our waste contractor or by EH&S. *You cannot even move it to another one of your own labs!*

It is also important that you know what materials are considered hazardous. They are any material that is:

- Flammable (flash point >140° F)
- Corrosive (pH less than 2 or greater than 12.5)
- Reactive (with water, air, or common chemical)
- Toxic (see the MSDS for this information)

When in doubt of whether your material meets the above definitions, it is best to assume it is hazardous and to follow the above accumulation requirements. Call EH&S at 8-8182 with further questions. **Next month: Removal of the waste chemicals from your lab and where they end up!**

### **Hazardous Waste Pick-up Schedule**

<b>Mellon Institute</b>	Sep 11, 25 & Oct 9, 23	9:30 AM to 11:30 AM
<b>Wean and Doherty Halls</b>	Sep 11, 25 & Oct 9, 23	12:30 PM to 3:30 PM
<b>All other main campus locations</b>	Sep 12 & Oct 10	9:30 AM to 11:30 AM
<b>PTC</b>	Sep 12 & Oct 10	12:30 PM to 3:30 PM
<b>Penn Ave., Robotics Consortium</b>	Nov 20	
<b>Computers</b>	Sep 13 & Oct 11	

To request a waste pick-up or receive waste labels or tags, go to:

[http://ehs-alert.fms.bap.cmu.edu/EHSWebSite/Waste\\_Recycling/HazardousWaste.htm](http://ehs-alert.fms.bap.cmu.edu/EHSWebSite/Waste_Recycling/HazardousWaste.htm)