

Training Topic of the Month:

Chemical Exposure Limits and Medical Activities

In olden times (say the 1500's), Paracelsus stated "the dose makes the poison." [*see inset box to the right*] This means that for most hazardous materials, the level to which one is exposed determines whether a chemical will cause harm.

How do we know what a "safe" or an "unsafe" level for a chemical exposure is?

One way is to look at the OSHA Permissible Exposure Limit (**PEL**). This value indicates an airborne level of a contaminant, below which no harm is expected to healthy workers, if exposed at that level for an eight-hour work shift. As you might expect, less hazardous materials have fairly high PELs while the more hazardous ones have lower PELs. If a PEL has been established for a chemical, that PEL is given on the MSDS for the material. Under the OSHA Laboratory Standard, we are required to keep all exposure levels below the PEL.

While air tests may be taken to determine the airborne level of a chemical to which one is exposed, we seldom do this testing in laboratories. At Carnegie Mellon, scores of people work with scores of chemicals, all in different ways. To perform air monitoring for all these combinations would not be possible. Nevertheless, we are confident that you will have exposures below the PELs if you are working **properly** with a chemical. That is, working with volatile chemicals while using a fume hood, proper handling practices and appropriate protective equipment. We DO perform air monitoring in certain circumstances, such as with very hazardous materials. **If you are concerned about the airborne levels of materials you work with, contact EH&S and**

we can discuss whether air monitoring is indicated.

The full Paracelsus quote:

Alle Ding' sind Gift und nichts ohn' Gift; allein die Dosis macht, das ein Ding kein Gift ist. "All things are poison and nothing (is) without poison; only the dose makes that a thing is no poison."

The OSHA Lab Standard requires us to offer "medical consultations" to lab employees in certain circumstances. This consultation involves a discussion with a physician about the situation that produced a possible overexposure. The physician then decides whether further action is needed, testing or treatment, for example. This medical activity is confidential between you and the physician; the employer (Carnegie Mellon) will only get a physician's report of recommendations to follow. Medical consultation will be offered to you in these circumstances:

- ✓ If you develop signs or symptoms associated with overexposure to a chemical
- ✓ If an air test shows you are exposed over the PEL
- ✓ If you were involved in a significant spill or leak of a chemical material

If you believe you meet any of these three criteria, please contact the CHO, Mark Banister at markb2@andrew.cmu.edu as soon as possible. He will arrange for the appropriate medical activities. Do not go to the doctor on your own for an exposure at your lab!

Laboratory Safety and Hazardous Waste Training

October 17, 2007

9:30 AM to Noon

Mellon 320

To register, go to: http://ehs-alert.fms.bap.cmu.edu/EHSWebSite/Training/ClassDescriptons/training_laboratory_safety.htm

Environmental Subject of the Month:

Hazardous Waste Generation (Part 2)

In last month's newsletter, we talked about the requirements for laboratory accumulation of hazardous wastes. This month, we will talk about the process to have the materials removed from the lab and their ultimate disposal.

Here is the procedure to request waste pick-up:

Go to the EH&S web site: <http://ehs-alert.fms.bap.cmu.edu/> and select "hazardous waste chemical" from the "quick-link" menu. After you log in, you will see the requirements for pick-up along with a link to the schedule and request form. Select the Request form and follow the instructions. You will need to identify in general terms the amount and type of waste you have. This allows us to be sure we have the personnel and equipment necessary for transporting your waste.

When the wastes are picked up, they are taken to one of two "accumulation areas" on campus where they are segregated by compatibility and held until the contractor removes them from campus. We currently can hold materials up to 180 days before we MUST transport them from campus, though most go much sooner than that; we typically have a shipment from campus once per month.

Many people are interested in where their waste ends up:

Organic solvents and oil usually go for "fuels blending", which means that they will be used with other fuels for processes like cement kilns and steel production. These solvents are carefully integrated into the fuels stream to prevent non-compliance with the processes' air emissions requirements. Certain organic materials can also be distilled to provide commercial product for another use.

Acidic and basic wastes (barring other hazards present) are used in neutralization processes, often rendering other hazardous waste streams non-hazardous. Other wet wastes may be filtered, precipitated or otherwise treated to allow water to go back to the environment and solids to be recycled or land filled as non-hazardous material.

Metal wastes are generally sent for recycling activity, so that the spent metallic element can have a future re-use.

It is the University's goal to have as little material as possible go into landfills, and we are pretty good at accomplishing this.

Hazardous Waste Pick-up Schedule

Mellon Institute	Oct 9, 23 & Nov 6, 19*	9:30 AM to 11:30 AM
Wean and Doherty Halls	Oct 9, 23 & Nov 6, 19*	12:30 PM to 3:30 PM
All other main campus locations	Oct 10 & Nov 7	9:30 AM to 11:30 AM
PTC	Oct 10 & Nov 7	12:30 PM to 3:30 PM
Penn Ave., Robotics Consortium	Nov 20*	
Computers	Oct 11 & Nov 8	

* Note date change, due to Thanksgiving holiday

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