

Laboratory Management

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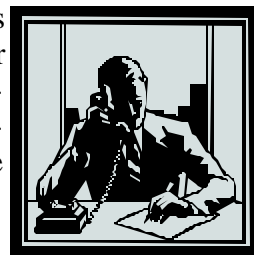
By Tim Governor, Institutional Chemical Hygiene Officer

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Provost Ray recognizes value of safety in teaching and research labs.

Ed Ray, Executive Vice President and Provost, was recently asked "Why do you value safety in research operations?" His responses, based on his perspective as an administrator, educator, research preceptor and researcher, demonstrate that sound management of safety issues is a responsibility of each of his many roles.

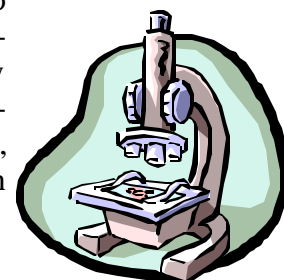
As an administrator, I am concerned about the quality of tools and facilities that scholars have available to them on campus to conduct research, whether they are faculty, staff or students. An important element of any research environment is the existence and enforcement of good safety training, procedures and oversight. My job is in part to provide colleagues with the tools they need to succeed in their research efforts and a safe research environment is an important part of the mix.



As an educator, I find creation and maintenance of a safe research setting to be an integral part of the foundation that every researcher should have in his/her training. Habits associated with safety, including planning ahead, taking precautionary actions to avoid potential harm, and paying strict attention to details, reflect the kind of personal discipline, attention to detail and professionalism that are critical to effective research, as well as safety.

As a preceptor, I would want my colleagues and students to understand as suggested above that habits of discipline in one's work, attention to detail, careful planning of experimental approaches, anticipating problems and reacting quickly and effectively to them, are critical to a successful career and they are habits that cannot be turned on and off at will if one is to be successful. In that regard, safety is always an issue to be paid attention to when conducting research. Paying attention and following effective safety practices some of the time, will no more ensure a safe research environment than the sometime commitment to the habits noted above will result in a consistently successful research career.

(As a researcher) Again, successful research requires focus, discipline, attention to detail, the ability to confront the unexpected, professionally, and the ability to imagine uncharted possibilities. The more certain one can be about the safety, security and integrity of the research environment, the more one can concentrate on the research issues at hand. Poor safety policies and procedures are not only dangerous, but also likely to generate distractions and problems that will divert one's attention from the research issues at hand and reduce one's research potential.



Chemical inventory?...a good idea!

Producing a hazardous chemical inventory for your lab is good management. There is no better tool for determining research chemical needs, identifying chemical hazards, submitting chemicals for proper disposal, providing information to emergency personnel, and training laboratory employees on their specific laboratory chemical hazards.

Electronic inventories are encouraged to facilitate use, but a written copy must be printed and included in your Chemical Hygiene Plan.

Names of extremely toxic, flammable or reactive chemicals, designated with a "4" in National Fire Protection Association's hazard rating system, which are present in a lab, are to be posted on the exterior side of the lab door or adjacent to the door. (See Appendix A of the Chemical Hygiene Plan for chemicals with a "4" rating)

Any chemicals with an NFPA rating of "2" or above are to be included on the chemical inventory along with reproductive toxins and carcinogens. (NFPA ratings for chemicals can be found at <http://www.orcbs.msu.edu/chemical/chemical.html>; carcinogens and reproductive toxins are listed in Tables 9 and 10 in the Chemical Hygiene Plan)

Information that researchers find useful in the inventory includes:

Chemical name	CAS# or Formula	Physical or Health hazard	NFPA rating H F R	Company	Quantity (container size)	Location
Phenol	108-95-2 C6H6O	Corrosive, toxic	4 2 0	Fisher	1 kg	Graves 221

Many chemicals have not been rated by NFPA 49, however if they are physical hazards or health hazards they are to be included on the inventory.

Physical hazards, by definition include organic peroxides, oxidizers, pyrophorics, unstable (reactive), water-reactive, explosives, flammables, combustible liquids and compressed gasses.

Health hazards, include corrosives, carcinogens, toxic and highly toxic agents, reproductive toxins, irritants, sensitizers, hepatotoxins, neurotoxins, nephrotoxins, agents which act on the hematopoietic system and agents that are injurious to lungs, skin, eyes and mucous membranes.

Remember, if you no longer need chemicals on your list, submit them for recycling or chemical disposal through the Environmental Management program at 292-1284.



The inventory informs employees of lab specific health and physical hazards.

Respected chemicals...Phenol.

In Vol. I Issue III of Laboratory Management, phenol was listed by principal investigators as one of the chemicals that cause them the most concern. It is also commonly used in all types of research laboratories. Phenol is corrosive and moderately toxic, affecting the central nervous system as well as liver and kidneys. It is irritating to skin, but is a local anesthetic so no pain may be felt on initial contact. Toxic or fatal amounts can be absorbed through small areas of contact. Contact with the eyes can cause severe damage and blindness. Standard operating procedures (SOP) for handling phenol must include protective clothing, skin protection and eye protection.

An SOP for phenol can be found at <http://www.biosci.ohio-state.edu/~jsmith/SOP/SOP-Phenol.htm>

A Lab Chemical Safety Summary can be found at <http://www.hhmi.org/research/labsafe/lcss/lcss.html>



Phenol is rapidly absorbed through skin.