

Laboratory Management

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By Tim Governor, Institutional Chemical Hygiene Officer

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C. Bradley Moore shares lab safety philosophy

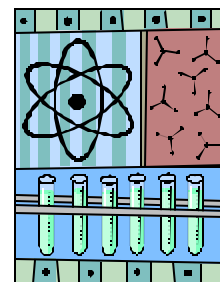


C. Bradley Moore, Vice President for Research, was recently asked “Why do you value safety in research operations?” His responses, based on his perspective as an administrator, educator, research preceptor and researcher, convey his attitude that sound management of safety issues is an inescapable, integral part of research.

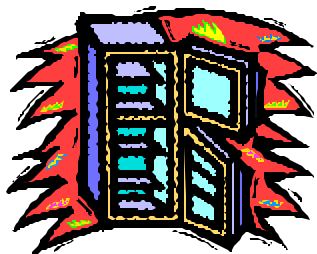
“As an administrator, a research preceptor and a teacher the bottom line is that I want every researcher and student in my institution to go on to productive careers in good health, without physical impairments and with good preparation to perform and guide research in a modern laboratory setting be it in government, industry or academe. Accidents in U.S. research labs have led to serious injury, blindness and death in my own field.

As administrators, professors and research advisors, it is imperative that we provide the facilities and conditions in which research and class work can be conducted safely. As researchers we all must work carefully, thoughtfully and safely. The considerable care and thought required to work safely go hand-in-hand with the care and thought required to control experiments so that they produce reliable data and valid conclusions.

As a researcher, I am anxious to be able to continue my research and for everyone impacted by my actions to be able to do so as well.”



Refrigerators...lab mines?



The lower explosive limit (LEL) of many flammable liquids is in the range of 1-2%. This is the volume of vapor in air that will explode in the presence of an ignition source e.g., an electric spark. The volume of a common domestic refrigerator is about 10 cubic feet. The volume of liquid, which when evaporated, would generate a LEL concentration in a full refrigerator is relatively small. Domestic refrigerators, refrigerators sold for home use, contain numerous ignition sources inside of the cabinet! [The interior light (click!), the thermostat (click!), door switch (click!), the defrost heater (click!) the defrost control switch (click!)] Storing flammable liquids in a domestic refrigerator is like playing “Russian Roulette”. One exploded causing \$50,000 in damages to a lab.

Only refrigerators constructed for flammable material storage should be used for storage of flammable liquids in the laboratory. The extra cost over the life of the unit is about \$20 per year. This is really cheap lab insurance!

Are you the weakest link?...goodbye!

To be a big winner on the popular quiz show “The Weakest Link”, contestants must be able to answer successfully a string of ten questions. The following ten questions deal with aspects of laboratory safety that all researchers should be able to answer:

1. What OSHA regulation covers laboratory safety?
2. What is the name of the lab safety document required by OSHA?
3. What is the name of the document produced by chemical manufacturers that provides hazardous chemical safety information?
4. What list must be generated and updated annually?
5. What term is used to describe the location where chemicals with high acute toxicity can be used?
6. Where can medical evaluation for chemical exposures be obtained on campus?
7. What office provides assistance with employee exposure monitoring?
8. Lab procedures that require special training are referred to as...?
9. Mandated training for lab safety has two components. What are they?
10. Who is the Chemical Hygiene Officer for your laboratory?



SCORING GUIDE.
(Number correct.)

- 10 Nobel Laureate
- 9 Nat'l Academy of Science
- 8 Distinguished Univ. Prof.
- 7 Eminent Scholar
- 6 Professor
- 5 Doctor of Philosophy
- 4 Master of Science
- 3 Bachelor of Science
- 2 GED/ High School Grad.
- 1 HS Drop out
- 0 Darwin Award Candidate

Answers: 1. “Occupational Exposure to Hazardous Chemicals in Laboratories” or the Lab Standard. 2. Chemical Hygiene Plan
3. Material Safety Data Sheet or MSDS 4. Hazardous Chemical Inventory 5. Designated Area 6. Employee Health Service (in
the University Hospital Clinics Building Suite 2A) 7. Office of Environmental Health and Safety (2-1284) 8. Operations re-
quiting Prior Approval 9. General or Generic Training and Lab Specific Training 10. Varies by department. Check in your de-
partmental Chemical Hygiene Plan.

Respected chemicals...Acrylamide.

Acrylamide is commonly used in dry form for making electrophoresis gels. It is also used in synthetic chemistry.

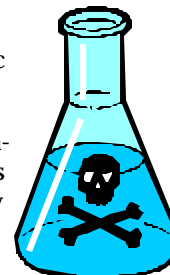
Acrylamide is a suspected human carcinogen and is listed as a “select carcinogen” in OSHA’s Lab Standard. Acrylamide is also a neurotoxin which can cause unsteadiness, muscle weakness, and numbness in the feet and paralysis of the legs, numbness in the hands, and slurred speech. Skin contact may cause redness and peeling skin on the palms. It is irritating to eyes.

Standard operating procedures for handling acrylamide must include protective clothing, skin protection and eye protection. Work with the powder should be in a designated area, such as a fume hood.

Where possible it is advisable to purchase premixed solutions of acrylamide to avoid handling the powder form.

An SOP for acrylamide is found at <http://www.biosci.ohio-state.edu/~jsmith/SOP/SOP-Acrylamide.htm>

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



Acrylamide is a neurotoxin.