Protecting MU's Health, Safety, and the Environment Spring 2010

notes

ENVIRONMENTAL HEALTH and SAFETY

Approaching Unknown Materials

Chemical safety begins with accurately identifying the hazards associated with a material, and then responding with proper safety equipment and protocols. This is difficult to accomplish if you don't know the identity of the chemicals you are managing. Prudent handling measures should prevent unknowns from occurring, but even the best laboratories may occasionally discover they have inadvertently generated a material of unknown composition.

Proper chemical labeling is the first line of defense. MU policy to comply with EPA regulations requires that unwanted chemical containers be labeled with a yellow Hazardous Unwanted Materials label as soon as any quantity of material has been added to a storage container. Policy also requires labeling of all containers of chemicals in use or storage. This practice will eliminate most instances of generation of unknowns. It is important to periodically inspect labels to verify that they are intact, and are not fading or falling off.

Occasionally, despite best efforts, unknown materials may be generated. It is important to approach these materials cautiously; however, it is also important to remember that the staff of a laboratory should be most familiar with the potential chemical hazards in their work spaces. The first step in identification should be to make inquiries of personnel in the area. Occasionally it may be helpful to examine laboratory notes from past employees. When possible to do so safely, make simple observations about the physical nature of the material to help in identification. A general rule for handling unknown materials is to assume that they may potentially be as dangerous as the most hazardous substances in a Registered User's inventory, and to adopt safety measures which would be observed in handling those materials.

When reasonable efforts at identification have failed or safety is in question, unknown materials should be submitted to EHS for further characterization. EHS maintains an analytical lab at the Resource Recovery Center. While this service is generally free of charge, EHS reserves the right to seek payment in unusual or excessive instances. Submission of unknown materials must be performed with a Used and Unknown Materials Pick Up Request Form, and the form must be signed by the Registered User responsible for the area. Any information which may be useful for identification should be included in the comments section. Comingling of unknown materials to reduce their numbers is strongly discouraged, due to potential chemical incompatibilities, as well as to prevent difficulties associated with identifying specific components in a complex mixture. As always, safety is the most important priority.

Kevin Fasken
Senior Environmental Health Technician

In This Issue

EHS Director's Desk

Reflections on the Past Decade

As we begin the new decade, I have spent some time thinking about things that have changed for EHS programs over the past ten years.

First and foremost, security has emerged as the biggest driver of regulations affecting EHS programs. Although security has always been an issue in radiation safety, regulatory concerns and expectations have increased. More recently, we have seen security concerns affect the use and storage of several hundred chemicals and almost 100 biological select agents and toxins. Security is a challenging issue for educational institutions, which have a culture of openness and collaboration.

A second area of emphasis has been increased regulation of biological agents. While these have focused on select agents and recombinant DNA, this increased emphasis on biosafety has caused biosafety issues to greatly increase in prominence over the past decade.

Third has been emergency planning. Emergency plans have been around for a long time. However, due to hurricanes Katrina and Rita, the Virginia Tech shootings, pandemic flu, and other incidents, all universities have given much more attention to emergency preparedness.

While we have addressed these new areas of emphasis, the "older" areas of regulatory compliance such as worker safety, fire safety, food safety, radiation safety, chemical safety, and environmental compliance have not disappeared. In fact, in most cases, there have been additional requirements to contend with. Storm water and decommissioning of radioactive material use areas come to mind.

When I started my career in EHS back in the 1970's, many of these regulations were new. Work environments have gone through several culture shifts to adapt to society's changing expectations about how business should be conducted. Many of these expectations apply to "industry" and we have discovered that higher education is now considered part of "industry."

One trend I have noticed is one that should hearten higher education. Most of these regulatory programs have a training component to make sure that people have the knowledge to make good choices about how they conduct business. We at EHS have tried to put together training programs to meet regulatory needs while recognizing the knowledge base of those attending our classes. We welcome your feedback at any time on how we can better serve your needs.

Peter Ashbrook

Biological Safety Cabinets and Chemical Laboratory Hoods - What's the Difference?

Many investigators and lab workers refer to biological safety cabinets as "hoods". But when you say "hood", do you mean tissue culture hood or chemical laboratory hood? There's a big difference between these two pieces of laboratory equipment. Both can look very similar—each has a work area behind a glass sash that can be raised and lowered. Chemical laboratory hoods frequently have cabinets below the work area and workers stand while working in the hood, while the biological safety cabinet allows a worker to sit in a chair at the cabinet as they would a desk. Those are just the visual differences, but they also provide very different functions.

A biological safety cabinet (AKA: "tissue culture hood" or "laminar flow hood") is designed to

protect the worker and the environment (your lab and adjoining labs) from biological agents, and to protect research material from contamination using air circulated through a HEPA filtration system. When biological safety cabinets are used for worker protection, they must be certified annually or when moved to a new location. EHS works with the Procurement Office to maintain a University contract with a vendor certified to provide annual testing, certification, and specialized repair services.

A chemical laboratory hood is designed specifically to protect the individual from exposure to chemicals and noxious gases. The duct work for chemical fume hoods is a physical fixture of the building and neither the intake nor exhaust air is HEPA filtered. The air velocity for a chemical laboratory fume hood is checked annually by Campus Facilities or EHS. Repairs can usually be completed by Campus Facilities staff.

The next time you are in a lab where a biological safety cabinet and a chemical laboratory hood are both present, take a good look. You'll be able to see the differences. Feel free to contact EHS should you desire assistance in purchasing, use, and/or maintenance of either type of unit.

Mary Reichel
Environmental Health Technician

Personnel Contamination Survey: Preventing Contamination Incidents

In places where radioactive materials are used, it is inevitable that minor spills or other forms of contamination will occur despite the best efforts to prevent them. You must be prepared to provide prompt attention to control and prevent spread of these occurrences in order to minimize the hazard associated with them.

Each laboratory approved for radiological work shall have a survey meter or radiation monitor readily available that is capable of detecting radiation involved in the work. All personnel are required to survey themselves and areas following completion of any activity involving radioactive materials, and more frequently as necessary. If contamination is found on any equipment, area, or personnel, EHS should be immediately informed of the event.

The following procedures demonstrate how to perform contamination surveys of your hands, feet and whole body:

Hand Surveys

1. Without touching the survey probe, monitor the fingers of your gloves first and verify they are clean and remove gloves; once gloves have been removed then resurvey fingers, palm and back of hand.

2. Grab survey probe with "clean" hand and repeat process for second hand and back of hands. If contamination is found on gloves remove gloves and dispose of them properly, wash hands then resurvey. If contamination is found on ungloved hands, wash again with warm water and mild soap or radiac wash; repeat as needed.

3. If contamination is still not removed contact EHS for help.

Foot Surveys

4. Elevate foot from floor so you can get to soles of feet, without getting in contact with survey probe, to monitor the sole of your shoes.

5. Repeat process for second foot.

Whole Body Surveys

6. Starting at your face, without getting in contact with survey probe, thoroughly survey the front of your body, including your face, arms, legs, and torso.

7. With an assistant, thoroughly survey the back of your body.

Any recorded reading above background is an indication of contamination and must be immediately reported to EHS for decontamination and further surveys.

Jack Crawford
Assistant Director, EHS

ENVIRONMENTAL HEALTH AND SAFETY
8 Research Park Development Building
University of Missouri-Columbia
Columbia, MO 65211

(573) 882-7018
http://ehs.missouri.edu

Take a Look at Eye Protection

In 2009, 27 MU employees suffered an eye injury serious enough to require referral to the workers' compensation program. Over the past decade, MU has averaged about 36 eye injury claims per year. During that previous 10-year period, five of those injuries caused either a temporary or permanent disability for the employee.

At any location where eye protection is required for an employee's safety, the department must provide protective eyewear free of charge. Supervisors must select the proper type of eye protection based on the hazard to the employee. It is then the responsibility of the employee to use that eyewear at all times when required. All persons in campus laboratories must wear eye protection in accordance with University policy and state law.

For some jobs a pair of traditional safety glasses might be appropriate. For others, tight fitting goggles would be more appropriate. There are many types of eye protection on the market and supervisors need to be aware of the limitations of each. Protective eyewear is available from a host of retailers including online sellers like Fisher Scientific and Lab Safety Supply.

The most common hazards to the eyes include: impact, heat, chemicals, dust, and optical radiation. As you might guess, all those hazards are present at MU. Fortunately, EHS has expertise in this area and can assist in the selection of eyewear regardless of the hazard. We will work with you to better understand the hazards in your work area and even make a site visit if necessary.

Eye protection can prevent serious eye injury. Know the hazards in your work area and ask for help if you have any question about the type of eyewear you should be using.

Dennis Elmore, Manager
Industrial Hygiene/Occupational Safety

EHS appreciates campus support of environmental and safety issues. If you have any special needs regarding the format of this publication, or have any comments regarding newsletters, training programs or services, please direct your communications to Rebecca Bergfield, Editor at the above address.