

## **\$300,000 in Damage -- Preventable Accident or Predictable Outcome?**

**I**n April an explosion and fire destroyed an Ohio State University research lab. Lab personnel escaped with their lives but nothing was left of the laboratory or their research after the hour long 3 alarm blaze. The Principal Investigator claimed it could have happened to anyone and that it's too expensive to fully implement safety regulations in academia.

A graduate student in the lab was loading twelve 4-liter bottles of hexane into a storage cabinet. When he put the last bottle on the shelf it collapsed, bottles broke, and large amounts of hexane spilled on the floor. The vapors from the hexane were so strong that the occupants left the lab to call for assistance. Shortly after leaving a large explosion was heard and flames quickly consumed the lab. The building was evacuated, the rest of the building was saved, and luckily no lives were lost.

Fire investigators found that the shelf that collapsed in the storage cabinet had been borrowed from another storage cabinet made by another manufacturer. The borrowed shelf did not fit properly and was unstable. Further investigation revealed that the research group knew about the unstable shelf and took no corrective action. In fact, the investigators learned that the shelf had tipped on previous occasions causing solvent bottles to break but the volume was manageable and it was cleaned up with no report filed to the Health and

Safety Department. One unidentified graduate student reported "We had put out a number of other fires in the lab; this was such a large explosion we didn't even bother to go back to the lab". The investigation made it very clear the PI and lab personnel had a history of safety problems and an attitude that safety was too costly--what is the cost of the lost research or lost lives? Safety is not too expensive to implement!

UM is not immune to this type of incident. We've been fortunate our incidents and near misses haven't progressed to this extent. Presumably, any of the lab members in the story just described could have prevented the incident. Although research is the main focus it should not be the only focus of lab personnel. Attention to detail, following procedures, and taking action when things aren't right are also vitally important. The culture in research labs must evolve so that everyone is an active participant in laboratory safety. How many safety problems have you witnessed but not acted on? Your assistance in maintaining a safe and healthy work environment is critical.

**Check Out our Webpage!**

<http://www.oseh.umich.edu>

## Laboratory Ergonomics

Many job tasks performed in research laboratories place workers at risk for developing musculoskeletal disorders. These disorders develop over time and occur when muscles and joints are stressed, tendons are inflamed, nerves are pinched and bloodflow is restricted. Potential risk factors include repetitive motions, prolonged and awkward postures, lifting heavy or bulky items, excessive reaching and contact stress to soft tissues. These may contribute to the onset of discomfort and eventual injury. Pipettes, microscopes, microtomes, centrifuges, flow cytometers, cryostats, and computers are common tools in labs and should be considered when evaluating how work tasks are performed.

Standing and sitting while working in awkward positions at laboratory benches, hoods and biosafety cabinets can lead to physical strain and result in discomfort or pain. By becoming familiar with how to control laboratory ergonomic risk factors, you can improve your comfort, productivity, and job satisfaction while lowering your chances for occupational strain or injuries.

### Here are a few tips to remember:

#### ***BE AWARE OF YOUR POSTURE***

- Maintain the natural curvature of the spine as much as possible, especially when maintaining static postures, bending and lifting. Bending your knees and keeping the inward curve in the low back will help reduce back strain.
- Wear shoes with good support and cushioning if your work requires a lot of standing or walking.
- If standing in one spot for long periods, anti-fatigue mats that redistribute weight can help. Using a 4"-6" high platform or step will relieve low back discomfort. Rest one leg, then switch and rest the other.
- When you are seated, sit back in the chair or stool to keep your back supported. If you sit back and your feet no longer reach the footring, footrest or the floor, adjust the ring or get an adjustable foot-rest.
- If your stool lacks back support, you may be able to tilt the seat forward or use a seat wedge to position the back and pelvis in a more natural posture.

- Avoid spending long periods looking down while reading or working. Find ways to elevate objects. Use a copy holder to elevate printed materials.
- Keep your neck in a natural posture and avoid extending the chin forward when using the microscope. Adjust the height of the scope or the chair so that you do not need to strain.
- Get close to your work.
- Alternate tasks throughout the day.
- Automate when possible
- Take short, frequent breaks to allow muscles to recover from overuse and to get blood flowing. Contrary to what some people believe, mini-breaks (2-3 minutes every 30 minutes) actually reduce fatigue and increase productivity.

Call OSEH for more information at 647-1143. There are also many other tips and resources available in the Laboratory Ergonomics Brochure on our website:

[www.oseh.umich.edu/  
Lab\\_Ergonomics\\_Brochure.pdf](http://www.oseh.umich.edu/Lab_Ergonomics_Brochure.pdf)



## Is That the Fire Alarm?

**W**hen the fire alarm sounds in your building do you find yourself wondering “Gee, is this for real? Do I actually have to evacuate the building?” The answer is always yes!

Although you may not know whether the alarm represents a valid emergency, you should still evacuate as quickly as possible. Never assume that an alarm is false, and never re-enter a building until emergency responders give the all clear. In some cases, fire alarm audible tones may even cease, but this does not mean a building is safe for occupancy. If the strobes are still flashing, you should assume that an emergency condition is still present in the building.

According to the National Fire Protection Association, fire alarm signals are only to be used to announce a fire emergency in public buildings that require evacuation. The primary reason is to ensure that persons do not become confused on how to respond during an alarm condition. Using fire alarm tones to announce a tornado warning is a prime example; we don’t want people to evacuate into an unsafe weather emergency! Another reason is because there is a potential for the fire alarm signal to cause an ignition and detonate explosive materials. For instance, in the event of a natural gas leak, there could be a sufficient concentration of flammable vapors present in the environment to ignite when the fire alarm pull station is activated. If you smell natural gas inside the building do not pull the fire alarm. Instead, alert others in the area, leave the area immediately, and go to a location outside where you no longer smell the gas. Go to a safe location and contact the Department of Public Safety (DPS) at 911 from any campus phone to report the problem.

When evacuating the building, walk to the nearest exit. Remember to always use the stairs, never the elevators. If you know of someone in your area with special needs, assist that person or ensure that DPS has been notified of the individual’s location. When leaving research unattended, turn off heating elements, gases and electrical equipment, if possible. Report to DPS

any processes that have been left on or are of a critical nature. Gather outside the building and do not attempt to re-enter unless notified by DPS or OSEH that it is safe to do so.

Remember, you must evacuate the building when the fire alarm is sounding or when you are verbally instructed to do so by DPS, OSEH or a member of your building emergency response team. Building evacuations always seem to occur at inconvenient times or during periods of inclement weather, but nothing is more important than ensuring your safety. Standing in the cold or losing a little research time are small prices to pay in exchange for your safe return home to loved ones at the end of the day.

## Thoughts from the Director

*By Terry Alexander*

**E**very year we have a few small fires on this campus—a few weeks ago we had a small lab fire from the use of ether. We have been very fortunate but as the first article points out, small problems grow out of control very quickly. Health and safety needs to be the responsibility of each and every one of us as we go through our daily activities—both at home and at the University. It is not a compromise—it is a necessity! And the cost of inaction is often far higher than taking the time to make sure everyone knows the risks and has the ability to do it right.

I firmly believe we all need to work toward sending our students out into the world with an excellent grasp of the knowledge in their chosen career path, and the ability to do it safely! Our goal should be to have their future employers thank the University for that extra piece of knowledge. OSEH is here to help--feel free to call anyone of our staff for assistance.

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