



# Lab Notes

Summer 2011



## Chemical Decontamination

By: K. Lee Stone



Hopefully you are familiar with our hazardous spill response acronym ESCAPE that is taught during our Laboratory Safety Training: Evacuate the lab, Shut the doors to the lab, Call 911 from a campus phone or 274-7911 from a cell phone, Assess the situation, Pull the fire alarm if it is determined that the spill will create a situation that is immediately dangerous to the life or health of the building occupants and finally Evacuate the building if the fire alarm has been pulled. However, many times we forget or are not familiar with what to do if we are exposed to a hazardous chemical. Please click on the link below to view the steps that should be taken

if you are exposed to a hazardous chemical in the laboratory.

Hopefully you are already familiar with the chemicals in your laboratory, have read the Material Safety Data Sheets (MSDSs) for the chemicals in your laboratory and know the location of the MSDSs for the chemicals in your laboratory. This pre-planning is essential. Once you have been exposed to a chemical the more you know about the chemical prior to exposure the more prepared you will be to respond if exposed.

First and foremost is to flush the exposed area with copious amounts of water for 15 minutes in a safe environment. If it is an ocular exposure then use the eyewash. Hold both eyes open in the stream of water for a full 15 minutes. If it is a small exposure area to the hand or arm then flush the exposed area with copious amounts of water in the laboratory sink for 15 minutes. Again, a full 15 minutes, don't skimp. If there is a large area of exposure or an exposed area that cannot be decontaminated in the sink such as legs and thighs then stand underneath the emergency shower, pull the handle and immediately remove any contaminated clothing while flushing the body with copious amounts of water from the shower. Again, flush for a full 15 minutes. On a side note I should prepare you for the flooding that will occur from the activation of the emergency shower. An emergency shower flow rate is 20 gallons of water per minute. If you stand under the shower the full 15 minutes that equals 300 gallons of water. This water will flood the lab but you are not to be concerned about the flooding (this is another reason we don't like to see materials stored on the floor in labs) your only concern is to flush

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# IUPUI ENVIRONMENTAL HEALTH AND SAFETY SUMMER 2011

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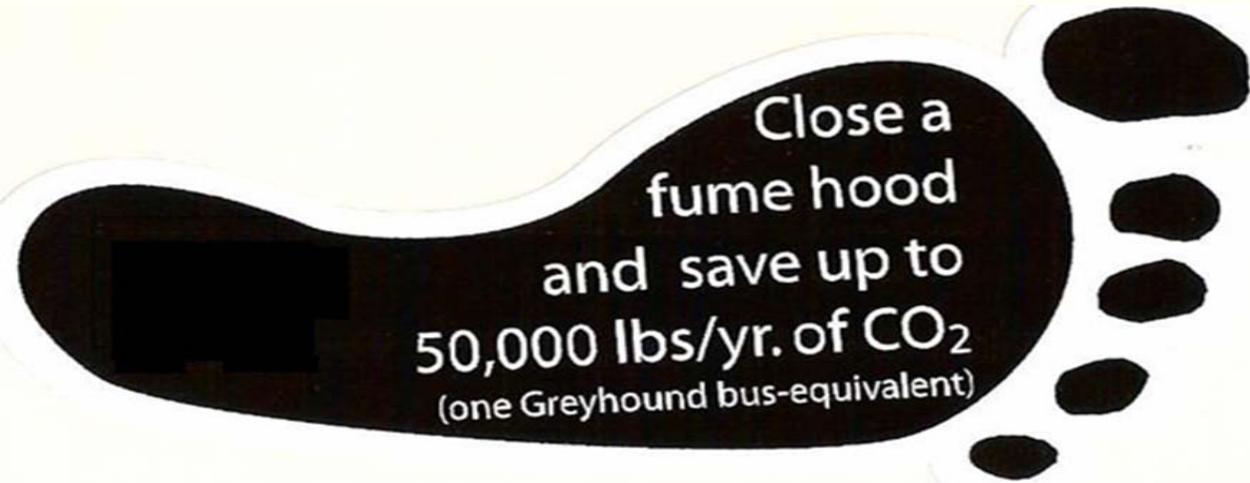
the exposed area for 15 minutes.

After flushing the exposed area, what next? Unfortunately many think that once they have flushed the exposed area they are done. This is not true. The next step is to contact IUPUI Health Services, inform them of the exposure, ask for any additional instructions and then report immediately to IUPUI Health Services located on the first floor of Coleman Hall. If it is a major exposure with activation of the emergency shower then you should also call 911 from a campus phone just as you would a chemical spill and inform them that you have activated the shower and also inform them of the name of the chemical you were exposed to as well as an approximate volume of chemical. Leave all contaminated clothing in the laboratory for collection by the HAZMAT team. If the exposure occurs on a holiday, weekend or after hours then report to University Hospital Emergency Department. Never make the mistake of driving home and attempting to decontaminate yourself at home. A Boston College Chemistry Student was recently exposed to thionyl chloride and drove home to take a shower. The University contacted Boston Fire department who went to the student's home and utilized a mobile decontamination unit in the student's front yard to decontaminate the student. The fire department then decontaminated the student's car and home. Please be aware that if there is a large exposure then there is the potential for the need to be de-

contaminated before treatment to prevent exposure to the personnel treating you. A mobile decontamination process involves removal of clothing and a series of showers inside of a decontamination unit. Keep in mind that the individuals performing the decontamination are all trained professionals and they will make every attempt to ensure others cannot see what is going on. Once decontaminated you pose no risk to the emergency personnel and they can begin treating you. Also at some point you will be required to fill out an Occupational Injury/Illness report to document the incident.

Finally I want to talk a little bit about antidotes. A few highly toxic chemicals require antidotes to be present such as cyanide salts which requires a cyanide antidote kit or hydrofluoric acid which requires calcium gluconate to be on hand. Make sure you are aware of the location and use of these antidotes before working with the chemicals.

In summary your response to a chemical exposure is just as important as your response to a chemical spill. Many times a spill with an exposure can occur in which you will need to follow both emergency procedures. If you are exposed to a hazardous chemical make sure you flush the exposed area for 15 minutes with copious amounts of water, then you should report the exposure and you seek medical treatment immediately after flushing.



Close a  
fume hood  
and save up to  
50,000 lbs/yr. of CO<sub>2</sub>  
(one Greyhound bus-equivalent)

# IUPUI ENVIRONMENTAL HEALTH AND SAFETY SUMMER 2011

## Welcome Nicole Cloud



Hello, my name is Nicole Cloud. I have lived in Indiana most of my life and in 2005 I graduated from Ball State University. I majored in Biology and minored in Sociology. While at Ball State I was involved in various research

projects and societies. One was a small mammal study on Cooper Woods and grasslands. From this, we were able to better understand the populations and distributions of various small mammals on the property. This was done through live trapping, ear tagging, and data collection on the individuals trapped. I also conducted a study on the effects of pollution on the populations of macro invertebrates in the White River. This was done by collecting water samples based on their proximity to sewage overflow sites, and using kick nets to collect macro invertebrates from the floor of the river. I was also a member of the Wildlife Society and was able to partake in some amazing activities, including, volunteering at a large cat sanctuary. We fed and interacted with the cats, cleaned the cages, and built new enclosures.

Since graduating I have spent over 4 years working at ESG Laboratories. There I was a laboratory technician and was responsible for several nitrogen related tests. I was constantly handling harmful chemicals and now understand the precautions that need to be taken when handling such agents. I also assisted in several other labs, including the microbiology lab. When I began working with bacteria I realized my interest in microbiology. Also, I was able to realize the care and safety precautions that need to be taken when working with

and disposing of biological agents.

In July of this year I accepted the Biosafety Technician position at IUPUI. I am very excited to be a part of the Environmental Health and Safety Department. I have been in labs since college and I have a good understanding of proper laboratory safety practices. Also, I have had a passion for science, especially biology, ever since I was a little child. I plan on using this passion to facilitate safe research. That said, I still have a lot to learn and enjoy continuing my education. I plan on taking the courses and training needed to better myself in this new position. I am excited about the challenges I face and plan on giving it everything I have.

When not at work I enjoy spending time with my amazing husband, Adam. Two years ago we bought an old home in the Historic District of downtown Noblesville. We are slowly renovating our 120+ year old house and can't wait to see it completed. Also, we enjoy playing with our two cats (Millie-Grace and Poster-Nutbag) and our dog (Wilmont). They are great pets and we try to spoil them as much as possible. Besides our pets, we also enjoy gardening, antiquing, cooking, and just being around good friends. I feel very lucky to be surrounded by great people and communities, where I work and where I live.



# IUPUI ENVIRONMENTAL HEALTH AND SAFETY SUMMER 2011

## An Unfortunate Reminder

By: K. Lee Stone

You have heard the basic rules for laboratory safety many times. No food or drink, no horseplay, avoid working alone, confine long hair and loose clothing...etc. A recent accident at Yale University cost a young student her life and is a sad reminder of the importance of the simple but often forgotten laboratory safety rule of "Confine loose hair". Please click [here](#) to read the New York Time's account of the accident.

I would like to first discuss machine guarding. The Occupational Safety and Health Administration (OSHA) requires guarding for any machine where machine parts, functions, or processes may cause injury. It is extremely important that all equipment in your laboratory with dangerous moving parts are properly guarded. A vacuum pump is an excellent example. A vacuum pump is generally operated by an electric motor attached by a belt and pulley mechanism. This belt and pulley must be guarded in such a way as to prevent contact with any of the moving parts. Generally a protective housing is placed over the belt and pulley mechanism,

however this housing can be taken off for repairs and not replaced or can be broken off.



Properly guarded vacuum pump

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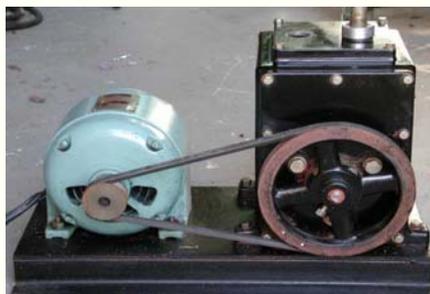
## New Employee Training Schedule

Training	Time	2011 Dates	Building	Room
<b>Laboratory Safety-REQUIRED</b> for all new employees working in laboratories with hazardous chemicals.	9:30 AM-Noon	August 8 September 12 October 10 November 14	Daly Center	185
<b>Bloodborne Pathogens-REQUIRED</b> for all employees working with human blood, body fluids or tissues.	8:30 AM-9:30 AM	August 22 September 12, 26 October 10, 24 November 14, 28	Daly Center	185
<b>New Employee Orientation-REQUIRED</b> for all new employees.	1:30 PM- 4:00 PM	August 9, 23 September 13, 27 October 11, 25 November 8, 22	Campus Center	307
<b>Biosafety Training-</b> All employees who work with biohazardous materials are encouraged to attend.	9:30 AM-11:30 AM	August 22 September 26 October 24 November 28	Daly Center	185

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Without this guarding in place long hair and loose clothing can become wrapped in the pulley or fingers can be caught all of which can have disastrous consequences. Therefore the first step in prevention is to check your laboratory and ensure all equipment with dangerous moving parts is properly guarded.



**Old vacuum pump without guarding**

Next I would like to discuss confinement of long hair and loose clothing. Long hair can not only become entangled in moving equipment but can

also create injury when working near hazardous chemicals and open flames. Long hair that is not confined can easily fall into laboratory containers such as beakers and can unknowingly come in contact with contaminated equipment and dirty bench tops. Hair will rapidly burn and long hair can easily be ignited by a bunsen burner or other open flame if not confined. Loose clothing such as ties and necklaces can also become entangled in moving equipment, can be ignited by open flame, can knock over containers as well as create many other dangerous situations.

We have laboratories on this campus with small machine shops as well as equipment with moving parts in laboratories so please make sure your equipment is properly guarded, tie long hair at the back of the head away from the front of the face and confine any loose clothing.

## Terrorism Awareness

*By: Jim Klenner*

This edition has me taking a detour off the normal biological safety path. I recently received several notices from the Indianapolis FBI Field Office related to potential indicators for terrorist activities. I receive these as I have a working relationship with the WMD Coordinator Special Agent at the Indy Field Office and I am also listed as their Subject Matter Expert on synthetic biology and general biosafety. It should also be noted that this information is considered open source and deemed unclassified.

While all of the information cannot be passed along in a short article, some of the highlights that the community may consider suspicious include activities at home improvement and large retail stores such as unusual quantities of compressed fuels, large numbers of electronic or kitchen timers, large amounts of short pipe lengths and end caps, and attempts to purchase excessive amounts of type 34-0-0 or 32-2-0 fertilizer. Personally, when I go camping with my sons I usually only need a single propane (small) tank. Buying 10 or so just may raise eyebrows.

Another notice dealt with wholesale distributors for beauty shops and a preoccupation with the concentration levels of available hydrogen peroxide or acetone. The only people I know that are concerned with the concentration of acetone in solution are actual chemists and they would not buy their supply from beauty wholesale distribution centers.

Related to mass transportation, activity that could possibly be considered suspicious includes the monitoring of vehicles and/or personnel from staff parking areas, discreetly using cameras or recording devices and elevated interest in security measures, security cameras, entry points, perimeter barriers or an unattended bus or train.

Taken individually, these may be harmless activities but cumulatively they just may be suspicious. If you have concerns you may contact the Federal Bureau of Investigation, Indianapolis Division at (317) 595-4000. Please visit the online version of the summer edition of Lab Notes to view the FBI notices. You can also contact me at 274-2830 with any questions.

## Lab Safety Top 10

### Every Person Working in an IUPUI Laboratory Must

- 1) Read the IUPUI Chemical Hygiene Plan and the Laboratory Safety Handbook  
<http://ehs.iupui.edu/chem-lab-safety.asp?content=chemical-hygiene-plan>  
<http://ehs.iupui.edu/content/doclib/LabSafetyHandbookRevision2008Final.pdf>
- 2) Attend the required IUPUI Laboratory Safety Training class. The schedule of all available training classes as well as online training can be found here:  
<http://ehs.iupui.edu/training.asp>
- 3) Ensure ALL chemical containers are labeled with their contents and ensure acids, bases, flammables, oxidizers and poisons are segregated and properly stored. **CHEMICAL AND WASTE CONTAINERS MUST BE CLOSED WHEN NOT IN USE.**
- 4) Plan out experiments by writing Standard Operating Procedures.
- 5) Wear Personal Protective Equipment (safety glasses, gloves, lab coats, etc) whenever working with chemical, biological, or radiological materials and remove Personal Protective Equipment and wash hands before leaving the lab. **NO SHORTS OR SANDALS IN LABS.**
- 6) Know that eating or drinking and storage of food and drink is not permitted in labs with chemical, biological, or radiological materials present.
- 7) Read and know the location of Material Safety Data Sheets (MSDS) and know the hazards before working with chemicals.
- 8) Know the location of your Emergency Procedures Manual as well as the location of safety equipment like emergency eyewashes and showers, spill kits, and fire extinguishers as well as the location of fire alarms, exits, and emergency evacuation points. **CALL 911 IN CASE OF AN EMERGENCY!**
- 9) Know to evacuate the area and call 911 from a campus phone or 274-7911 from a cell phone if a hazardous chemical is spilled.
- 10) Know how to complete an online Hazardous Waste Manifest form found here:  
<http://ehs.iupui.edu/waste-manifest.asp>. **NEVER DISCARD HAZARDOUS WASTE DOWN DRAINS.**

## Proper Laboratory Attire

By: K. Lee Stone, M.S., MT (ASCP), NRCC-CHO



eyewear.

Why are we even concerned with personnel present in laboratories improperly dressed? The first reason is common sense. Due to gravity, anything with mass will fall to the lowest point. Where is the lowest point of your body if you are standing upright? Your feet. Anything that falls from the counter will either hit or splash onto your feet and legs. If you are wearing shorts, short dresses or sandals then your exposed feet and legs will likely be contaminated.

The second reason is due to laboratory safety policies and regulations. Section 3.2.5 of the IUPUI Chemical Hygiene Plan states: Shorts, sandals, perforated

So far it has been a long hot summer and we are seeing a number of laboratory personnel wearing shorts and sandals in the laboratories.

Adequate protective clothing must be worn whenever working in the laboratory. "Adequate" means, at a minimum, clothing that falls below the knees and shoes that fully cover the feet. These, of course, are in addition to other personal protective equipment such as a lab coat, gloves and appropriate safety

shoes, cloth sneakers and bare feet are prohibited. The OSHA Laboratory Safety Standard states "Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals." Protective laboratory practices and equipment means those laboratory procedures, practices and equipment accepted by laboratory health and safety experts as effective or that the employer can show to be effective, in minimizing the potential for employee exposure to hazardous chemicals. Prudent Practices in the Laboratory - Handling and Disposing of Chemicals. National Research Council. 1995 states: "Clothing that leaves large areas of skin exposed is inappropriate in laboratories where hazardous chemicals are used. The worker's personal clothing should be fully covering." Safety in Academic Chemistry Laboratories for Students. American Chemistry Society. 2004 states: "Clothing worn in the laboratory should offer protection from splashes and spills" and "In the laboratory, wear shoes with uppers made of leather or polymeric leather substitute. Do not go barefoot or wear sandals. Do not wear shoes that have high heels or open toes, uppers made of cloth, woven leather strips or other woven material. Shorts, cutoffs, and mini-skirts unnecessarily exposure your skin to potential corrosives and are not safe."



Everyone, please enjoy the nice weather but leave the shorts and sandals for your activities outside of the laboratory. If you must wear open-toed shoes and/or shorts to campus, please keep a pair of pants and full coverage shoes to

change into for when working in the laboratory.

# IUPUI ENVIRONMENTAL HEALTH AND SAFETY SUMMER 2011

## Recalled



The Silencer® S2200 Centrifuge pictured above is being recalled because there is a potential for the centrifuge to operate with the centrifuge's bucket and insert not properly seated on the rotor which results in the rotor coming loose, breaking the lid and being forced out of the centrifuge. For more information on this recall please visit the following link:

<http://www.fda.gov/MedicalDevices/Safety/RecallsCorrectionsRemovals/ListofRecalls/ucm265698.htm>

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**“Don't learn safety by accident.”**