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Welcome back to the lab!

By Jessica Tyre

Welcome back lab staff and students! We hope you had a very safe and enjoyable summer. Now that the Fall 2015 semester is upon us, we are delighted to begin distribution of the EHS Lab Chatter publication once again. We are dedicated to bringing lab safety and health issues to the UNE faculty, staff, and student's attention and make sure everyone leaves the lab in the condition in which they arrived. Please make sure to read through the entire newsletter as there are many items that may pertain to your lab space, or there may be new rules and regulations that have come along.

As always, we encourage lab staff and students to write and contribute articles pertaining to lab safety and health issues so that this can be a collaborative effort. Even if you just have an idea for an EHS Lab Chatter topic, but you need the EHS staff to do the research and write an article, we welcome that and would be happy to cover whatever topics you feel are pertinent. Have a safe Fall 2015 semester!

Hazardous waste SAA compliance audits

The UNE Environmental Health and Safety Department will be conducting unannounced hazardous waste satellite accumulation area (SAA) audits on the Biddeford campus in the month of September to ensure compliance of all state and federal regulations is achieved.

EHS will be checking for:

- ▶ appropriate container labeling
- ▶ integrity of storage containers/closed lids
- ▶ completion of weekly inspection logs
- ▶ full containers have been removed from SAA

****The results will be reported to the appropriate members of administration. ****

HAZARDOUS WASTE

Contents: (No Formulas or Abbreviations)

HAZARDS (H I C F O P D C R) (S C H I B S)

IGNITABLE TOXIC CORROSIVE REACTIVE

OXIDIZER OTHER: _____

DATE CONTAINER WHEN FULL OR READY FOR PICKUP

_____/_____/____ BLD. _____ DEPT. _____ RM _____

MANAGER: _____ TEL. _____



Safety Spotlight

The September 2015 Safety Spotlight is on the **Chemical Hygiene Plan**.

The OSHA standard for Chemical Hygiene Plans can be found in OSHA 29CFR1910.1450.

This OSHA regulation states the following requirements for Chemical Hygiene Plans: Where hazardous chemicals as defined by this standard are used in the workplace, the employer shall develop and carry out the provisions of a written Chemical Hygiene Plan which is:

- Capable of protecting employees from health hazards associated with hazardous chemicals in that laboratory and
- Capable of keeping exposures below the limits specified in paragraph (c) of this section.
- Shall be readily available to employees, employee representatives and, upon request, to the Assistant Secretary (OSHA).
- The Chemical Hygiene Plan shall include each of the following elements and shall indicate specific measures that the employer will take to ensure laboratory employee protection.
 - Standard operating procedures relevant to safety and health considerations to be followed when laboratory work involves the use of hazardous chemicals
 - Criteria that the employer will use to determine and implement control measures to reduce employee exposure to hazardous chemicals including engineering controls, the use of personal protective equipment and hygiene practices; particular attention shall be given to the selection of control measures for chemicals that are known to be extremely hazardous
 - A requirement that fume hoods and other protective equipment are functioning properly and specific measures that shall be taken to ensure proper and adequate performance of such equipment
 - Provisions for employee information and training
 - The circumstances under which a particular laboratory operation, procedure or activity shall require prior approval from the employer or the employer's designee before implementation
 - Provisions for medical consultation and medical examinations
 - Designation of personnel responsible for implementation of the Chemical Hygiene Plan including the assignment of a Chemical Hygiene Officer, and, if appropriate, establishment of a Chemical Hygiene Committee and
 - Provisions for additional employee protection for work with particularly hazardous substances. These include "select carcinogens," reproductive toxins and substances which have a high degree of acute toxicity. Specific consideration shall be given to the following provisions which shall be included where appropriate:
 - Establishment of a designated area (for use)
 - Use of containment devices such as fume hoods or glove boxes
 - Procedures for safe removal of contaminated waste and
 - Decontamination procedures
- The employer shall review and evaluate the effectiveness of the Chemical Hygiene Plan at least annually and update it as necessary.

The UNE Chemical Hygiene Plan can be found in Word format on the UNE EHS website:

www.une.edu/campus/ehs. Each lab should have a copy of the UNE Chemical Hygiene Plan available either electronically or by paper copy. The cover sheet should reflect your lab's information and your lab-specific SOPs should be included in the plan. For assistance, please contact EHS (see last page).

Lab renovations, remodels, and moves

Contributed by: Jessica Tyre

It is very important when planning to renovate, remodel or move a laboratory space that you take several issues into consideration. The below checklist from “Elements Magazine” is helpful to review when you are planning to change or move your lab space.

Room requirements

- What size is required?
- How many people need to work in the lab?
- How many different processes will go on at once?
- How much and what type of storage (for tools, chemicals, etc.) is required?
- Will you need separate rooms or spaces for different processes or tasks?
- Are there any special requirements regarding vibrations, magnetism, temperature control, sunlight, drafts, dust-filtering, humidity control or sound dampening?
- Can equipment be delivered to the lab easily (for example, through doors, corridors and elevators)?
- Are there benefits to having the lab close to other facilities, teaching classrooms, etc.?
- Will the room need particular paint, flooring or window coverings?
- Will the room need a pass-through airlock chamber for environmental control, or is a change area needed for coats, bags and outside shoes?
- Does the room require particular security (for example, motion sensors, locks, safes, doors with tempered-glass windows, phones)?

Services



Are particular services needed? Such as:

- a vacuum line
- exhausting fume hoods or clean-air boxes (or access to one)
- venting or delivery of gases / dry air
- a high-pressure, dry-airline
- chilled water
- tap or deionized water systems
- specific power requirements, including backup power
- safety shower, eye-wash station, fire extinguisher
- sinks with special traps
- wireless/Internet/phone connections

Cabinetry and furniture

- Should benches be of standing or sitting height?
- Will there be knee space or cupboards/drawers underneath?
- Will benches form a peninsula and/or rim the room?
- Will these need special surfaces (metal-free, acid- or scratch-resistant)?
- Are cupboards required above the benches?
- Do cupboards need glass fronts?
- Do drawers need to be made from special material or have storage inserts?
- Do you need a sink and draining rack or a dishwasher?
- Are chairs and/or stools required?
- Are tools best stored in cabinets or in specialized storage boxes or hanging systems?
- Is a flammable-solvents cabinet or chemical-storage cabinet required?
- Is easy access provided for safety equipment, like lab coats, gloves and safety glasses?
- Should gas-bottle harnesses be installed?
- Is the lab in a seismically active area requiring special shelving units?
- Is a specific area for heavy-tool work required?



Other items

- It is always easier to maintain equipment if the appropriate parts are nearby. Don't forget to plan some space for these items.
- A filing cabinet or bookshelf is not a luxury in labs where log books, instruction manuals, chemical safety sheets and reference books need to be stored.
- Space for a computer, data-backup hardware or a server, and a printer may be needed.
- Is there space for expansion?

10 Quick Lab Safety Tips

Contributed by Shaun Gill, Asst. Director of the Marine Science Center

Article source: *Lab Manager Magazine* Written by: M2 Scientifics

1) No Food or Drink in the Lab

This is one of the most common bad habits found among personnel and easily one of the hardest to kick. Everyone enjoys a good coffee or ice water while at work. But removing food and drink from the laboratory has multiple benefits. First, it reduces distraction. When performing critical tasks, any distraction is bad. Remove any and all distractions to help prevent injury or loss. Second, food waste can be messy. Messes reduce efficiency and promote risk of contamination. And last but definitely not least, it is a safety best-practice. A worse case example is one coming out of Tacoma, Washington. A young woman died four days after accidentally ingesting a saline solution containing sodium azide during an AP class.

2) Work With a Lab Partner

It isn't always possible to perform experiments or duties with a partner. But if and when it is possible, it should be encouraged to work in teams. Two sets of eyes and hands double the chances of successfully catching a mistake or slip up. Human error is expected. Everyone makes mistakes. Working in teams helps keep each other in check. It also allows quick response if someone is injured.

3) Use Warning Signs

Anything that poses a particular threat should be labeled and HIGHLY visible! Bright colors, bold lettering and placement in prominent locations is a must. Consider using warning signs outside of the standard places. Chemicals and solutions are required to be marked by OSHA guidelines. But what about high-decibel noise areas? Trip hazards? And don't forget circuit breakers. Electricity is used in abundance in any laboratory where equipment and instruments are being used. Make sure breakers are clearly marked. Appropriate warning labels and markings are essential to laboratory safety success.

4) Budget for Lab Safety Equipment

Maintaining a strict budget is key to any laboratory safety plan. When drafting a new budget or revising current spending, make sure funds are set aside to *buy safety equipment*. These items include eye wash stations and solution, protective gloves, goggles and safety glasses, ear plugs, splash guards, lab coats, fire extinguishers, and plenty more. It can get costly to purchase and maintain adequate measures, but nothing is more valuable than the well-being and safety of personnel. Budgeting for it will remove future funding concerns and the situation of having to decide what is more important in a pinch. Costs associated with training should also be considered. There may be some production downtime to facilitate training courses. Remembering to add these costs to your safety fund will prevent surprises.

5) Store Flammable Chemicals in Fireproof Cabinets

Fire is dangerous. Make sure all flammable chemicals, solvents and aerosols are secured in fireproof cabinets. Leaving them out in the open is asking for disaster. Remember those warning signs? Post reminders throughout the lab wherever flammable items are being used. Something as simple as "*Don't Forget – Put Back in Fireproof Cabinet!*" (you could probably word that much better, but you get the point) can go a long way. You may consider making this an item on your daily inventory management inspection.

6) Conduct Unannounced Inspections

Put together a safety audit checklist and perform random, yet frequent inspections. Making them random and unannounced will alleviate the possibility of personnel "tidying up" for the inspection. Nobody likes a pop-quiz. But when safety is a priority, they must be done. Over time, well developed laboratory safety training and inspections will create good habits. These habits are invaluable.

(Lab health and safety tips continued)

7) Safety Training

Confirm that all of your lab staff has had the appropriate level of safety training. (At UNE this is accomplished by having individuals take the safety training modules on Blackboard). Lab-specific safety training is also strongly encouraged as each laboratory setting is different and has unique hazards depending on the type of work being performed. Document all training and keep the records on file.

8) Practice Routine Safety Drills

Remember the good ol' days back in elementary school when safety drills were an exciting surprise? As kids we didn't understand just how valuable those drills were. They prepared us for worst-case scenarios and emergency disasters. If the time ever came where these practices were necessary, we were armed with the training and knowledge we had. Guess what? Nothing has changed as we got older. As previously mentioned, good habits are essential to ongoing safety practices. Conducting routine drills will prepare students and staff members for emergencies. Identify emergency exits, meeting areas, and individuals that can assist as guides in the event evacuation is necessary. Make sure everyone is completely aware of the plans. Providing handouts or literature with maps is also helpful. Lab managers dread ever having to experience an emergency, but being well prepared is more than half the battle.

9) Delegate Tasks

You've got a lot to do as a lab manager or supervisor. Another great way to make sure everything is running efficiently is to delegate tasks. Assign various team members duties that will help keep lab safety protocols in place. For example, one member could make sure all warning signs are present, while another keeps inventory of chemicals. Spread out the responsibility to allow yourself the time necessary to focus on the bigger picture. Training, delegation and inspection should be all that you have to do once it all comes together like clockwork.

10) Encourage and Promote Personal Safety

There is nothing more effective than positive motivation and excitement. Laboratory safety isn't exactly a party favorite. However, with a little added personality, carefully planned pep-talks and sharing of personal experiences can really make all the difference. Adding a little humility by sharing examples of mistakes you've made makes it all more real and relatable. Incorporate some humor while speaking about laboratory safety policies and you'll get more than just laughs. The things you teach will be more memorable.



Formaldehyde Safety by Peter Nagle



Formaldehyde is a common substance used as a specimen preservative in laboratories and as an embalming fluid. It is also found in glues, particle and fiber boards, plywood, fungicides, germicides and disinfectants. At UNE it is generally found in formalin solutions, paraformaldehyde, or as a constituent in embalming fluid.

Exposure to formaldehyde occurs when workers inhale formaldehyde as a gas or vapor or absorb it through the skin as a liquid. Groups that are most at risk at UNE are those that work in anatomy labs dissecting cadavers preserved in an embalming fluid containing formaldehyde or lab workers who handle specimens preserved in formaldehyde solutions.

Formaldehyde is a sensitizer that can cause workers to develop reactions to it after several exposures. It is highly irritating to the eyes, nose and throat and can make anyone exposed cough and wheeze. It is a powerful lachrymator that causes the eyes to tear at about 2-3 ppm in most people, but as low as 0.5 ppm in some. Formaldehyde is also a potential carcinogen. OSHA has established a standard (29 CFR 1910.1048) that protects workers from formaldehyde exposure. This is achieved by setting legal exposure limits for formaldehyde and requiring employers to monitor workers who can be potentially exposed to levels at or above regulatory limits. The following are exposure limits set by OSHA:

- Permissible Exposure Limit (PEL) - 0.75 ppm as an 8 hour Time Weighed Average (TWA)
- Short Term Exposure Limit (STEL) - 2 ppm as a 15 minute TWA
- Action Level- 0.5 ppm as an 8 hour TWA.

A worker's average exposure to formaldehyde cannot legally exceed 0.75 ppm during an 8 hour day or 2 ppm during a 15 minute peak. If exposure levels exceed the Action Level then medical surveillance and increased industrial hygiene monitoring are required.

UNE has a formaldehyde monitoring program in place. We monitor in areas where employees may be exposed to formaldehyde vapors at or above the PEL during working hours. Monitoring consists of an initial sampling period which firsts monitors the exposure levels. If the levels are below the action level and the STEL, then no further monitoring is required until either work practices or personnel change. If levels are at or above the action level or STEL, then further monitoring is required. Work practices and engineering controls will be reviewed and changed accordingly and individuals exposed will be required to undergo medical surveillance. All test results are disclosed to the employees monitored. All current and past results are kept on file in the Environmental Health & Safety office.

The Formaldehyde Standard also requires employers to train employees who work with formaldehyde on the hazards of exposure even if the levels are well below the regulatory limits. The training includes:

- Contents of the regulation and Safety Data Sheets (SDS)
- Health hazards
- Signs and symptoms of exposure
- Engineering controls and work practices to limit exposure
- Directions for handling spills
- Purpose of Medical Surveillance Program

This training module is available upon request through the UNE Blackboard site.

If you have any questions regarding the Formaldehyde Standard contact the EHS office (contact information on page 7).

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EHS Lab Inspections

EHS Lab Inspections will resume in September.

Every lab on both campuses undergoes an EHS Lab Inspection once in the Fall semester and once in the Spring semester.

You will receive an email from an EHS staff member to schedule your inspection date/time.

**If you have any questions regarding the lab inspection process, please contact an EHS staff member.
Thank you and see you soon!**

UNE Chemical Sharing Listing

The UNE Chemical Sharing Program is a great way to reduce hazardous waste, reduce costs for your department, and have a positive environmental impact on campus. If you have any commonly used lab chemicals you are thinking of disposing of, please contact EHS so they can be listed in the next issues of EHS Lab Chatter as available for the UNE Chemical Sharing Program.

Chemicals currently available: None