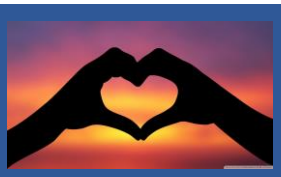
ENVIRONMENTAL HEALTH AND SAFETY



Lab Chatter

UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

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Table of contents:

Page 1……..Safety Spotlight: The importance of stretching at work
Page 2…….. Perceptions of safety in labs
Page 3…….. Perceptions of safety continued
Page 4……...Fluorescent light bulbs
Page 5…….. Skin exposures and effects
Page 6…….. Skin exposures continued
Page 7…….. Developing a Successful Health and Safety Training Program
Page 8…….. Training program continued
Page 9…….. UNE Chemical Sharing Program (printer cartridges available) and Contact Us

Safety Spotlight

The Importance of Stretching at Work *(via Shape Magazine)*

Working at a desk all day can be hard on the body and mind, but allowing yourself a chance to stretch gives your body the TLC it deserves. Depending on your office environment, you might be hesitant to take the time for a stretch break, but here are a few good reasons to start adding it to your day-to-day routine:

1) It improves flexibility. Sitting in an upright position for hours on end wreaks havoc on the natural curvature of the spine. If your lower back always feels tight and uncomfortable, or your shoulders feel like they're inching up toward your ears, moving through a few stretches every day will help relieve that constant tension, both inside and outside of the workplace.

2) It leaves you refreshed. It may seem counterintuitive, but taking time for a break can improve your work flow and productivity. When you step away from your desk and release the stresses of your responsibilities, you come back to your work with a clear mind, ready to tackle the rest of your day.

Make it routine. Make a point to stretch at the same time—or hopefully times!—every day. Set an alarm to stretch every hour, take a few moments once you're back from lunch, or stretch in the hallway after a bathroom break. Your new habit will be more likely to stick if it feels ingrained in your schedule.

Think outside the box. If you can't drop to the floor for a yoga break, look up some exercises online. If you're tied to your desk, there are plenty of subtle ways to stretch while you're seated and working.

Don't feel awkward. If you feel strange in the beginning, that's okay. Once you start recognizing all the benefits of taking this time, it won't feel as silly. After you start, others might even catch on and try it out for themselves. A few weeks down the line, who knows? You might even be leading stretching breaks for your whole office!

Source: https://www.shape.com/blogs/working-it-out/importance-stretching-work

Perceptions of safety in labs

By Jessica Tyre

There are definitely a wide range of attitudes and opinions about safety procedures in laboratories. These perceptions are formed by past experiences, different jobs lab staff have held, training courses that individuals have completed, etc. Here are some of the most common things you hear when you ask the question: why is lab safety so difficult to achieve?

- Lab staff are not sure what rules and regulations apply to them in their specific laboratory.
- Individuals bring habits with them from other institutions that do not coincide with UNE's safety programs.
- The "rules" interfere with their work and they don't "have time" to follow safety protocols.
- Personal Protective Equipment (PPE) "hinders them" from using equipment the way they want to.
- There is no enforcement of the rules and therefore no consequences.
- "I have done it this way for years and never gotten hurt" mentality.

The other issue is that technology and society in general have changed over the years causing other factors that affect how labs are managed. Some of these changes include:

- Cell phones, computers and technology (cell phones can be a distraction and can easily become contaminated in lab areas),
- Lack of respect for the hazards involved with materials they are working with (YOLO -You Only Live Once) mentality and over confidence ("that will never happen to me"),
- Competitive nature of research in educational institutions (have to produce results quickly),
- Political correctness (fear legal action or confrontation, so there is a lack of discipline/consequences for safety violations),
- Technological advances in laboratory equipment bring new safety challenges,
- Budget/grant restrictions (cutting corners on safety of equipment/programs/staff in the name of research).

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Now that we have reviewed some of the attitudes and cultural views about safety in labs, it is important to address what we as an institution are doing to change these perceptions and create a safe and positive work environment for all of our employees, students, and visitors. The Environmental Health and Safety department at UNE is dedicated to this cause. We have implemented the following items to assist our colleagues with this challenge:

- **EHS Lab Chatter Newsletter:** a monthly publication to boost awareness and knowledge of lab safety issues and tips on what you can do to help.
- **Lab Safety Sub-Committee:** this is a group that formed as a sub-committee of the University Wide Safety Committee to focus on laboratory specific safety issues. It is comprised of the EHS department, a representative from Human Resources, and Chemical Hygiene Officers (CHOs) from all colleges across both campuses.
- **UNE EHS Website:** the UNE EHS website has several resources that can be accessed online 24/7 such as the UNE Safety Manual, the UNE Chemical Hygiene Plan, past issues of EHS Lab Chatter, resources about specific safety issues contained in various tabs on the page, training information and presentations, and much more!
- **Semi-Annual EHS Lab Safety Inspections:** the EHS department conducts safety inspections of all labs on both campuses once in the Fall semester and once in the Spring semester with a checklist of safety items that should be in place in all UNE labs. EHS uses this information to assist labs with areas of difficulty and enhance current programs and training initiatives.
- **Relationships with Human Resources and Security:** EHS maintains collaborative relationships with the Human Resources and Security departments at UNE to track employee, student, and visitor injuries and incidents in hopes of preventing these incidents from occurring in the future. These relationships also help open the lines of communication so that all necessary parties are involved as needed in an emergency.
- **Create Laboratory Postings:** EHS works to create eye-catching postings and informational documents to be used in laboratory areas to build awareness of lab safety and be resources for all persons who enter UNE laboratories.
- **Form and Improve Safety Training Programs:** any individual working in a lab space must go through Blackboard online lab safety training programs. EHS creates and edits these programs in conjunction with HR as needed. EHS also provides training on specific items upon request and we can provide classroom training for any interested party.
- **University Fairs and Forums:** safety is covered at many UNE fairs and functions such as the annual Employee Benefits Fair, Wellness Fair, and the incoming student Services Fair.

These are just a few of the ways UNE is constantly working to improve our lab safety culture and work as a team to reach our safety goals. We are always open to new and innovative ideas to make this easier for everyone so please feel free to contact EHS with your thoughts or positive past experiences in other lab environments. The other way to reach the lab community is to write an article here in EHS Lab Chatter about a safety topic that is key to your safety success. You can email: jtyre@une.edu to submit an article or an idea for an article anytime.

Fluorescent Light Bulbs

By Peter Nagle

Fluorescent light bulbs are occasionally generated as waste in our laboratories from sources other than the standard light fixtures illuminating our labs. Equipment such as plant racks and aquariums use fluorescent lamps to replicate the warmth of solar light to create optimal growth environments indoors. Fluorescent lamps can also be found in chemical fume hoods and bio-safety cabinets. Because of this the bulbs are occasionally changed by lab staff. If you change fluorescent light bulbs, you need to be aware of how to handle them.

The Maine Department of Environmental Protection (ME DEP) regulates fluorescent lamps as Universal Waste and thus has regulations that require us to manage waste bulbs in a specific manner. There are packaging and labeling requirements for all waste bulbs that must be followed as well as limitations for how long waste bulbs can be in storage so it is important that we manage these properly.

Maine law does not allow fluorescent bulbs, including compact fluorescent lamps (CFLs) and U tubes, to be disposed of in the trash because they contain a small amount of mercury. High Intensity Discharge (HID) and sodium lamps are also prohibited from the regular trash for the same reason. Light Emitting Diodes (LED's) do not contain mercury and are not regulated as Universal Waste; however EHS will still accept them to be managed with the Universal Waste if given to us. Incandescent and halogen light bulbs do not contain mercury or other hazardous material that would make the bulbs a hazardous waste and are permissible to dispose of in the regular trash.

If you generate fluorescent, HID or sodium light bulbs in your lab please follow the guidelines below:

1. Never intentionally break a fluorescent light bulb. Doing so immediately creates a hazardous waste spill.

2. Never place bulbs in a broken glass container. If the bulb breaks, the whole container becomes a hazardous waste.

3. Always contact Facilities Management or EHS if you have a fluorescent, HID or sodium bulb for disposal. Do not collect them. We will transfer them to our Universal Waste storage area for proper labeling and packaging.

If you have any questions regarding light bulb disposal or Universal Waste, please contact Peter Nagle at: pnagle@une.edu or internal extension 2791.

SKIN EXPOSURES & EFFECTS

Submitted by Ronnie Souza

Overview

It is estimated that more than 13 million workers in the United States are potentially exposed to chemicals that can be absorbed through the skin. Dermal exposure to hazardous agents can result in a variety of occupational diseases and disorders, including occupational skin diseases (OSD) and systemic toxicity. Historically, efforts to control workplace exposures to hazardous agents have focused on inhalation rather than skin exposures. As a result assessment strategies and methods are well developed for evaluating inhalation exposures in the workplace; standardized methods are currently lacking for measuring and assessing skin exposures.

OSD are the second most common type of occupational disease and can occur in several different forms including:

- Irritant contact dermatitis,
- Allergic contact dermatitis,
- Skin cancers,
- Skin infections,
- Skin injuries, and
- Other miscellaneous skin diseases.

Skin Hazards

Causes of OSD include chemical agents, mechanical trauma, physical agents, and biological agents.

- Chemical agents are the main cause of occupational skin diseases and disorders. These agents are divided into two types: primary irritants and sensitizers. Primary or direct irritants act directly on the skin though chemical reactions. Sensitizers may not cause immediate skin reactions, but repeated exposure can result in allergic reactions.

    - A worker's skin may be exposed to hazardous chemicals through:
        - direct contact with contaminated surfaces,
        - deposition of aerosols,
        - immersion, or
        - splashes.

- Physical agents such as extreme temperatures (hot or cold) and radiation (UV/solar radiation).
- Mechanical trauma includes friction, pressure, abrasions, lacerations and contusions (scrapes, cuts and bruises).
- Biological agents include parasites, microorganisms, plants and other animal materials.

Dermal Absorption

Dermal absorption is the transport of a chemical from the outer surface of the skin both into the skin and into the body. Studies show that absorption of chemicals through the skin can occur without being noticed by the worker, and in some cases, may represent the most significant exposure pathway. Many commonly used chemicals in the workplace could potentially result in systemic toxicity if they penetrate through the skin (i.e. pesticides, organic solvents). These chemicals enter the blood stream and cause health problems away from the site of entry.

The rate of dermal absorption depends largely on the outer layer of the skin called the stratum corneum (SC). The SC serves an important barrier function by keeping molecules from passing into and out of the skin, thus protecting the lower layers of skin. The extent of absorption is dependent on the following factors:

- Skin integrity (damaged vs. intact)
- Location of exposure (thickness and water content of stratum corneum; skin temperature)
- Physical and chemical properties of the hazardous substance
- Concentration of a chemical on the skin surface
- Duration of exposure
- The surface area of skin exposed to a hazardous substance

Control and Prevention

Dermal exposure can be controlled and prevented. Many times it is as simple as changing the chemicals being used. When that is not an option, there are many types of personal protective equipment (PPE) that are available.

- Substitution to a less toxic chemical is almost always a good option, unless the alternative chemical is much more volatile.
- Consideration should be given to re-designing the work process to avoid splashes or immersion. Where that is not feasible, personal protection in the form of chemical protective gloves, an apron, or clothing should be selected. Good housekeeping can avoid the accumulation of stable, low volatility, dermally toxic contaminants on horizontal surfaces. Enclosure and isolation may be feasible for both liquid and solid large aerosols.
- Published breakthrough information from glove manufacturers and lab test data should be used with caution. Glove breakthrough can occur in considerably less time than expected based upon many factors.

Personal Protective Equipment (PPE)

Hand contact is a significant route of exposure. Therefore, proper glove selection is a major means of controlling dermal exposure. Contact the EHS office at extension 2488 if you have questions or need assistance selecting proper PPE.

Source: www.osha.gov, www.cdc.gov

Please note: The below article is being used to reference lab-specific training that should be done by lab managers/coordinators in all UNE laboratories depending on the specific hazards present in each individual laboratory, not the mandatory annual online Blackboard training that all faculty, staff, students and visitors must complete.

Developing a Successful Health and Safety Training Program

Daily work in research laboratories poses constant risks to our health and safety.

By Vince McLeod | September 11, 2017 *via Lab Manager Magazine*

Have you ever had to attend an after-lunch training session? Or, even worse, had to give a presentation to a room full of cell phone users and nodding heads? Well, read on for tips on how to develop training that will keep your attendees interested and focused.

We all can agree that laboratory research facilities contain more than their fair share of hazards. A wide array of hazards is usually present given the typical assortment of chemical laboratories, instrument rooms, chemical storage, waste handling and busy receiving/loading docks. Every workday our employees must deal with these hazards while hopefully avoiding accidents and injuries. As you must admit, well-trained employees do a much better job at this than average or untrained workers. So, let us take a look at evaluating and improving your training programs.

Daily work in research laboratories poses constant risks to our health and safety. These take the form of chemical safety, ergonomics, fire safety, hazard communication, housekeeping, material handling and personal protective equipment. These potential hazards and the training needed to combat them have not gone unnoticed, as more than 100 OSHA standards for the control of hazards in the workplace contain requirements for training in order to reduce potential for injury. During the period between 1980 and 1996, 80 reports were reviewed where training was used to reduce the risk of work-related injury. This NIOSH review found vast evidence supporting the value of training in increasing worker knowledge of job hazards and effecting safer work practices. On the other hand, they found a lack of training was a contributing factor in worker injuries and workplace fatalities, further reinforcing the review's findings. A quick read of this publication should stimulate you into taking the time to assess your current training programs.

As they say, "Start with the end in mind" whether you are developing a new training program or evaluating an existing one. By this, we mean you should have a clear idea of what you hope to achieve. Training experts refer to this as defining your performance objectives. To begin, ask these three important questions:

1. Can your employees recognize and identify the hazards in the workplace?
2. Can your employees recognize how these hazards result in personal injury, property damage, or both?
3. Can your employees describe and apply appropriate safe work procedures and practices to cope with these hazards?

In order to answer the above questions, we recommend starting with your facility's safety record. Hopefully, an accident/injury reporting system is in place where you can pull all recent accident and injury reports and trace them to their source area. If not, start one now! Remember to include reports of near misses and close calls. A careful review of your accident/injury data should help you identify areas of your facility, particular job tasks, or positions needing training. Using these data, you can prioritize training topics and target your audience.

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Training continued…

In developing your safety training program, the next step is to examine your current training model using the OSHA draft model training guidelines. These seven steps will guide you through the entire process from development to delivery, and then circle back to the top for evaluating and improving your training programs. The seven guidelines are summarized here:

1. Determine whether training is needed. Are engineering or physical controls needed? Should the work process be changed or is it really a question of increasing employees' knowledge of safe work practices?

2. Identify training needs. Examine the facility's health and safety records. Go over your job hazard analyses. Solicit worker or supervisor perceptions and suggestions to identify what training is needed and where improvements can be made. Do not forget to include applicable federal and state requirements.

3. Identify goals and objectives. Clearly state what the training is intended to achieve, and develop explicit, observable evidence that it has been met. In other words, a specific objective is much better than a vague goal.

4. Develop learning activities. Good instruction that targets well-defined objectives should include mental and/ or physical skills required to meet the specified needs. Use of actions and situations that simulate actual conditions are very effective. In addition, allow employees to demonstrate that they have assimilated the desired knowledge through specific activities.

5. Conduct the training. The teaching format should invite worker participation and provide hands-on exercises to promote active learning. Use of the many means of motivating and maintaining student interest is encouraged. Emphasizing the benefits and relating the training to current skill levels and experiences are among the best methods.

6. Evaluate program effectiveness. Determine whether the training has accomplished objectives for each training session. Use of student/trainee opinions and feedback, as well as supervisor observations and workplace improvements, are recognized as effective for this purpose.

7. Improve the program. Revise aspects of the training based on evaluations from the previous step. Offer periodic retraining. Determine course deficiencies and identify needed revisions by repeating all steps of the training model.

The role of training in developing and maintaining effective hazard avoidance is borne out in the reams of literature and safety training studies performed. The question is not whether safety and health training can reduce risks from workplace hazards, but rather how to maximize these training effects. Following the OSHA draft model training guidelines will put you on a path of building an excellent occupational safety and health training program. Working through the seven guidelines and emphasizing the last two, evaluating the effectiveness and improving the programs, will reward you with reduced injuries and a better educated and motivated workforce. For those needing shortcuts, OSHA has developed sample programs for many areas that you might want to check out *(https://www.osha.gov)*.

Examples of possible laboratory specific hazards that may require additional lab training.

UNE Chemical Sharing Program

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 that you are thinking of disposing, please contact EHS so they can be listed in the next issues of EHS Lab Chatter as available for the UNE Chemical Sharing Program.

The Sustainability Office currently has the following printer cartridges available:

HP LaserJet Q6470A - Black (2 of these)
HP LaserJet Q6471A - Cyan
HP LaserJet Q6473A - Magenta
HP LaserJet Q6472A - Yellow
HP LaserJet Q3961A- Cyan
HP LaserJet Q3963A- Magenta
HP LaserJet CC532A- Yellow
HP LaserJet CC531A- Cyan
HP Color LaserJet 3600 Q6473A- Magenta
LD Laser Toner LD-330952 - Black

Please email: **jtyre@une.edu** if you are interested in any of the listed items and we will transfer them for you.

Quarterly Hazardous Waste Pick-Up

Tuesday, February 13th

Please contact EHS if you need a waste pickup or a chemical clean out before this date.

Contact us

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