EHS ENVIRONMENTAL HEALTH AND SAFETY

Lab Chatter

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Contents:

Lab training requirements for all lab staff and lab volunteers

By Ronnie Souza

There are two questions that Human Resources and the EHS Department address every semester and prior to the summer break in regards to lab safety training:

1. What are the training requirements for employees and volunteers working in UNE laboratories?

2. When is a laboratory worker an employee or a volunteer?

Answers:

Employees and volunteers working in the UNE labs are required by federal law to complete **Lab Training Modules on Blackboard** in the same way you complete annual training. If you are a PI in charge of a lab or a lab manager, you need to report (to Human Resources) **all new and returning students receiving compensation including federal work study, temporary and part-time employees, adjunct faculty and student and non-student volunteers working in your lab.**

If you have laboratory employees and/or volunteers in the categories below you are required to register them for Blackboard Training:

- Full and Half-time Salaried
- Full and Half-time Hourly
- 9, 10, 11, or 12-month Faculty
- Adjunct Faculty
- Temp Salaried
- Temp Hourly
- Student Paid
- Student Unpaid (volunteer)
- Non-student Unpaid (volunteer)
- Graduate Assistant

Contact Tammy Louko in Human Resources at extension 4256 to request a training registration form or go to V:\UNEDocs\HUMAN RESOURCES\Training. Once you have populated the training registration form with all the information requested, forward the form to Tammy Louko in Human Resources and she will set up the individual to gain access to the training on Blackboard.

Dissection Safety Tips

Introduction

The policy for handling and disposal of dissection materials is no different than that required for any other biological or chemical material. Common sense, knowledge of the material, and a familiarity with local disposal regulations and procedures must prevail.

Rationale

Dissection of preserved organisms is an integral part of many life sciences courses. The rationale for dissection work should be well thought out and available in written form for answering potential questions from parents or the community. Careful and clearly written directions are critical for safe and meaningful dissection work. Professionally illustrated dissection guides add an important degree of authenticity to classroom dissection work. Many software programs are available to prepare students to carry out dissection activities. However, nothing can replace the actual experience of dissection.

The science department should regularly review the:

1. Courses where dissection activities are used in instruction.
2. Quality of the dissection guides used in these courses.
3. Quality of the dissection tools and workspace available for these courses.
4. Availability of personal protective equipment and proper ventilation in biology work areas.
5. Nature of the preservatives used in the dissection materials used by your department.
6. Inventory of preserved materials in the department and the date of their purchase.
7. Local regulations relative to the disposal of preserved materials.

Equipment Considerations

Protective gloves, chemical-resistant aprons, and protective eyewear are dissection necessities. Quality dissection tools that are sharp and free of rust should be provided. Routine procedures for inspecting dissection tools should be instituted. (Dull and dirty scissors, scalpels, or blades are much more dangerous than sharp, clean ones!) Student laboratory directions should include the proper techniques for using specific dissection instruments, as well as how to dispose of sharps. Appropriate dissection pans and table protection should be provided at each workstation. Common-sense rules relative to jewelry, nails, hair length, etc. should be reviewed in terms of student personal safety during dissection work.

Preservatives and Ventilation

Preserved materials are often fixed in formaldehyde or other toxic chemicals. After the fixing process, the excess fixative is removed and replaced with safer preservatives. A certain degree of preservative odor is likely to linger, and thus good ventilation of the work area (classroom) is critical. Good ventilation will provide fresh air and will not "announce" to the entire school that it is dissection time. Rinsing procedures are often specified for specimens. Follow any such directions carefully, especially if the preserved materials will be used over an extended period of time. With the extremely low levels of preservative in most specimens, odors are minimal but the expected shelf life of a preserved specimen is also shortened.

Cleanup and Disposal of Preserved Materials

Proper cleanup and disposal of dissected materials is critical. Be sure to read the Flinn Scientific "Biological Waste Disposal" instructions in the *Flinn Scientific Catalog/Reference Manual* and note especially the section on the disposal of Type III Biological Materials. Local conditions (septic systems, sewers, etc.) and local regulations may influence the proper disposal procedures of your biological materials. It is critical to know your local regulations and guidelines for such materials. Plenty of soap and water should be provided after all dissection work and adequate time should be provided for the proper cleanup of materials and students.

General Guidelines

- Be sensitive to any students who may be put under physical stress when using preserved materials.
- Monitor students for any signs of illness during dissection.
- Wear chemical splash goggles and chemical-resistant gloves and apron.
- Properly mount dissection specimens to the dissecting pan or tray. Do not dissect a specimen while holding it.
- Handle scalpels, razor blades, and other sharp instruments with care.
- Cut away from the body and away from other students.
- Do not use excessive force when working with sharp instruments. Use scissors instead of scalpels wherever possible.
- Students should be cautioned to never ingest specimen parts.
- Students should not be allowed to remove specimens or specimen parts from the classroom.
- All dissection parts should remain within the dissecting pan.
- Properly dispose of dissected materials.
- Store specimens in accordance with directions and chemical storage safety rules.

Scalpel Safety Reminders:

- Hold a scalpel as you would a pencil.
- Cut with a downward motion but never push down very hard to make a cut. (If extreme pressure is required, you have a dull scalpel or require a different instrument.)
- Watch the placement of your specimen-holding hand. Do not cut toward your holding hand.
- Scalpels are not appropriate for bone or cartilage tissue work.

Keep your dissection instruments organized and clean to improve safety

For a full listing of dissection supplies, see the *Flinn Scientific Catalog/Reference Manual.*

Autoclave Safety

By Peter Nagle

Autoclaves are a common apparatus found on both campuses at the University. They are essential to several labs since they are used for the sterilization of equipment, supplies and infectious waste. Autoclaves pose several physical hazards to users when used improperly.

The hazards include:

Burn hazards from pressurized heat and steam

Explosion hazards from failure of door seals during operation or improper loading

Heavy lifting hazards from loading or unloading heavy or awkward objects

To protect yourself and others from these hazards, always practice the following guidelines:

Prior to loading

1. Check inside the chamber for any items left behind by the previous user that could pose a hazard.
2. Ensure that the drain strainer is clean before loading.
3. Ensure that the door gaskets are intact and pliable and not deteriorated.

Loading the autoclave

1. Load according to the manufacturer's instructions. **DO NOT** over load the autoclave.
2. Never autoclave items containing corrosives, oxidizers, solvents, volatiles, or radioactive material.
3. Never use containers that are not autoclave safe (non-heat resistant plastics and glass) as they will melt or shatter during the sterilization cycle.
4. Individual glassware pieces must be placed on a heat resistant tray or rack and never directly on the chamber bottom.
5. Make sure the autoclave door is completely closed and latched before operating.

Operating the autoclave

1. Wear proper PPE, including:
    - Heat resistant gloves and arm sleeves,
    - Rubber apron if handling hot liquids,
    - Lab coat is sufficient if no liquids are involved,
    - Eye protection,
    - Cut resistant gloves if handling sharps (use of tongs is acceptable).
2. Open door slowly. Keep your head, face and hands away from opening.
3. Allow materials inside to cool for at least 10 minutes with the door open before unloading. Removing contents too soon may cause heat stress and fracturing of materials, especially glass.

Autoclave failure

1. Discontinue use immediately if autoclave is not working properly.
2. Post sign alerting others not to use until fixed.
3. Contact the service company responsible for maintenance. The repairs should only be made by a trained technician (this information is found on or next to each autoclave).

Regulations

In addition to the safety precautions, all owners and operators need to be aware of any state laws regulating autoclaves. Maine considers autoclaves to be pressure vessels. The state regulations require that any pressure vessel with an internal volume greater than 5 cubic feet (37.5 gallons) and operating at a pressure greater than 15 PSIG (pounds per square inch gauge) and all pressure vessels operating at a pressure greater than 250 PSIG regardless of size be registered with the Maine Board of Boilers and Pressure Vessels and inspected on a regular basis.

Autoclaves are essential equipment for several laboratories. However, ownership of them carries several safety and regulatory responsibilities for their operators to ensure the hazards of autoclave operation are minimized.

What do you want to know?

Are there safety concerns in your lab space?
Do you have questions about a specific lab safety or health issue?
Are you unsure about certain rules and regulations?

Submit your topics of interest for lab safety to: jtyre@une.edu and we will cover those burning questions in an EHS Lab Chatter article.
Give us the topic and we will provide the information!

The Maine Department of Environmental Protection overview

Contributed by Jessica Tyre via Maine .gov

The Department of Environmental Protection (DEP) is responsible for protecting and restoring Maine's natural resources and enforcing the state's environmental laws.

Mission: Legislative mandate directs DEP to prevent, abate and control the pollution of the air, water and land. The charge is to preserve, improve and prevent diminution of the natural environment of the State. The Department is also directed to protect and enhance the public's right to use and enjoy the State's natural resources. The Department administers programs, educates and makes regulatory decisions that contribute to the achievement of this mission. In pursuing this mission, it is the policy of the Department to treat its employees and the public with courtesy, respect and consideration and to be fair and honest in its dealings, and to be mindful of the special qualities that make Maine a unique place to live and work.

Activities: The Department engages in a wide range of activities. It makes recommendations to the Legislature regarding measures to prevent, minimize and eliminate environmental pollution; issues licenses; initiates enforcement actions; and provides information and technical assistance. The DEP serves as the main link to the federal government on environmental issues and administers some federal programs. Working with the general public, legislators and state and municipal agencies, department staff implement environmental laws and programs.

Organization: The Department is organized by environmental media into four bureaus – Air Quality, Land Resources, Remediation & Waste Management, Water Quality – and the Office of the Commissioner, which includes the Office of Communications & Education, the Policy Development & Implementation Unit and the Office of Innovation and Assistance. Within this structure, department leadership continues to implement organizational improvements that will enhance the agency's effectiveness in providing protections for the state's air, land and water while enacting efficiencies to strengthen customer service and operations.

The Department maintains offices across the state to provide accessibility to municipalities and the public and to enable staff to conduct necessary field work. The Office of the Commissioner and Central Maine Regional Office are located in Augusta. Other offices include the Northern Maine Regional Office in Presque Isle, the Eastern Maine Regional Office in Bangor and the Southern Maine Regional Office in Portland.

Enforcement and Compliance: The cornerstone of Maine DEP's compliance programs is our long-standing commitment to close monitoring and equitable enforcement of our laws. There is a proud tradition of taking our environmental laws seriously, and an unwavering expectation from Maine people that we will enforce those laws. As a result, DEP maintains compliance programs that we understand rival any other in the country for consistency, and for timely and appropriate responses to noncompliance.

Maine uses specific tools and sometimes unique terminology to identify a regulated entity's compliance status and those enforcement actions taken as a result of noncompliance including:

- Letter of Warning
- Notice of Violation
- Administrative Consent Agreement
- 80K Action (the legal procedure which must be followed in prosecuting land use violations. Rule 80K actions are intended to be prosecuted by non-attorneys who have completed the Rule 80K certification program).
- Referral to the Office of the Maine Attorney General

For more information on the Maine DEP, please visit: **http://www.maine.gov/dep**

Out of Control:
State and federal agencies are very serious when it comes to controlled substances. And you should be too.

By Vince McLeod | December 03, 2015

(Contributed by Jessica Tyre via http://www.labmanager.com/lab-health-and-safety)

Handling Controlled Substances

Our bet is that many of you are wondering what we mean when we talk about controlled substances. The rest are probably thinking "What's the big deal?" Granted, when it comes to dealing with controlled substances, we usually are not discussing serious potential for injury or catastrophic loss. What usually happens is that some of our material or product turns up missing. But you should heed our warning. You do not want to be in that situation, or you will very quickly discover how big of a deal it becomes. State and federal agencies are very serious when it comes to controlled substances. And you should be too.

What exactly are we talking about?

For those who are not familiar with the term controlled substances, it refers to drugs and other substances listed on one of the five schedules published in the Controlled Substance Act, Title 21 Code of Federal Regulations, Part 1308.11 through 1308.15.1 Chemical substances are placed on the schedules based on three primary characteristics: currently accepted medical treatment use in the United States, relative abuse potential, and likelihood of causing dependence when abused. Below are simple definitions of each schedule and a few common examples of each.

Schedule I substances have no currently accepted medical use in the U.S., a high potential for abuse, and a lack of accepted safety for use under medical supervision. Examples include heroin, LSD (lysergic acid diethylamide), marijuana (cannabis), and methylenedioxymethamphetamine (Ecstasy).

According to 21CFR 1308, Schedule II substances are primarily narcotics or stimulants that have a high potential for abuse, which may lead to severe psychological or physical dependence. Narcotic examples include codeine, hydrocodone, morphine, opium and barbitals, and the well-known oxycodone (OxyContin®, Percocet®), and hydromorphone (Dilaudid ®). Examples of stimulants are amphetamines (Dexedrine ®), Adderall®), and methamphetamines (Desoxyn®).

Schedule III substances have a lower potential for abuse than Schedules I or II substances do, and abuse may lead to moderate or low physical dependence or high psychological dependence. These include products containing not more than 90 milligrams of codeine per dosage unit (Tylenol with Codeine® and buprenorphine (Suboxone®). An anabolic steroid such as Depo-Testosterone® is an example of a non-narcotic Schedule III substance.

Substances in Schedule IV have a low potential for abuse relative to substances in Schedule III. Examples of Schedule IV substances include alprazolam (Xanax®), carisoprodol (Soma®), and diazepam (Valium®).

Schedule V substances have a low potential for abuse relative to substances listed in Schedule IV and consist primarily of preparations containing limited quantities of certain narcotics. Examples of Schedule V substances include cough preparations containing not more than 200 milligrams of codeine per 100 milliliters or per 100 grams (Robitussin AC® and Phenergan with Codeine®).

Controlled substances continue d on next page…

What do you need to do?

Now that you know what constitutes a controlled substance, what do you need to do?

First, you need to understand that the controlled substance schedules currently list approximately 160 specific substances, and they do not constitute a comprehensive listing of all controlled substances. The schedules describe only basic or parent chemicals and do not list all the salts, isomers and salts of isomers, esters, ethers, and derivatives, which may be controlled substances. If a substance is an analogue and is structurally or pharmacologically substantially similar to or is represented as being similar to a Schedule I or Schedule II substance and is intended for human consumption but not an approved medication in the United States, it can be treated as a Schedule I substance for criminal prosecution.

Second, this article is intended to address the use of controlled substances in research, instruction, and analytical laboratories. It is not our intent to include medical clinical activities, medical veterinary hospitals, or pharmacies, which are governed by federal and state accrediting and regulatory agencies and are subject to review and audit by those agencies.

Third, and this is the main focus and information, you should take away, before you begin using any controlled substance in your lab; you should have all the appropriate licenses and registrations and have a robust program in place for managing these materials.

Staying in control

The heart of proper controlled substance management is a well-thought-out, comprehensive program including vigorous training, record keeping, surveillance, and follow-up. There are many excellent programs readily available, as a quick internet search will show. No matter which one you choose as your model, ensure that it meets all the requirements. It should cover all the basics mentioned above plus responsibilities of all stakeholders, licensing and registration, purchasing, receiving, storage, and disposal. In addition, pay extra attention to access restrictions, personnel screening, spill procedures, and handling diversion, loss, or theft.

The critical steps and components of a successful controlled substance management plan are briefly discussed here. Most, if not all, states require a license to use controlled substances, and this step is the first hurdle. After you obtain your state license, you need to then register with the federal Drug Enforcement Agency. Excellent step-by-step instructions with explanations are provided on the DEA registration website. Pay attention to your specific research requirements for both state and federal applications. The registration is an absolute must, so make sure you get it right. State licenses renew every two years (usually), while the DEA registrations must be renewed annually.

Next, get your on-site paperwork in order, beginning with receiving material through inventory listing and control and ending with use or disposal record keeping. Do not underestimate the importance of safe, secure storage and tightly controlled access. You do not want to go through having to report a loss, theft, or diversion. Trust us.

Finally, make sure your program has well-documented disposal procedures. You must understand that controlled substances are not considered hazardous waste, biological waste, or regulated medical waste. Therefore, they CANNOT be disposed of through your normal biological, medical, or hazardous waste programs. Most solid programs will have requirements to return all unused or expired material to the original manufacturers or distributors. A good backup plan is to set up reverse distributors, specialty contractors knowledgeable and approved for handling controlled substances.

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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 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.

Chemicals currently available: *None*