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EHS Lab Chatter

UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

EHS ENVIRONMENTAL HEALTH AND SAFETY

Table of Contents:

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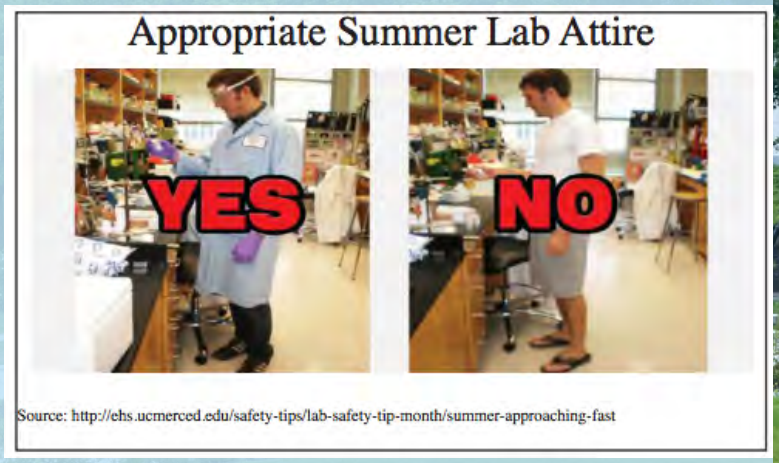
Safety Spotlight

The show must go on: summer laboratory safety

by Jessica Tyre

For most people summer means shorts, flip flops, and staying cool. In the laboratory environment we need to be diligent in making sure key laboratory policies and procedures put in place for safety are still being adhered to even in the summer months. Courses and research still continue May through August on both campuses so we need to make sure students and staff are properly trained and aware that the rules still apply no matter what the outdoor temperatures are.



REMEMBER...

LAB DRESS CODE:

*NO shorts or capri pants (no exposed ankles)

*NO open shoes (no exposed skin on feet)

*NO dangling jewelry

*WEAR lab coats per lab policies and SDSs

*WEAR long hair tied back

*WEAR gloves per lab policies and SDSs

*WEAR eye protection per lab policies and SDSs

(**There are exceptions to Marine Science field labs with no exposure to hazardous materials; see EHS for clarification**)

TRAINING:

***ANY** individual working in a laboratory setting must have the required UNE training courses completed before beginning work. Any lab-specific training is the responsibility of the PI.

*This applies to visitors, students from other universities working at UNE for the summer, new employees, work study students, and temporary workers.

*Training can be requested through Tammy Louko in the Human Resources Department.

FACILITY CONCERNS:

*DO NOT leave windows open overnight. All windows must be closed when lab staff leave for the day.

*DO NOT prop doors in laboratory areas. Ventilation systems are designed to have lab doors closed for best results.

*DO NOT bring in air conditioners or install an air conditioner yourself in any UNE space. Contact UNE Facilities to discuss options for air conditioning.

*DO turn off all lights when you leave the lab.

*DO report any building issues when they are discovered by placing a Facilities work order or calling the Facilities front desk at X2368.

Contributed by Ronnie Souza through Penn State:

https://ehs.psu.edu/sites/ehs/files/cleaningguidance-laboratory.pdf

PennState Physical Plant
ENVIRONMENTAL HEALTH & SAFETY

CLEANING GUIDELINES FOR LABORATORIES AND RESEARCH FACILITIES

OVERVIEW: This following guidance is provided to laboratories and research facilities to help identify approved COVID-19 disinfection methods researchers can follow for their high touch work areas and equipment.

ROUTES OF TRANSMISSION: According to the CDC, what is currently known about the novel coronavirus and similar coronaviruses that cause SARS and MERS, ***spread from person-to-person*** with these viruses happens most frequently among close contacts (within about 6 feet). This type of transmission occurs via respiratory droplets. On the other hand, transmission of novel coronavirus to persons from surfaces contaminated with the virus has not been documented. Transmission of coronavirus occurs much more commonly through respiratory droplets than through fomites. Current evidence suggests that novel coronavirus may remain viable for hours to days on surfaces made from a variety of materials. ***Cleaning of visibly dirty surfaces followed by disinfection is a best practice measure for prevention of COVID-19 and other viral respiratory illnesses in households and community settings.***

MAINTAIN SOCIAL DISTANCING: During this COVID-19 pandemic, if you can avoid coming to campus, please do. Now is a great time to work on manuscripts and grant proposals instead of wet-bench work.

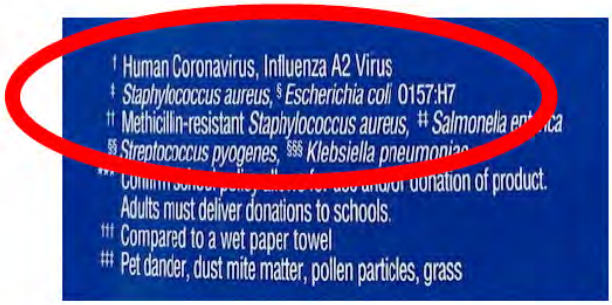
HIGH-TOUCH LOCATIONS AND EQUIPMENT: The following are locations and equipment with high frequency of handling and contact. As such these represent a higher probability of viral loading in the work area and should be disinfected on a routine basis.

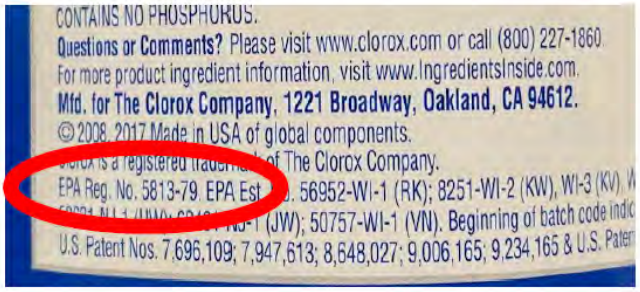
- Benchtops
- Equipment handles and latches
- Equipment controls and touchpads
- Drawer and cabinet handles
- Bin and water incubator lids
- Hand tools
- Micropipettors and other shared tools
- Faucet handles and sprayer grips
- Baskets, bins, trays, etc.
- Outsides of shared chemical bottles and caps
- Chair backs and arm rests
- Pens, whiteboard markers, etc.

CLEANING GUIDELINES FOR LABORATORIES AND RESEARCH FACILITIES

USE EPA-APPROVED DISINFECTANTS: Use a disinfectant that is certified by the EPA to be effective against the COVID-19 coronavirus. There are two easy ways to tell this.

- Verify the disinfectant is on the EPA's List N registry of disinfectants. Disinfectants are listed by both name and by EPA ID number. Your product may not be listed by name, but if the EPA number matches what's on the list, then this is a good disinfectant to use.
- The fine print of the label will list Coronavirus among the organisms for which it is approved.





Common Laboratory Disinfectants Approved for COVID-19:

- 10% bleach in water is an approved disinfectant, as is QuatStat 5 from Betco.
- 70% ethanol is ***not*** recommended for all surfaces, though it may be appropriate for electronics and other delicate surfaces.
- NOTE that not all products with the name "Lysol" or "Clorox" are necessarily effective against Coronavirus.

DO NOT MIX cleaning chemicals together, especially with bleach!

PAY ATTENTION TO DISINFECTANT CONTACT TIME: The overwhelming majority of disinfectants need time to work, so simply spraying and immediately wiping is insufficient. For most disinfectants, you need to spray until the surface is thoroughly wet, then wait 5-10 minutes before wiping. This is even true of bleach. If your bottle doesn't have the instructions on the label, look them up online. DO NOT ASSUME that the disinfectant works on contact.

WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT: You may already be wearing appropriate PPE based on your laboratory work, but if not, this is the time to pull on splash goggles or safety glasses, and chemical-compatible impervious gloves. A lab coat is a good idea also, especially if you are spraying bleach. Reference the Safety Data Sheet (SDS) for information on PPE, the hazards of the disinfectant, and any other information you might want to know about it.

CLEANING GUIDELINES FOR LABORATORIES AND RESEARCH FACILITIES

USE CARE WITH DELICATE EQUIPMENT: Certain equipment may be damaged by spraying (computer keyboards and mice, key-style equipment touchpads, on/off switches, power tools, etc.) and by harsher disinfectants such as bleach. If you have approved quaternary-ammonium disinfectant or 70% ethanol wipes, use them for these more delicate tasks.

If you do not have disinfectant wipes, these items can be disinfected by soaking a dry wipe or clean soft cloth in the alcohol or disinfectant until it is soaked but not quite dripping, and then using it to wipe the keyboard/switch/etc., being careful to avoid getting liquid into any openings. The surface should be visibly wet after you wipe it, and the disinfectant should be left to evaporate from the surface. There is an additional guidance document available for disinfecting computer equipment.

Energy Efficiency in the Time of COVID-19

By Alethea Cariddi

Mainers know how to do frugal, right? The novel coronavirus is reminding us to tighten our belts and find savings everywhere we can. The Sustainability Office has issued reminders about shutting down all power consuming appliances, offered to do office energy checks for those already working from home, turned off water filtration units in vacated spaces, and partnered with ITS to power down classroom projector podiums. Labs are no different. If you have equipment that does not need to be running during this period, please shut it down - completely. Remember that equipment that is turned off, but still plugged into an outlet, is likely still drawing a load, especially if there are any indicator lights. These “vampire loads” add up to a lot over a period of time. Use your best judgement about what equipment is safe to unplug, and if you need help, please reach out. The Environmental Health and Safety staff and Sustainability Office would be happy to consult with you.

Proper glove selection

Lab staff and students need to wear gloves to protect against skin absorption of chemicals, chemical burns, thermal burns, lacerations, and cryogenic liquid exposure. Choosing the appropriate hand protection can be a challenge in a laboratory setting.

Always wear gloves when handling hazardous materials, chemicals of unknown toxicity, corrosive materials, rough or sharp-edged objects, and very hot or very cold materials. Disposable nitrile or neoprene gloves are usually appropriate as protection from incidental splashes or contact with lab chemicals. The SDS must always be consulted to verify chemical compatibility with the gloves being used.

When working with chemicals with high acute toxicity, working with corrosives in high concentrations, handling chemicals for extended periods of time or immersing all or part of a hand into a chemical, the appropriate glove material should be selected, based on chemical and task compatibility.

Glove Selection

Consider the following when selecting a glove:

- degradation rating
- breakthrough time
- permeation rate

Degradation is the change in the physical properties of a glove caused by contact with a chemical. Degradation typically appears as hardening, stiffening, swelling, shrinking or cracking of the glove. Degradation ratings indicate how well a glove will hold up when exposed to a chemical.

Breakthrough time is the elapsed time between the initial contact of the test chemical on the surface of the glove and the analytical detection of the chemical on the inside of the glove.

Permeation rate is the rate at which the test chemical passes through the glove material once breakthrough has occurred and equilibrium is reached. Permeation involves absorption of the chemical on the surface of the glove, diffusion through the glove, and desorption of the chemical on the inside of the glove. If chemical breakthrough does not occur, then permeation rate is not measured.

Manufacturers stress that permeation and degradation tests are done under laboratory test conditions, which can vary significantly from actual conditions in the work environment.

For mixtures, it is recommended that the glove material be selected based on the shortest breakthrough time.

The following information includes major glove types and their general uses. This list is not exhaustive.

Glove material and general uses:

Butyl: Offers the highest resistance to permeation by most gases and water vapor. Especially suitable for use with esters and ketones.

Neoprene: Provides moderate abrasion resistance but good tensile strength and heat resistance. Compatible with many acids, caustics and oils.

Nitrile: Excellent general duty glove. Provides protection from a wide variety of solvents, oils, petroleum products and some corrosives. Excellent resistance to cuts, snags, punctures and abrasions.

PVC: Provides excellent abrasion resistance and protection from most fats, acids, and petroleum hydrocarbons.

PVA: Highly impermeable to gases. Excellent protection from aromatic and chlorinated solvents. Cannot be used in water or water-based solutions.

Viton: Exceptional resistance to chlorinated and aromatic solvents. Good resistance to cuts and abrasions.

Silver Shield: Resists a wide variety of toxic and hazardous chemicals. Provides the highest level of overall chemical resistance.

Natural rubber: Provides flexibility and resistance to a wide variety of acids, caustics, salts, detergents and alcohols.

Compatibility Information: Most glove manufacturers have chemical compatibility charts available for their gloves. These charts may be found online from Fisher Scientific and Chemrest. Most SDS recommend the most protective glove material in their Protective Equipment section. SDS are available from the chemical manufacturers.

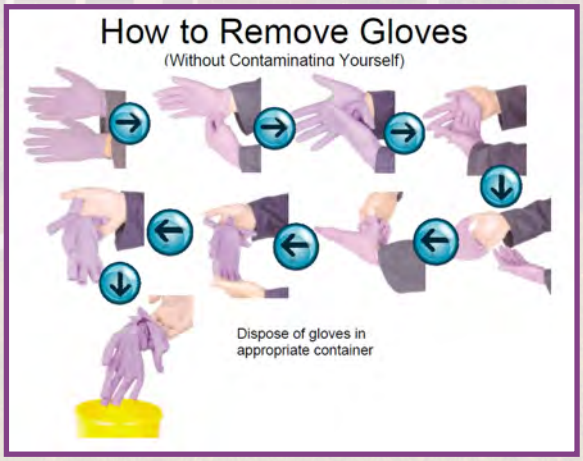
Other Considerations

Where fine dexterity is needed and can't be achieved with a manufactured product, consider double gloving with a less compatible material, immediately removing and replacing the outer glove if there are any signs of contamination. In some cases, such as when wearing Silver Shield gloves, it may be possible to wear a tight-fitting glove over the loose glove to increase dexterity.

Glove thickness, usually measured in mils or gauge, is another consideration. A 10-gauge glove is equivalent to 10 mils or 0.01 inches. Thinner, lighter gloves offer better touch sensitivity and flexibility, but may provide shorter breakthrough times. Generally, doubling the thickness of the glove quadruples the breakthrough time.

Glove length should be chosen based on the depth to which the arm will be immersed or where chemical splash is likely. Gloves longer than 14 inches provide extra protection against splash or immersion.

Glove size may also be important. One size does not fit all. Gloves which are too tight tend to cause fatigue, while gloves which are too loose will have loose finger ends which make work more difficult. The circumference of the hand, measured in inches, is roughly equivalent to the reported glove size. Glove color, cuff design, and lining should also be considered for some tasks.



Source:

https://ehs.princeton.edu/laboratory-research/laboratory-safety/ppe-the-lab/gloves

Refresher: Hazard Communication and GHS Pictograms

By Jessica Tyre

We all take the annual Hazard Communication training on Blackboard, but I feel it is worth reiterating the importance of this topic. In this article I will just hit the highlights of the UNE Hazard Communication Plan (which can be found in Section 8 in the UNE Safety Manual).

Potential hazards:

-**Physical hazards**: flammable/combustible, corrosive, combustible liquid, compressed gas, explosive, oxidizers, pyrophoric, unstable (reactive) or water-reactive.

-**Health hazards**: toxic, irritant, corrosive, sensitizer, hepatoxin, nephrotoxin, neurotoxin, respiratory, reproductive, eye, cutaneous.

Hazard reduction:

ENGINEERING CONTROLS

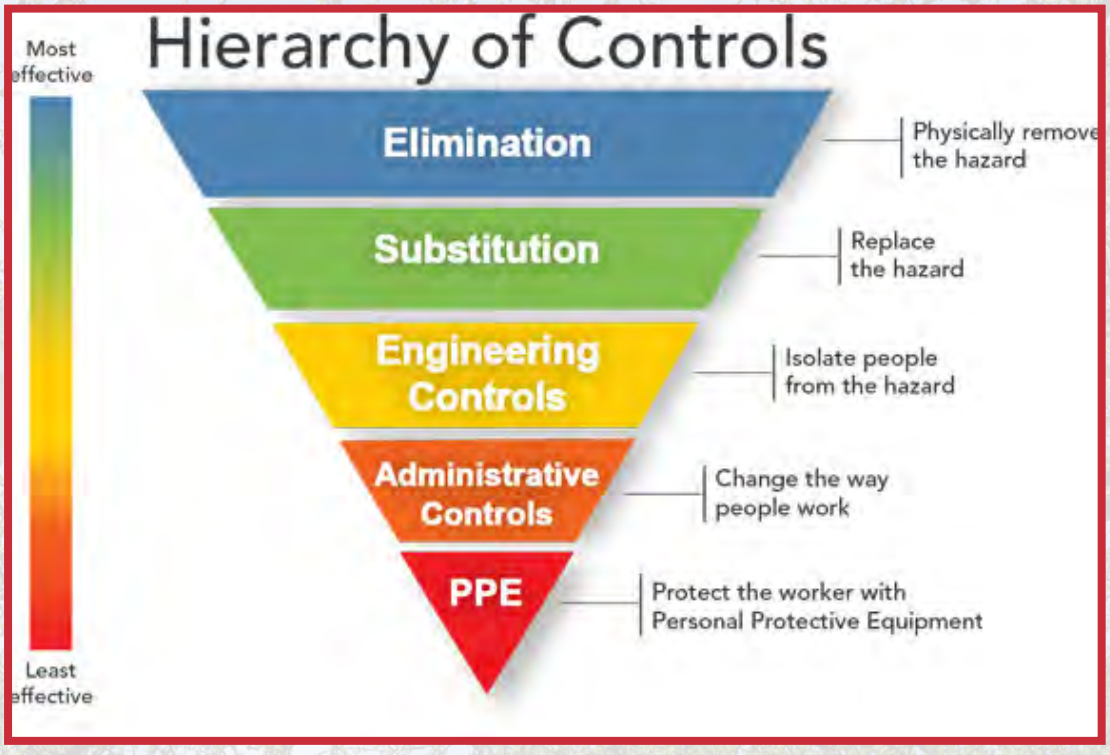
Engineering controls protect workers by removing hazardous conditions or by placing a barrier between the worker and the hazard. Examples include local exhaust ventilation to capture and remove airborne emissions or machine guards to shield the worker.

ADMINISTRATIVE CONTROLS

Administrative controls include training, procedure, policy, or shift designs that lessen the threat of a hazard to an individual. Administrative controls typically change the behavior of people (e.g., employees) rather than removing the actual hazard.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Use of gloves, respiratory protection, aprons, gowns, and other physical equipment worn to protect the employee from the hazard. PPE is the last line of defense.



Safety Data Sheets (SDSs)

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDS) (formerly known as Material Safety Data Sheets or MSDS) to communicate the hazards of hazardous chemical products. As of June 1, 2015, the HCS required new SDS to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

Section 1, Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures includes important symptoms/effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8, Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PEL); ACGIH Threshold Limit Values (TLV); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*

Section 13, Disposal considerations*

Section 14, Transport information*

Section 15, Regulatory information*

Section 16, Other information, includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29 CFR 1910.1200(g)(2)).

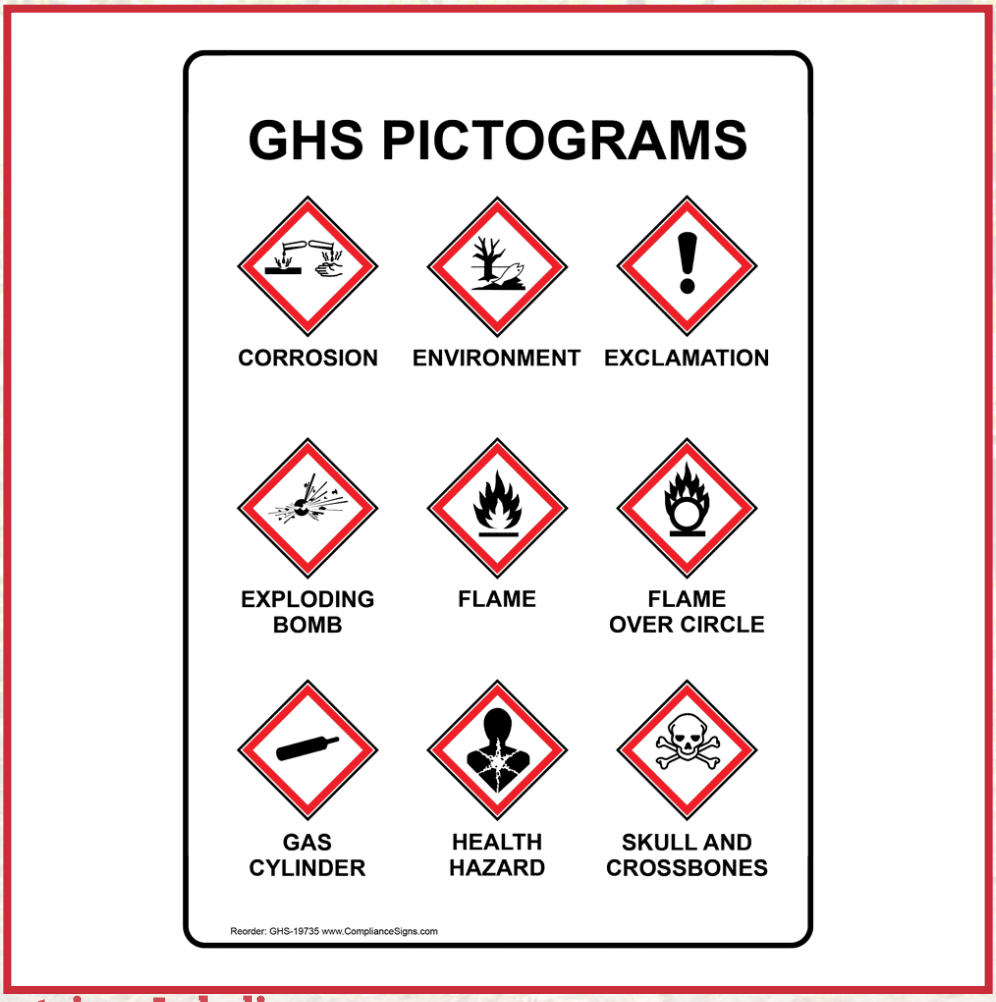
Employers must ensure that SDS are readily accessible to employees.

Chemical Inventory System

UNE EHS maintains an online chemical inventory system. All chemicals on UNE property are to be entered into this system. SDS for all chemicals are uploaded into the online inventory system. If at anytime you need an SDS, you can contact EHS, or you can access the online inventory system if you have a login. You should have a binder in your immediate lab area of all your SDS for your chemicals. Alternately, you may have an electronic collection of SDS as long as all lab staff have access to the computer and its files.

GHS Pictograms

As of June 1, 2015, the Hazard Communication Standard (HCS) has required pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.



Secondary Container Labeling

Another important part of hazard communication is proper labeling of secondary containers for substances that have been removed from their original manufacturer's container or packaging. If you have squirt bottles, spray bottles, smaller containers, etc. of any chemical those containers must contain the name of the substance with NO abbreviations. It may become required soon to state the primary hazard on the label as well on a secondary container so it is good practice to start doing so now. A primary hazard could be "flammable", "corrosive", "sensitizer" etc. Good secondary container labeling reduces confusion, promotes good lab safety practices and assists in emergency response. Lab staff are not the only personnel in UNE labs. Housekeeping services, Facilities, Security and EHS are also in UNE labs frequently and it is important for all personnel that enter the area to have precise and accurate information in an emergency.

To view the entire UNE Hazard Communication Program in its entirety you can visit the UNE EHS website (https://www.une.edu/campus/ehs) and look at Section 8. Of course you can always contact the EHS staff for clarification as well.

Accessing the Master Collection of Safety Data Sheets at UNE

By Peter Nagle

In the past EHS has maintained a campus wide SDS collection in folders located in the Facilities Building. The collection covered all chemicals on site from laboratory chemicals to products used by our Facilities staff. Over the past year it has been converted to an electronic collection, which all faculty and staff can easily access from their own computers. The SDS's for laboratory chemicals are found in two locations: The Campus V: Drive and Vertere Chemical Inventory program. Below are directions on how to access the database.

1. V:\UNEDocs\SDS-Forms

The campus wide SDS forms are located in the shared V: drive in the SDS-Forms Folder. The SDS's for laboratory chemicals are located in the laboratory chemical folder and are organized by manufacturer. For example if you have a Sigma chemical then you need to go to the Sigma folder to find it. Within the folder each chemical SDS is organized alphabetically.

If you go to the UNE EHS website and click on the **Forms and Resources Tab** it will direct you to the V: drive to access any chemical SDS.

2. Vertere Chemical Inventory

The SDS's can also be found in our chemical inventory system. Once you are on the Vertere Chemical Inventory program follow these steps:

1. Click on **View/Update** in the upper left hand corner.
2. Select the search option. It can be by chemical name, CAS #, barcode #, etc.
3. Click on the **Pencil Icon** next to the chemical name.
4. Click on the **Documents Tab**.

   This will generate a list of chemicals associated with that chemical. In most cases the chemicals are grouped by CAS#. For example, if you searched for Methanol, CAS# 67-56-1, a list of all the SDS's for Methanol will be generated.

   If there are two or more CAS#'s associated with your chemical (mixtures), then the program will use the Catalog # to group SDS's.

5. Scroll through the list on the Documents page and click on the **Magnifying Glass Icon** next to the catalog # that best matches your product. The SDS for that product will be displayed

If you need help accessing Vertere or have questions please contact Peter Nagle, pnagle@une.edu or X-2791.

EHS will still require that labs continue to maintain a collection of SDS's for their own chemical inventories. Like in the past, our master collection is a supplement to each individual lab's collection. Having electronic copies is strongly encouraged but if you prefer hard copies that is still acceptable. If you have any further questions, please contact the EHS Department.

UNE Chemical Sharing Program

The UNE Chemical Sharing Program is a great way to reduce hazardous waste, reduces costs for your department, and have a positive environmental impact on campus. If you have any commonly used lab chemicals or lab equipment 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.

Available now:

No items currently available.

Have an amazing summer!

Stay safe!