ENVIRONMENTAL HEALTH AND SAFETY

Lab Chatter

UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

Volume 4, Issue 2, October 2017

Table of contents:

Safety Spotlight

EHS at the UNE Employee Benefits Fair!

The Environmental Health and Safety Department will be at the annual UNE Employee Benefits Fair the following dates from 9:30am to 1:30pm:

Tuesday, October 31st-Innovation Hall, Portland Campus

Thursday, November 2nd-Campus Center Gym, Biddeford Campus

Stop by our table to get some tips on emergency preparedness and receive a mini first aid kit!

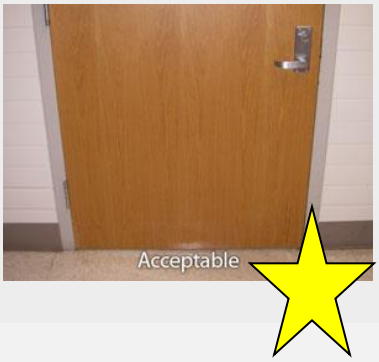
Why is it bad to prop lab doors open?

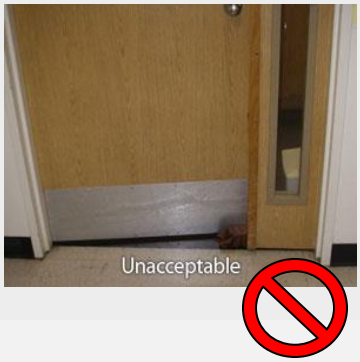
By Jessica Tyre

The UNE Environmental Health and Safety Department often sees lab doors being propped open during inspections or while walking through buildings. Sometimes they are held open with door stops, sometimes by lab stools, other times they are held open by other lab equipment. We understand that the reason lab staff prop doors open is to easily go between labs or to let some air in from the hallway, but there are several reasons why this practice is not best practice in the lab environment. I have compiled a list of reasons that propping lab doors can cause issues for lab staff and other building occupants to help our community understand the risks of lab door propping:

- Confuses building ventilation systems: In many cases our buildings' ventilation systems are designed to have the lab doors closed at all times. If the doors are propped open, it will throw the ventilation system in the building off balance and then it does not function properly.
- Hazard containment: Many labs around campus have chemical or biological hazards that, should an accident occur, can have adverse effects on lab staff and building occupants. Keeping the door closed will help to contain the hazards in the immediate lab area.
- Research contamination: This can work both ways. You do not want outside forces to impact your experiments or research in your lab area and you also do not want to contaminate other building occupants' experiments and research. Keeping doors shut will safeguard everyone's work to make sure there are no outside factors influencing their very specific work.
- Fire safety: In case of a fire emergency you want to try to contain the fire and smoke to one space as long as possible. Also you do not want to trip on furniture or door stops that are propping open doors when you are trying to evacuate. You want to be able to close the door quickly after everyone is out, which may not be possible if you are trying to un-prop the door in a hurry.
- Security: Closed doors will deter individuals from entering a lab space if they are not permitted to be there. There are still lab areas that do not have swipe card access on campus. Closed and locked doors will limit access to certain labs where security is imperative.

These are just a few reasons why it is always recommended to keep laboratory doors closed. We want to protect the UNE community, visitors, and our research and experiments to the best of our ability. Doing this one simple task is an easy way to help in achieving this goal.





OSHA® QuickFacts

Laboratory Safety
Chemical Fume Hoods

The fume hood is often the primary control device for protecting laboratory workers when working with flammable and/or toxic chemicals. OSHA's Laboratory standard (29 CFR 1910.1450) requires that fume hoods be maintained and function properly when used.

Before using a fume hood:

- Make sure that you understand how the hood works.
- You should be trained to use it properly.
- Know the hazards of the chemical you are working with; refer to the chemical's Material Safety Data Sheet if you are unsure.
- Ensure that the hood is on.
- Make sure that the sash is open to the proper operating level, which is usually indicated by arrows on the frame.
- Make sure that the air gauge indicates that the air flow is within the required range.

When using a fume hood:

- Never allow your head to enter the plane of the hood opening. For example, for vertical rising sashes, keep the sash below your face; for horizontal sliding sashes, keep the sash positioned in front of you and work around the side of the sash.
- Use appropriate eye protection.
- Be sure that nothing blocks the airflow through the baffles or through the baffle exhaust slots.
- Elevate large equipment (e.g., a centrifuge) at least two inches off the base of the hood interior.
- Keep all materials inside the hood at least six inches from the sash opening. When not working in the hood, close the sash.

continued on page 2

The fume hood is often the primary control device for protecting laboratory workers when working with flammable and/or toxic chemicals.

For assistance, contact us. We can help. It's confidential.

OSHA® Occupational Safety and Health Administration
www.osha.gov 1-800-321-6742

OSHA 3407 Rev. 10/2011
DSG

OSHA® QuickFacts

Laboratory Safety
Chemical Fume Hoods

continued from page 1

- Do not permanently store any chemicals inside the hood.
- Promptly report any hood that is not functioning properly to your supervisor. The sash should be closed and the hood "tagged" and taken out of service until repairs can be completed.
- When using extremely hazardous chemicals, understand your laboratory's action plan in case an emergency, such as a power failure, occurs.

Promptly report any hood that is not functioning properly to your supervisor.

For assistance, contact us. We can help. It's confidential.

OSHA® Occupational Safety and Health Administration
www.osha.gov 1-800-321-6742

OSHA 3407 Rev. 10/2011
DSG

Handling and Storing Chemicals

Tips for safely moving, storing, and protecting yourself from laboratory chemicals

By Vince McLeod | July 11, 2017 via Lab Manager Magazine

(Submitted by Jessica Tyre)

Let's face it: most laboratories use chemicals. Depending on the lab's focus—research synthesis, compound production, basic acid digestions, etc.—the types and amounts of chemicals used can vary greatly. Unfortunately, reports of accidents and incidents involving the use and storage of chemicals are far too frequent. We must remain diligent in properly handling and storing these hazardous materials, or problems will arise. So, in this column we provide general safety rules of thumb for handling and storing chemicals in the laboratory.

Before we get into the details, it is important to take stock of the many federal, state, and local regulations that may include specific requirements for handling and storing chemicals in labs and stockrooms. For example, controlled substances and consumable alcohols are regulated by the Food and Drug Administration and the Drug Enforcement Agency, radioactive substances are regulated by the Nuclear Regulatory Commission, and hazardous wastes are governed by the Environmental Protection Agency. These specific requirements can range from simple locked storage cabinets and specific waste containers to controlled access for regulated areas. If any of your labs are using or generating potentially hazardous substances, determine which regulations apply and the specific requirements they impose. State or local building and fire codes are very common, and applicability is becoming more demanding each year.

Another hurdle frequently encountered is the fact that labs evolve and change over time. We need to focus awareness on our lab facilities and implement a regular (annual) review process to ensure our overall laboratory safety stays up to date.

First—the right personal protective equipment (PPE)

The focus of this article is safe storage of chemicals. But before we start rounding up bottles of chemicals and reorganizing our labs, we need to make sure we have the proper PPE. At a minimum, this should include appropriate chemical-resistant gloves and eye protection, closed-toe shoes (essential for working in the laboratory), and lab coats and/or chemical aprons (used when needed or when required by your laboratory safety policy).

Once we have collected our PPE, there are just a couple more things to gather before we begin moving those chemical containers around. Survey your surroundings, and take notice of any potential trip hazards and locations of work stations where others are busy. Make sure exits, passageways, and emergency equipment areas (i.e., eyewash and safety showers) are clear and free of stored materials. Locate and have close at hand a full spill kit with appropriate absorbent materials, neutralizing agents, cleanup utensils, and waste containers. Finally, check that all chemical containers have complete labels in good condition and that safety data sheets (SDS) are readily available. Consult OSHA's Hazard Communication Standard 1 for guidance. Another good resource for this is the Standard System for the Identification of the Hazards of Materials for Emergency Response.2

Next—Safe transport

Here are our pointers for moving chemicals safely:

- Never move visibly degrading chemicals and containers. Report these to your lab supervisor or principle investigator.
- Whenever transporting chemicals, place bottles in appropriate, leak-proof secondary containers to protect against breakage and spillage. A good example is using a special plastic tote for carrying four-liter glass bottles of corrosives or solvents.
- When moving multiple, large, or heavy containers, use sturdy carts. Ensure cart wheels are large enough to roll over uneven surfaces without tipping or stopping suddenly. If carts are used for secondary containment make sure the trays are liquid-tight and have sufficient lips on all four sides.
- Do not transport chemicals during busy times such as break times or (for those academic laboratories) lunch periods or class changes.
- Use freight elevators for moving hazardous chemicals whenever possible to avoid potential incidents on crowded passenger elevators. Remember to remove gloves when pushing elevator buttons or opening doors.
- Never leave chemicals unattended.

Rules for chemical storage

Safely storing chemicals in a laboratory or stockroom requires diligence and careful consideration. Correct use of containers and common lab equipment is critical. To store chemicals safely, DO the following;

- Label all chemical containers fully. We recommend including the owner's or user's name along with the date received.
- Provide a specific storage space for each chemical, and ensure return after each use.
- Store volatile toxics and odoriferous chemicals in ventilated cabinets. Please check with your environmental health and safety personnel for specific guidance.
- Store flammable liquids in approved flammable liquid storage cabinets. Small amounts of flammable liquids may be stored in the open room. Check with your local authority (e.g., fire marshal, EH&S personnel) for allowable limits.
- Separate all chemicals, especially liquids, according to compatible groups. Follow all precautions regarding storage of incompatible materials. Post a chemical compatibility chart for reference, both in the lab and next to chemical storage rooms.
- Use appropriate resistant secondary containers for corrosive materials. This protects the cabinets and will catch any leaks or spills due to breakage.
- Seal containers tightly to prevent the escape of vapors.

- Use designated refrigerators for storing chemicals. Label these refrigerators CHEMICAL STORAGE ONLY—NO FOOD. Never store flammable liquids in a refrigerator unless it is specifically designed and approved for such storage. Use only explosion-proof (spark-free) refrigerators for storing flammables.

And AVOID doing the following:

- Storing large, heavy containers or liquids on high shelves or in high cabinets. Instead store these at shoulder level or below.
- Storing bottles on the floor unless they are in some type of secondary containment.
- Storing chemicals near heat sources or in direct sunlight.
- Storing chemicals in fume hoods. Excessive containers interfere with air flow and hood performance. Only chemicals in actual use should be in the hood.
- Storing anything on top of cabinets. Ensure at least 18 inches of clearance around all sprinkler heads to avoid interference with the fire suppression system.
- Using bench tops for storage. These work spaces should contain only chemicals currently in use.
- Storing chemicals indefinitely. Humidity causes powders to cake or harden. Liquid chemicals evaporate. We strongly recommend all containers be dated when they arrive in the lab. Ensure all manufacturers' expiration dates are strictly followed. Pay special attention to reactive or dangerous compounds. Dispose of all outdated, hardened, evaporated, or degraded materials promptly.

Following these simple guidelines will get you well on the way to an efficient, organized, and safely operating laboratory. Ignore them, or become cavalier in their application, and you may be picking through ashes or rubble one day. Spend a few minutes going through the lab with this list on a regular basis, and you should avoid any major incidents with chemical storage. As always, safety first.

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.

Chemicals currently available due to a professor's retirement:

Azure B	Gold Chloride	Succinic Acid
Aniline Blue	Hydroquinone	Sodium Phosphate x2
Alizarin sodium sulfonate	Magnesium Chloride	Sucrose
Cobalt Chloride	Methyl Blue Chloride	Sodium Borate
Chromium Potassium Sulfate	iodine	Sodium Acetate
Cedar Wood Oil	Malonic Acid	Sodium Bicarbonate
Drierite 3	Menadione	Sodium Citrate
Citric Acid	Potassium Chloride x 3	Sodium Sulfate
Agar	Oxalic Acid	Sodium Succinate
Cupric Sulfate	Potassium Permanganate	Sudan Black
Aluminum Ammonium Sulfate	Parafin Oil	Strong Silver Protein
Glycine	Silver Nitrate	Sodium Oxalate
Gum Tragacanth	Permount	Tris Amino Methane
Gelatin	Netural Red	Urea
Glycerophosphate	Saffron O x2	Tris Hydroxy Methyl
	Potassium Iodide	Trimethylamine N Oxide
	Paraformaldehyde	Tionin x3
	Ponceau Xylidine	Triethylphosphine

Please email: **jtyre@une.edu** by **November 1st** if you are interested in any of the listed substances. EHS will gladly do the transfer to your laboratory.

Contact us

Ronnie Souza,
Director of EHS
UNE Extension:
2488
Cell:
207-391-3491
Email:
rsouza@une.edu

Peter Nagle,
EHS Specialist
UNE Extension:
2791
Cell:
207-468-1786
Email:
pnagle@une.edu

Jessica Tyre,
EHS Specialist
UNE Extension:
2046
Cell:
603-244-0081
Email:
jtyre@une.edu

Alethea Cariddi,
Sustainability Coordinator
UNE Extension:
2507
Email:
acariddi@une.edu

www.une.edu/campus/ehs