

Laboratory Safety Regulations

Humboldt State University•Department of Chemistry

Independent Study Level

FAILURE TO ADHERE TO THESE SAFETY REGULATIONS, AND TO ACT IN A RESPONSIBLE MANNER WILL RESULT IN LOSS OF PRIVILEGES, AND MAY LEAD TO DISMISSAL FROM THE LABORATORY

A. General

1. First-aid kits are available for **emergency use only** in the following locations: Main stockroom--SA 569; Organic Stockroom--SA 566; Biochemistry Lab—SA 568; Student Research Labs (anteroom)--SA 559; Quant Lab--SA 369. Band-aids for minor cuts are available in the main stockroom.
2. If you use a Band-Aid or other supplies from a First Aid kit in one of the independent study labs please notify both your instructor and the Stockroom as soon as possible so that the first aid items can be replaced.
3. Notify your instructor as soon as possible after all accidents and/or injuries regardless of their severity. If you need medical treatment, you will be promptly taken to the Student Health Center. In case of accident after 5:00 pm or on weekends, call the campus police at 911.
4. Perform no unauthorized experiments.
5. Horseplay, pranks, and other acts of mischief are strictly prohibited and may result in immediate dismissal from the laboratory.
6. Work with chemicals only after you have learned about their potential hazards. Then, proceed with caution. There are always risks when working with chemicals so work cautiously and defensively. Material Safety Data Sheets (MSDS) are available in the Main Stockroom and are also available on the Web. See the Chemistry Department web page for MSDS links at http://www.humboldt.edu/~chem_dpt/resources/Resouces.htm
7. You are required to determine the hazards of any chemical before you use it. For example, ask yourself the following:
 - What are the greatest risks from using this chemical? How can I minimize these risks?
 - In what form is this chemical most hazardous? Least hazardous?
 - Can I arrange my work so that it is used in the least hazardous manner?
 - If I have to transport this chemical what is the safest way to do so?
 - How would I respond if the chemical is spilled?

Consult with faculty and/or staff, if necessary, when you are working with any chemical with which you are not intimately familiar. Departmental personnel may not be available for consulting outside of normal working hours. **Remember, if you haven't determined the hazards of the chemicals and procedures you will be doing, you cannot do the experiment!**
8. A list of chemicals and biologic organisms utilized in laboratory courses is available to any student upon request to the instructor. Safety precautions to be taken, as outlined in the department safety regulations, are available to any student upon request to the instructor. Students who are pregnant or who learn of their pregnancy while enrolled in a laboratory course should consult with their health care provider about possible health consequences of exposure to chemicals and biologic organisms on the list. The University makes no representations as to the effects of exposure to these substances on pregnant women or fetuses. The University strongly urges the pregnant student to consult her health care provider prior to enrolling or continuation in the course.
9. A lab apron or long lab coat provides good personal protection against many laboratory hazards.
10. Never work in the laboratory alone. Never work in the laboratory when you are tired or distracted. Children, pets and friends etc. who are not authorized chemistry students are not allowed in the lab at any time. There must be at least two authorized chemistry students or one student and an instructor in the laboratory at all times when any laboratory work is being done.
11. Shoes must be worn in the laboratory at all times. Open shoes or sandals provide no protection from contact hazards and you are not permitted to wear them in the laboratory. Moreover, it is unwise to go barefoot anywhere in the Science Complex.
12. Be present at the beginning of the lab period. At the start of the period, unusual hazards and safety precautions to counter them are discussed. Don't miss this essential information.
13. Do not attempt to slow down or stop centrifuge rotors with your hands! Always let the centrifuge come to a complete stop before opening the lid to the rotor chamber.

14. Learn the location and use of safety equipment, including the safety shower, eyewasher, fire extinguisher, and fire blanket.
15. Do not force glass tubing into rubber stoppers or rubber tubing. First, make sure that the ends of the glass tubing are fire polished. Then, lubricate both the rubber and the glass with a mixture of water and either glycerol or aerosol OT. Hold the glass tubing as close as possible to the rubber, and then insert the glass with a slow, twisting motion. In addition, protect your hands against possible injury from broken glass by using a towel or piece of cheesecloth.
16. **Wash your hands well before leaving the laboratory.**

B. Eye Protection

1. You are required to wear approved eye protection (safety glasses or goggles) in the laboratory whenever you are doing any experiment or whenever any experiment is being done in the laboratory. Repeated failure to wear approved eye protection will result in dismissal from the laboratory and may result in a course grade of "F." (Eye protection must meet ANSI Z87.1 impact standards and have indirect ventilation splash protection).
2. If you should get an irritating substance in your eye, move quickly to the eye washer and wash your eyes thoroughly for at least 15 minutes. Do not delay; a difference of a few seconds can be crucial for the recovery of your eyes. Have someone notify the instructor of the accident so that you can be taken to the Student Health Center immediately.
3. When using sprays or working in other situations where full face protection is desirable a face shield can be worn over your goggles or safety glasses. Face shields are not intended as primary eye protection! Face shields are available in the lab or from the stockroom.
4. Sunglasses and dark tinted lenses in glasses or safety glasses are not approved for eye safety in the lab.

C. Fire Hazard

1. In case of fire notify the instructor as soon as possible.
2. Learn the locations of the fire extinguisher(s), the fire blanket, the eye washer, and the safety shower, and learn how to use these devices. Towels wet with water are very efficient at smothering small fires.
3. Confine long hair and loose clothing in the laboratory. Hair is surprisingly flammable.
4. Never store flammable substances in your laboratory drawer or locker **without the approval of, and explicit directions from, your laboratory supervisor.**
5. Do not heat any materials with an open flame unless specifically directed to do so. Heating with a steam bath or a hot plate is far safer.
6. Do not store organic solvents in open containers even for a short time. Corked Erlenmeyer flasks are the vessels to use for brief storage. Students have a great tendency to store liquids in beakers. One can easily pour materials from the large supply bottles into a beaker, so do that, but then transfer the liquid to some other vessel.
7. Do not dry chemicals in a drying oven or place materials in a refrigerator unless specifically directed to do so.
8. Never store flammable solvents, samples etc. in a refrigerator unless it is clearly marked **EXPLOSION PROOF** and designated for flammable storage.

D. Contact Hazard

1. If you should spill a corrosive substance on your skin or clothing, wash it off with copious amounts of water for at least 15 minutes. Do not hesitate to use the safety shower if the spill is large.
2. Notify the instructor of any such spillage as soon as possible, if the instructor is not present, notify the nearest Chemistry instructor; he/she will provide any necessary secondary treatment and will arrange for your transportation to the Student Health Center, if necessary.

E. Ingestion Hazard

1. Never eat, drink, or taste anything in the laboratory; this includes food and water. Never drink water from a beaker; instead, use the drinking fountain in the hall.
2. Smoking is not permitted in University buildings.
3. Do not use mouth suction when filling a pipette. Rather, use a suction bulb or an aspirator, and follow the instructions of your laboratory instructor.

F. Inhalation Hazard

1. Experimental operations that generate toxic or noxious fumes should always be performed in a hood.
2. When it is necessary to note the odor of a gas, exercise great care, and follow the procedure demonstrated by your instructor.

G. Waste and Clean-up

1. Excess chemicals must be disposed of; they generally cannot be recycled. Therefore, do not take more of a chemical than is needed for an experiment. You may obtain more later if you find that you have underestimated your needs.
2. All chemicals should be disposed of in an approved manner. Do not put any chemical down the sink unless specifically told to do so. If you are not certain of the proper disposal technique, check with your laboratory instructor or the stockroom/lab manager.
3. Never put solids down the drain, they will clog it. Do not try to wash paper towels, rubber tubing, matches, boiling chips, broken glass etc. down the drain—they will only clog the drain. Put such materials in the appropriate waste containers.
4. When metallic mercury is spilled, watch closely to see where the droplets go. Then, avoid stepping on them, and notify the laboratory instructor immediately so that proper decontamination procedures can be instituted.
5. Dispose of broken glass in the appropriate, designated, glass disposal box. Use a dustpan and broom to sweep up pieces of broken glass. Do not pick them up with your hands.
6. Each day, before you leave your lab bench, clean off the bench surface. Remove matches and papers, and wipe down the surface with water and paper towels.

H. Electrical Hazard

1. Before working with current carrying leads, make sure the power is off, and if possible, the power supply is unplugged. Remember, even with voltages as low as 100 volts, a current of as little as 25 mA can be lethal!
2. Handle power leads one at a time.
3. Do not work with electricity in the presence of aqueous or other potentially conducting solutions, nor should your hands or other body parts be wet, or damp.
4. If you feel a tingle in working with electrical devices—STOP. Unplug the devices, leave a note and inform your instructor and/or the stockroom of the malfunction. Check that the apparatuses have been repaired before you use them further!
5. Do not attempt to over-ride safety interlock devices.
6. Do not leave an electrophoresis or other current based electrochemical process unattended.

I. Hoods

1. Before using a hood, always check to make sure it is on and functioning.
2. Do not use the hood with the sash raised above the indicator line. This includes using the hood for the storage of chemicals or reagents. It is generally best to set the sash at the indicator line. Closing the hood too far can result in eddy currents and turbulence and opening it too far can result in reduced face velocity, both of which lower the hood's effectiveness.
3. All procedures should be performed at least four inches inside the hood. All chemicals should be stored at least four inches inside the hood.
4. If there is an explosion hazard, a safety shield should be placed inside the hood, the sash should be lowered as much as possible, and the worker should be wearing a safety face shield and a lab coat. Of course, your instructor should also be present and observing any such work!

J. Hazardous Spill Cleanup

You are required to determine proper and safe disposal and cleanup procedures for all chemical waste before conducting an experiment or using any chemical. Plan ahead and consult with faculty and/or staff on proper disposal and cleanup methods.

1. For this section a spill should be considered hazardous unless you have been specifically instructed otherwise.
2. In the event of a chemical spill, large or small, consult your laboratory instructor or the stockroom technician and/or the SPILL RESPONSE/SPILL CLEAN-UP CHECKLISTS in your lab as to the appropriate method of clean-up.
3. **You should not clean up a spill if:**
 - You feel it is unsafe to do so.
 - You don't know what the material is, or lack the necessary protection or clean-up materials to do the job safely.

- The spill is large (e.g. more than one liter for liquids).
- The spilled material is highly toxic.
- You feel **any** physical symptoms of exposure (eye irritation, difficulty breathing, coughing, dizziness, nausea, skin irritation etc.).
- The substance is regulated (e.g.: carcinogen, biohazard, radioactive).

Instead you should:

- Confine and contain the spill—use absorbent pillows or vermiculite to dyke and absorb.
 - Keep people away.
 - Call for help.
4. Using the SPILL CLEAN-UP CHECK LIST you should be able to clean up spills of:
- Dilute acids and bases (< 1 liter).
 - Small quantities of most solvents
 - Small quantities of materials which are non-toxic or mildly toxic, and which you have the proper equipment, materials and training to clean up

K. Independent Study Student Responsibilities

Students with unsupervised access to laboratories have added rules and responsibilities, including the following:

1. Laboratories are to be kept closed and locked at all times when they are unoccupied. **Do not leave an unoccupied laboratory open or unlocked for even a few minutes.** Failure to observe this regulation will result in loss of privileges, including loss of keys! If you need to get into a locked laboratory, make arrangements in advance with a faculty or staff member to obtain a key. Faculty and staff are instructed to close and lock any vacant rooms.
2. **Remember, if you are working outside of normal working hours and haven't determined, and arranged for, proper disposal/cleanup procedures you cannot do the experiment!**

FAILURE TO ADHERE TO THESE SAFETY REGULATIONS, AND TO ACT IN A RESPONSIBLE MANNER MAY LEAD TO DISMISSAL FROM THE LABORATORY.

DO NOT HESITATE TO USE ANY OF THE PROVIDED SAFETY FACILITIES IN CASE OF AN EMERGENCY