Laboratory Safety Regulations
Humboldt State University • Department of Chemistry
Upper Level

FAILURE TO OBSERVE SAFETY PRECAUTIONS MAY RESULT IN IMMEDIATE DISMISSAL FROM THE LABORATORY AND ASSOCIATED LECTURE!

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.
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?
8. You are required to properly label all chemicals, including water, with the full unambiguous chemical name and appropriate hazard statement. Abbreviations are not acceptable.
9. 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!
10. 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.
11. 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.
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.**

17. If you are the last person to leave the laboratory, be sure to close the door and make sure the door is locked. If the door is not locked, please notify the instructor or stockroom personnel.

**B. Personal Protective Equipment**

1. You are required to wear approved eye protection (splash-resistant safety goggles) in the laboratory whenever you are doing any experiment or whenever any experiment is being done in the laboratory by someone else. **Eye protection must meet ANSI Z87.1 impact standards and have indirectly ventilated splash protection.** Laboratory goggles may be stored in your drawer, but it is recommended that the goggles be stored in a plastic bag or box to avoid contamination.
   - Repeated failure to wear approved eye protection will result in dismissal from the laboratory and may result in a course grade of “F.”
   - If you should get an irritating substance in your eye, move quickly to the eye wash station 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 escorted to the Student Health Center immediately.
   - Sunglasses and dark tinted lenses in glasses or safety goggles are not approved for eye safety in the lab.

2. You are required to wear clothing that covers your arms (short sleeves are permitted), torso, and legs down to your knees or to wear a lab coat that covers your legs to your knees and is long sleeved. Appropriate clothing and lab coats are usually made of cotton that ignites slowly. Synthetic materials such as polyester can melt to your skin and are not recommended.

3. Closed toed shoes which also cover the top of the foot must be worn in the laboratory at all times. Open-toed shoes or sandals provide no protection from contact hazards and are not permitted to be worn in the laboratory. Moreover, it is unwise to go barefoot anywhere in the Science Complex.

4. Gloves will be required for some of the experiments at the discretion of the instructor. You are required to supply gloves for each of those experiments. In general, nitrile gloves will be used unless stated otherwise by the instructor or in the lab manual.
   - If a glove becomes contaminated, remove the glove immediately, dispose of the glove in the proper container, and replace the glove with a new one.
   - Gloves must be removed and disposed of before leaving the lab even momentarily. Gloves may NOT be used to touch door handles.

**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. One can easily pour materials from the large supply bottles into a beaker, then transfer the liquid to another vessel that may be capped.

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 the area immediately 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; he/she will provide any necessary secondary treatment and will arrange for your transportation to the Student Health Center.
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 an exhaust (fume) 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. 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. For this section a spill should be considered hazardous unless you have been specifically instructed otherwise. 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.

1. Excess chemicals must be disposed of; unused chemicals 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. If you do inadvertently take more of a chemical than you need, try to find another student who needs some of that chemical so that the chemical is not wasted.
2. All chemicals, biologicals, paper and broken glass should be disposed of in an approved manner. Do not pour any chemical down the drain unless specifically told to do so by your instructor. 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, as solids will clog the plumbing. Do not try to wash paper towels, rubber tubing, wood, boiling chips, broken glass, pipet tips, etc. down the drain because all of these things will only clog the plumbing. Put such materials in the appropriate waste containers.
4. When metallic mercury is spilled, watch closely to see where the droplets scatter. Then, avoid stepping on any droplets, 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 up broken glass with your hands.
6. Each day, before you leave your lab bench, clean off the bench surface. Remove any detritus and dispose of it properly. Wipe down the bench top with wet paper towels, and then wipe it dry.
7. 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.

8. 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

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. Your instructor should also be present and observing any such work.

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