

Laboratory Code of Safe Practices

1. NO food or drink in the laboratory.
2. Wear clothing appropriate for laboratory work.
3. Select and correctly use appropriate Personal Protective Equipment (PPE).
4. Know what to do and who to contact in an emergency in the laboratory.
5. Avoid distractions and be alert to and aware of your surroundings and potential hazards in your area.
6. Maintain a safe and clean work area.
7. Only conduct experiments or procedures approved by your lab instructor or research advisor.
8. Understand the common chemical hazards and hazards specific to the chemicals and procedures with which you are working.
9. Understand and follow best practices on how to handle, transport, store, and dispose of chemicals safely.
10. If any equipment, glassware, or procedures are not working properly or as expected, notify your instructor before proceeding.
11. Notify your instructor if you have, develop, or may develop any medical conditions (e.g. severe asthma, limited mobility, vision impairment, pregnancy, etc) that may affect your safety in the laboratory or sensitivity to chemicals, so that your instructor can properly advise or accommodate you on minimizing the risks associated with laboratory work.

Laboratory Code of Safe Practices – Discussion

NO food or drink in the laboratory.

Absolutely no food or drink intended for human consumption may be consumed or stored in any laboratory for any reason. Ingestion of chemicals or chemical residues poses a significantly higher risk when compared to contact with the skin. This prohibition includes gum and other chewed products.

Any food product samples that are brought into the laboratory for chemical analysis should be clearly labeled as not for human consumption and disposed of after the laboratory.

Though not recommended, students may keep water, drinks, and food products in sealed containers inside of a backpack or other bag during teaching laboratories.

Wear clothing appropriate for laboratory work.

At a minimum, clothing appropriate for laboratory work includes long pants or skirts (past the knee, preferably past the ankle), closed toe shoes, and shirts that cover the entire torso. Avoid flammable or reactive fabrics. No loose clothing or dangling sleeves or jewelry that may snag on or dip into lab materials. Long hair must be tied back or up so that it does not dangle into experiments when you lean forward.

Leather topped shoes, heavyweight pants (e.g. jeans) that cover the ankles, and sleeved shirts are strongly recommended and may be required for some laboratories. Skin tight synthetic fabrics (e.g. yoga pants) are not recommended and may not be acceptable for some laboratories or experiments.

Select and correctly use appropriate Personal Protective Equipment (PPE).

At a minimum, anytime chemicals are being handled or used directly or in the same laboratory, PPE must include (1) protective eyewear meeting or exceeding ANSI Z87 standards for impact, chemical, and splash resistance and (2) an appropriate sized labcoat made from fire resistant fabric (e.g. natural fibers such as cotton). Both protective eyewear and lab coats are available for purchase in the campus bookstore.

Most laboratory experiments will also require the use of nitrile gloves. Gloves should be worn anytime you are handling hazardous chemicals, including closed containers. Gloves are provided for use in teaching laboratories.

Additional PPE such as fume hoods, face shields, blast shields, or specialized gloves may be required for some laboratories or procedures.

Know what to do and who to contact in an emergency in the laboratory.

In the event of an accident or exposure you must immediately notify your lab instructor. When time allows, you or your instructor should also notify the safety officer (Alan Preston 278-4183 for Science I and Ian Huh 278-2922 for McLane).

Each laboratory is equipped with common safety equipment including a safety shower, safety eye wash, fire extinguisher, fire blanket, and basic first aid kit. You should be aware of the location and familiar with the use of these items.

With the exception of very minor injuries or exposures, you or your instructor should contact campus police by dialing 911 from a campus phone or 559-278-8400. Campus police will come and escort the injured party to the campus health center.

Avoid distractions and be alert to and aware of your surroundings and potential hazards in your area.

You must remain alert to and aware of your surroundings at all time. This includes both your work and the work of those around you. Distractions are the major cause of accidents and exposures in the laboratory. It is your responsibility to minimize the distractions presented by electronic devices. Turn off ringers and other notifications, step outside the laboratory if you need to make a call. Minimize any noise that may prevent you from hearing instructions or warnings from your instructor or other students.

Your instructor will discuss specific policies on electronic devices during your first lab session. If your instructor allows the use of headphones, you must never have both ears blocked, as this can make it difficult to hear directions or warnings.

Maintain a safe and clean work area.

Many chemical exposures are secondary, meaning that the student touches a location previously contaminated by a spill or other activity. To prevent these types of exposures it is essential to clean up potential hazards immediately. Broken glass should be picked up using the provided dust pan, not with your hands. Chemicals need to be disposed of in the proper waste containers. If chemicals are spilled, ask your instructor for direction on how to properly neutralize and clean up the spill.

Touching common surfaces with contaminated lab gloves (e.g. door knobs, balance, laptops) is a common source for secondary exposures. Remove a glove before touching these surfaces to prevent contaminating it with the chemicals already on your glove.

Crowding in the aisles between the lab benches can present trip hazards. To keep these aisles open, be sure to store backpacks or skateboards under the bench or on provided shelves and remove unused stools to the front of the room.

Damaged or malfunctioning equipment is another potential cause of laboratory accidents or exposures. Notify your instructor if you encounter any damaged or malfunctioning equipment so they can be repaired or replaced. If something is not working as intended, fix it, don't force it.

Keep your work area neat and clean to avoid the risk of inadvertently bumping or knocking into containers while moving things around on your desk. As a rule of thumb, if you are not actively using something like a laptop, it should be put away.

Only conduct experiments or procedures approved by your lab instructor or research advisor.

You should only be conducting work on the specific experiments outlined in your lab manual or experiments approved by your instructor (research and inquiry labs). If you need to make a modification to a procedure, check with your lab instructor first.

As instructors, part of the review and approval process we go through when reviewing or planning experiments is checking to see if there are necessary safety precautions.

Understand the common chemical hazards and hazards specific to the chemical with which you are working.

Before beginning work with any chemical, you need to be aware of the hazards the chemical presents and the safety procedures and equipment that will allow you to safely work with the chemical. In some cases, the lab manual contains specific discussion of the chemicals you will be using. If it does not, you can always find hazard and handling information on the Safety Data Sheets provided by the chemical manufacturer. We have paper copies of these safety data sheets in the stockroom, but it is generally easier to google “SDS chemical name”.

If you have any questions or concerns, you should discuss these with your instructor before beginning work.

Understand how to handle, transport, store, and dispose of them safely. Follow these best practices.

It is not safe to put many chemicals down the drain because they are not effectively removed by common waste treatment practices and in some cases may kill the biological organisms that these facilities use for treatment. Instead chemical waste must be placed in appropriate containers: orange bottles for liquid waste and labeled white tubs for solid waste. The stockroom gathers these waste sources into larger containers for pickup by licensed chemical waste disposal companies. If you are unsure if a chemical should be placed in the waste containers, place it in the waste containers.

Use common sense in handling, transporting, and storing chemicals in the laboratory. Generally, you should leave large chemical bottles in the fume hoods and take the smaller amounts you will need back to your work area. Avoid walking through crowded areas while carrying chemicals through the labs. Don't push through tight spaces or try to step over obstacles while carrying chemicals.

If any equipment, glassware, or procedures are not working properly or as expected, notify your instructor before proceeding.

Some of the worst injuries and exposures we have had on campus resulted from trying to force glassware and equipment together. If things don't seem to be working, check with your instructor. Sometimes there is a simple trick that can make it both easier and safer.

Notify your instructor if you have, develop, or may develop any medical conditions (e.g. severe asthma, limited mobility, vision impairment, pregnancy, etc) that may affect your safety in the laboratory or sensitivity to chemicals, so that your instructor can properly advise or accommodate you on minimizing the risks associated with laboratory work.

Several medical conditions, including pregnancy, can significantly increase the risk of chemical exposures. Please notify your instructor, the lab coordinator, or the laboratory safety officer immediately if you have, develop, or may develop any of these conditions during the semester so that we can advise or accommodate you on minimizing potential health risks associated with laboratory exposure. If you do not reveal a relevant medical condition, we cannot advise you properly and you may assume untoward risk in participating in the laboratory course.

The department will not refuse a student access to a class or penalize a student's grade on the basis of a medical condition. We recommend that students with temporary medical conditions that may increase the risk of chemical exposures (e.g. pregnancy) wait to take lab courses if possible. If a student with a medical condition that can increase sensitivity to chemical exposure wishes to take a laboratory class, we strongly recommend the following procedures:

- Your instructor or the lab coordinator will discuss with you the implications and types of possible chemical exposures in the laboratory and provide you with a detailed laboratory schedule, a list of the main chemicals used and stored in the laboratory, and links to their safety data sheets.
- Review these documents and the risks associated with chemical exposures with your doctor or health professional. Obtain a letter from your doctor outlining what laboratory work is acceptable, what additional precautions are appropriate, and what work poses unacceptable risks to you or your baby.
- Review this letter with your laboratory instructor. You have the right to refuse to perform an experiment if you or your doctor deem it to be hazardous to your or your baby's health. Alternate work will be required, the nature of which will be at the discretion of your instructor or lab coordinator.

At no time should you work in the laboratory with materials you or your doctor feel are unsafe. We cannot ensure that a pregnant or at risk student will not be exposed to chemicals that might be unhealthy for him/her or her fetus. NO LIST OF CHEMICALS IS COMPLETE. In addition, we cannot know the level of exposure, the length of exposure, or the number of encounters that might occur with any chemical during the semester.