

Recognizing Laboratory Safety

The chemistry laboratory is a place to experiment and learn and is an important part of your study of science. In the laboratory, you and your classmates will learn about the natural world by conducting experiments. Working directly with laboratory equipment will help you to better understand the concepts you read about in your textbook or introduced in class.

Most of the laboratory work you will do is quite safe. However, some laboratory equipment and chemicals can be dangerous if handled improperly. You must assume responsibility for your own personal safety and that of the people working near you. Laboratory accidents do not just happen- they are caused by carelessness, improper handling of equipment, or inappropriate behavior. You can prevent accidents by closely following the instructions written in your laboratory procedures and those given verbally by me.

The following are safety rules to help guide you in protecting yourself and others from injury in the laboratory. Failure to follow the procedures will result in deduction of (graded) lab safety points and possibly dismissal from the laboratory experiment.

Dress Code:

1. To protect yourself from injuring your eyes, wear safety goggles whenever you are handling chemicals, flames, glassware, or any substance that might get into your eyes. You are not allowed to wear contacts lenses during specified labs. Goggles MUST remain on from before you get your materials until there is no longer glassware or chemicals at your station. Goggles must be on while cleaning your station. If you have problems with your goggles, you must remove yourself from your station and adjust them away from equipment and chemicals.
2. Wear long pants when working with chemicals or fire. No skirts will be allowed when working with chemicals or flames. Remove jewelry or sweatshirt cords that can hang down and touch chemicals, flames, or equipment. You can store a pair of sweatpants in the lab. You can pull these over shorts or skirts (once the pants are on, the skirt must come off).

There are pants available in class however I am not responsible for clothing the entire class. First come, first served.

Closed toe shoes are required, no open sandals. This is regardless of what the student handbook states, we run by lab rules. You can change once the lab is over. You may also store a pair of shoes in my closet if that is helpful.

If you do not dress appropriately you will be asked to leave, and you will take a zero on the lab write up (Quiz grade)

If there is a fire, DO NOT RUN- STOP, DROP and ROLL.

Tie back hair when working with chemicals or flames. Roll up or secure long sleeves. I have several hair ties you can use if you forget.

3. Gloves provide a barrier between you and chemicals. Gloves need to be worn whenever chemicals are involved. To remove gloves, peel the gloves off your hands, starting at the wrists and working toward the fingers. Gloves are not to be removed until all chemicals are gone from your station and your station is cleaned and wiped down.

General Precautions – Answers the question: “How do I keep my lab safety points?”

1. Read all background and procedures for an experiment as many times as you need to before beginning the activity, this will often be assigned as home learning. There is not time allotted to do this the day of the lab. Failure to read before coming to class, may result in you not finishing the which is a quiz grade. Lab procedures are posted on Canvas. Complete the pre-lab (when applicable) and watch any associated videos before coming to class. Carefully follow all written and oral instructions. If you are in doubt about any part of the experiment, ask me for assistance. Experimentation is fun and interesting; however, our labs are set up for your safety. You are not allowed experiment on your own. If you do not follow procedures, you will be asked to leave with a zero (quiz grade) on your lab.
2. Never perform any experiments that are not assigned to you. Always wait for instructions before touching anything in the lab; the materials that are out may not be for your class.
3. Make sure that your backpacks are secured in the cabinet by your workstation that is labeled “student”. You may need to use cabinets that are not directly next to your workstation if they have all been used.

4. Always stay with your lab group during experimentation. Unless you are asked to compare data, get additional materials, or instructed by me, you are to always remain at your station.
5. When using the sink, turn the faucet on first, adjust the water flow and then place your container underneath. Failure to comply with this rule may result in injury and broken glassware that you will be financially responsible for.

Safety & First Aid:

1. Always report all accidents or injuries to your teacher, no matter how minor.
2. Report any persons following incorrect procedures or any damaged equipment. Do not put broken glassware in the garbage; there is a special bin for it. I will take care of it for you.
3. Learn where the fire blankets, fire extinguishers (front of the room), eyewash station (front of the room), first aid kit (my desk) and shower (front of room) are located and how to work them. If you were to pull the shower because you thought it was funny or you were paid, there will be severe consequences from administration. Please do not joke about it; it makes me nervous.

Heating and Fire Safety:

1. Never use a heat source (hot plate or portable Bunsen burner) without goggles.
2. Never heat anything unless you are instructed to do so.
3. Keep everything away from an open flame.
4. Never reach across a flame.
5. Before using a laboratory burner, make sure you know proper procedures for lighting and adjusting the burner, as demonstrated by me. Do not touch the burner (it is hot!). Never leave a lighted burner unattended. Turn off burner when not in use. Always use two hands to adjust the flame. One to turn the knob and the other to hold the tank.

6. When heating a substance in a test tube, make sure that the mouth of the tube is pointed away from you and anyone else. Never look down the mouth of a test tube.
7. Never heat a material in a closed container.
8. Before picking up a container that has been heated, first hold the back of your hand near it. If you can feel heat on the back of your hand, the container is too hot to handle. Use an oven mitt or tongs to pick up a container that has been heated.
9. Never place a heated container on a scale until the container is fully cooled.

Using Chemicals Safely:

1. Never mix chemicals that are not in your directions/procedures.
2. When diluting acids, "do it like you oughtta; add the acid to the water."
3. Never put your face near the mouth of a container that holds chemicals. Many chemicals are poisonous. **Never touch, taste, or smell a chemical unless I instruct you.** If you are instructed to smell a chemical, use the wafting method.
4. Dispose of all chemicals as instructed by me. Never pour untreated chemicals or other substances into the sink or trash containers. I will have waste containers for you. Pouring chemicals down the drain may destroy our plumbing system. Some are horrible for the environment and I must bring them to a special facility. If you pour chemicals down the drain you will lose all lab safety points for the year.
5. Do not cross contaminate chemicals. Use the instrument given to get chemicals out of lab equipment, do not put it back in a different piece of equipment.
6. Assume that all chemicals you work with are toxic. Therefore, never touch your face in the laboratory. Eating and drinking are not allowed in the laboratory – EVER.

Using Glassware Safety:

1. Never heat glassware that is not thoroughly dry on the outside.
2. Never use broken or chipped glassware. If glassware breaks, notify me.

End of Experiment Rules:

1. After an experiment has been completed, turn off all burners or hot plates.
2. Turn off any other electrical equipment that may have been used.
3. Clean up your work area and return all equipment to its proper place. Throw away gloves and other trash.
4. Dispose of waste materials as instructed by me, never return left over, or used chemicals to their original containers.
5. Wash your hands after experiments when you use gloves.

Laboratory Assignment Grading:

Laboratory assignments and experiments are graded in the quiz category. Consider them “open book” quizzes. Most labs will start with a pre-lab that will include vocabulary from the section of the book we are working on in class. It will also include procedures from the lab and possibly a video assignment. The lab experiment will include data tables (label everything!), questions and observations from the experiment. READING the lab and directions will help you earn all your points. If you prepare for the lab, you will have plenty of time to work on the experiments in class and work together sharing ideas.

The labs are timed with the expectation of preparation; if you do not watch the video or do the pre-lab, you may not finish which will ultimately affect your grade. You will be responsible for picking your groups in most instances. This is a good opportunity to gain communication skills necessary after you graduate.

Lab Safety Points:

Chemistry is a very hands on class and we will be doing many labs throughout the year. Some labs will include toxic materials, fire, or breakable equipment. Your safety is my first and foremost priority. Therefore, it is necessary you follow procedures, complete pre-labs, and occasionally watch pre-lab videos posted to Canvas before entering the lab.

Laboratory experiments have two components: content and skills. Content deals with how well you understand what we are reading and discussing in class. Skills are how well you

follow procedure, directions and prepare yourself for an experiment (watching my videos). *At the beginning of the year, you will be required to sign a safety contract and pass a safety quiz to be able to perform labs.*

Understanding the concepts of a lab is different from following rules and acting appropriately in the lab. Because of that, at the beginning of first quarter, you will be given 30 lab safety points in the quiz category. If you are unable to follow instructions, directions, or rules, or fail to clean up after yourself, points will be deducted from those 30 points, not the actual lab. Whatever is deducted from first quarter will be the grade given to you second, third and fourth quarter. Points will not be deducted from the lab write up or questions for behavior. The only case where this could be applied is if you did not bring appropriate attire and I am able to give you sample data for the lab. If this is the case, you will receive a 20% deduction of your grade on the write up.

If you receive a deduction from your lab safety points, you and your parent will be notified. This score will then transfer to 2nd, 3rd and 4th quarters. You are very capable of the high expectations required for lab safety, keeping your points, and enjoying the added buffer it provides your quiz grade.

There should be no surprises in what is expected of you. Guidelines for lab safety are listed above; your assignment is to read them. We will discuss them in class however, to make sure expectations are clear, please see the attached list for examples of routine point deductions.

Below is a table of typical infractions, please note this is not a definitive list and the teacher reserves the right to change the amount of points at any time depending on the situation.

Infraction	Points Deducted
<p>Not following the directions in the lab procedure.</p> <p>Examples:</p> <ul style="list-style-type: none"> - Not following the correct steps because you did not read the procedure or watch the videos before coming to class. - Trying something that is not listed in the procedure because you are curious. If you are curious, ask me, maybe we can try it. - Smelling chemicals. 	<p>5 & up depending on the safety of yourself and your classmates.</p>

Not putting student materials in designated storage areas. Touching materials without my permission	2 points
Horseplay	5 & up depending on the safety of yourself and your classmates.
Not wearing gloves. Not wearing goggles at any time during a lab or clean up.	2 points
Not cleaning up according to procedure.	2 & up depending on the mess or the seriousness of chemicals involved.
Pulling the shower or running the eyewash station.	All safety points lost for the year & severe consequences from administration.
Running the sink at the lab tables unless told to. Not following sink procedures when using glassware.	3 points

In addition to deduction of lab safety points, if the student breaks any equipment in the lab due to failure to follow procedures or horseplay, the student will be invoiced the cost of the equipment.