

Physics Laboratories Safety Rules and Recommendations For all students, faculty and staff using the Physics Laboratories:

Physics Student Safety Contract

Lab work is the key to progress in science. Therefore, systematic, careful lab work is an essential part of any science program. In this class, you will practice some of the same fundamental laboratory procedures and techniques that experimental physicists use to pursue new knowledge.

The equipments and apparatuses you will use involve various safety hazards, just as they do for working physicists. You must be aware of these hazards. Your teacher will guide you in properly using the equipment and carrying out the experiments, but you must also take responsibility for your part in this process. With the active involvement of you and your teacher, these risks can be minimized so that working in the physics laboratory can be a safe, enjoyable process of discovery.

These safety rules always apply in the lab

1. Always wear a lab apron and safety goggles.

Wear these safety devices whenever you are in the lab, not just when you are working on an experiment.

2. No contact lenses in the lab.

Contact lenses should not be worn during any investigations using chemicals (even if you are wearing goggles). In the event of an accident, chemicals can get behind contact lenses and cause serious damage before the lenses can be removed. If your doctor requires that you wear contact lenses instead of glasses, you should wear eye-cup safety goggles in the lab. Ask your doctor or your teacher how to use this important eye protection.

3. Personal apparel should be appropriate for laboratory work.

On lab days avoid wearing long necklaces, dangling bracelets, bulky jewelry, and bulky or loose-fitting clothing. Long hair should be tied back.

Loose, dangling items may get caught in moving parts, accidentally contact electrical connections, or interfere with the investigation in a potentially hazardous manner. In addition, chemical fumes may react with some jewelry, such as pearls, and ruin them. Cotton clothing is preferable to wool, nylon, or polyester. Wear shoes that will protect your feet from chemical spills and falling objects-open-toed shoes or sandals, and shoes with woven leather straps are not allowed in the laboratory.

4. NEVER work alone in the laboratory.

Work in the lab only while under the supervision of your teacher. Do not leave equipment unattended while it is in operation.

5. Only books and notebooks needed for the experiment should be in the lab.

Only the lab notebook and the textbook should be used. Keep other books, backpacks, purses, and similar items in your desk, locker, or designated storage area.

6. Read the entire experiment before entering the lab.

Your teacher will review applicable safety precautions before the lab. If you are not sure of something, ask your teacher about it.

7. Always heed safety symbols and cautions written in the experimental investigations and handouts, posted in the room, and given verbally by your teacher.

They are provided for your safety.

8. Know the proper fire drill procedures and the location of fire exits and emergency equipment.

Make sure you know the procedures to follow in case of a fire or an emergency.

9. If your clothing catches on fire do not run; WALK to the safety shower, stand under it, and turn it on.

Call to your teacher while you do this.

10. Report all accidents to the teacher immediately, no matter how minor.

In addition, if you get a headache, feel sick to your stomach, or feel dizzy, tell your teacher immediately.

11. Report all spills to your teacher immediately.

Call your teacher rather than trying to clean up a spill yourself. Your teacher will tell you if it is safe for you to clean up the spill; if not, your teacher will know how the spill should be cleaned up safely.

12. Student-designed inquiry investigations, such as the Invention Labs in the Laboratory Experiments manual, must be approved by the teacher before being attempted by the student.

13. DO NOT perform unauthorized experiments or use materials and equipment in a manner for which they were not intended.

Use only materials and equipment listed in the activity equipment list or authorized by your teacher. Steps in a procedure should only be performed as described in the textbook or lab manual or approved by your teacher.

14. Stay alert in the lab, and proceed with caution.

Be aware of others near you or your equipment when you are performing an experiment. If you are not sure of how to proceed, ask.

15. Horseplay in the lab is very dangerous.

Laboratory equipment and apparatus are not toys; never play in the lab or use lab time or equipment for anything other than their intended purpose.

16. Food, beverages, and chewing gum are NEVER permitted in the laboratory.

17. NEVER taste chemicals. Do not touch chemicals or allow them to contact areas of bare skin.

18. Use extreme CAUTION when working with hot plates or other heating devices.

Keep your head, hands, hair, and clothing away from the flame or heating area, and turn heating devices off when they are not in use. Remember that metal surfaces connected to the heated area will, become hot by conduction. Gas burners should be lit only with a spark lighter. Make sure all heating devices and gas valves are turned off before leaving the laboratory. Never leave a hot plate or other heating device unattended when it is in use. Remember that many metal, ceramic, and glass items do not always look hot when they are hot. Allow all items to cool before storing.

19. Exercise caution when working with electrical equipment.

Do not use electrical equipment with frayed or twisted wires. Be sure your hands are dry before using electrical equipment. Do not let electrical cords dangle from work stations; dangling cords can cause electrical shocks and other injuries.

20. Keep work areas and apparatus clean and neat.

Always dean up any clutter made during lab work, rearrange apparatus in an orderly manner, and report any damaged or missing items.

21. Always thoroughly wash your hands with soap and water at the conclusion of each investigation.

Safety Symbols

The following safety symbols will appear in the laboratory experiments to emphasize additional important areas of caution. Learn what they represent so you can take the appropriate precautions. Remember that the safety symbols represent hazards that apply to a specific activity, but the numbered rules given on the previous pages apply to all labs.



Waste Disposal

- Never put broken glass or ceramics in a regular waste container. Use a dustpan, a brush, and heavy gloves to carefully pick up broken pieces, and dispose of them in a container specifically provided for this purpose.
- Dispose of chemicals as instructed by your teacher. Never pour hazardous chemicals into a regular waste container. Never pour radioactive materials down the drain.



Heating Safety

- When using a burner or hot plate, always wear goggles and an apron to protect your eyes and clothing. Tie back long hair, secure loose clothing and remove loose jewelry.
- Never leave a hot plate unattended while it is turned on.
- Wire coils may heat up rapidly during this experiment. If heating occurs, open the switch immediately and handle the equipment with a hot mitt.
- Allow all equipment to cool before storing it.
- If your clothing catches on fire, walk to the emergency lab shower and use the shower to put out the fire.



Hand Safety

- Perform this experiment in a clear area. Attach masses securely. Falling, dropped, or swinging objects can cause serious injury.
- Use a hot mitt to handle resistors, light sources, and other equipment that may be hot. Allow all equipment to cool before storing it.



Glassware Safety

- If a thermometer breaks, notify the teacher immediately.
- Do not heat glassware that is broken, chipped, or cracked. Use tongs or a hot mitt to handle heated glassware and other equipment that may be hot.
- Allow all equipment to cool before storing it.
- If a bulb breaks, notify your teacher immediately.
- Do not remove broken bulbs from sockets.



Electrical Safety

- Never dose a circuit until it has been approved by your teacher. Never rewire or adjust any element of a closed circuit.
- Never work with electricity near water. Be sure the floor and all work surfaces are dry.
- If the pointer on any kind of meter moves off scale, open the circuit immediately by opening the switch.
- Do not work with any batteries, electrical devices, or magnets other than those provided by your teacher.



Chemical Safety

- Do not eat or drink anything in the laboratory.
- Never taste chemicals or touch them with your bare hands.
- Do not allow radioactive materials to come into contact with your skin, hair, clothing, or personal belongings. Although the materials used in this lab are not hazardous when used properly, radioactive materials can cause serious illness.



Clothing Protection

- Tie back long hair, secure loose clothing, and remove loose jewelry to prevent their getting caught in moving or rotating parts or coming into contact with hazardous chemicals.



Eye Protection

- Wear eye protection, and perform this experiment in a clear area. Swinging objects can cause serious injury.
- Avoid looking directly at a light source. Looking directly at a light source may cause permanent eye damage.

STUDENT SAFETY CONTRACT

I, -----, a student at -----
-----, have thoroughly read the Laboratory Safety Rules and do hereby agree to follow all safety rules and procedures given therein. I will conduct myself in a safe and conscientious manner in the laboratory. I will not perform any unauthorized lab procedure. I understand that misbehavior in the lab or failure to follow safe lab procedures could cause a serious accident. I further understand that a violation of these rules could result in my not being allowed to participate in future lab exercises. I have observed the location of each piece of safety equipment in the room in which my laboratory class meets, room -----.

Fill in location of:

Fire extinguishers: -----

Eye washes: -----

Body showers: -----

First aid kits: -----

Emergency exits from room: -----

Student Signature:----- Date: -----