

Science Safety

Laboratory work can be exciting, but it can be dangerous if you don't follow safety rules. Ask your teacher to explain any rules you don't understand. Always pay attention to safety symbols and **CAUTION** statements.

General Safety Rules and First Aid

1. Read all directions for an experiment several times. Follow the directions exactly as they are written. If you are in doubt, ask your teacher for assistance.
2. Never perform unauthorized or unsupervised labs, or handle equipment without specific permission.
3. When you design an experiment, do not start until your teacher has approved your plan.
4. If a lab includes physical activity, use caution to avoid injuring yourself or others. Tell your teacher if there is a reason that you should not participate.
5. Never eat, drink, or bring food into the laboratory.
6. Report all accidents to your teacher immediately.
7. Learn the correct ways to deal with a burn, a cut, and acid splashed in your eyes or on your skin.
8. Be aware of the location of the first-aid kit. Your teacher should administer any required first aid.
9. Report any fire to your teacher immediately. Find out the location of the fire extinguisher, the fire alarm, and the phone where emergency numbers are listed.

Dress Code

10. Always wear safety goggles to protect your eyes when working in the lab. Avoid wearing contact lenses. If you must wear contact lenses, ask your teacher what precautions you should take.
11. Wear a laboratory apron to protect your skin and clothing from harmful chemicals or hot materials.
12. Wear disposable plastic gloves to protect yourself from contact with chemicals that can be harmful. Keep your hands away from your face. Dispose of gloves according to your teacher's instructions.
13. Tie back long hair and loose clothing. Remove any jewelry that could contact chemicals or flames.

Heating and Fire Safety

14. Hot plates, hot water, and hot glassware can cause burns. Never touch hot objects with your bare hands. Use an oven mitt or other hand protection.

15. Use a clamp or tongs to hold hot objects. Test an object by first holding the back of your hand near it. If you feel heat on the back of your hand, the object may be too hot to handle.
16. Tie back long hair and loose clothing, and put on safety goggles before using a burner. Follow instructions from your teacher for lighting and extinguishing burners. If the flame leaps out of a burner as you are lighting it, turn the gas off. Never leave a flame unattended or reach across a flame. Make sure your work area is not cluttered with materials.
17. If flammable materials are present, make sure there are no flames, sparks, or exposed sources of heat.
18. Never heat a chemical without your teacher's permission. Chemicals that are harmless when cool can be dangerous when heated. When heating a test tube, point the opening away from you and others in case the contents splash or boil out of the test tube.
19. Never heat a closed container. Expanding hot gases may cause the container to explode.

Using Electricity Safely

20. To avoid an electric shock, never use electrical equipment near water, or when the equipment or your hands are wet. Use ground fault circuit interrupter (GFCI) outlets if you or your equipment may come into contact with moisture.
21. Use only sockets that accept a three-prong plug. Never use two-prong extension cords or adapters. When removing an electrical plug from a socket or extension cord, grasp the plug, not the cord.
22. Disconnect equipment that is not in use. Be sure cords are untangled and cannot trip anyone.
23. Do not use damaged electrical equipment. Look for dangerous conditions such as bare wires or frayed cords. Report damaged equipment immediately.

Using Glassware Safely

24. Handle fragile glassware, such as thermometers, test tubes, and beakers, with care. Do not touch broken glass. Notify your teacher if glassware breaks. Never use chipped or cracked glassware.
25. Never force glass tubing into a stopper. Your teacher will demonstrate the proper methods.
26. Never heat glassware that is not thoroughly dry. Use a wire screen to protect glassware from flames.
27. Hot glassware may not appear hot. Never pick up glassware without first checking to see if it is hot.
28. Never eat or drink from laboratory glassware.

Using Chemicals Safely

29. Do not let any corrosive or poisonous chemicals get on your skin or clothing, or in your eyes. When working with poisonous or irritating vapors, work in a well-ventilated area and wash your hands thoroughly after completing the activity.
30. Never test for an odor unless instructed by your teacher. Avoid inhaling a vapor directly. Use a wafting motion to direct vapor toward your nose.
31. Never mix chemicals “for the fun of it.” You might produce a dangerous, possibly explosive substance.
32. Never touch, taste, or smell a chemical that you do not know for certain to be harmless.
33. Use only those chemicals listed in an investigation. Keep the lids on the containers when chemicals are not being used. To avoid contamination, never return chemicals to their original containers.
34. Take extreme care not to spill any chemicals. If a spill occurs, immediately ask your teacher about the proper cleanup procedure. Dispose of all chemicals as instructed by your teacher.
35. Be careful when working with acids or bases. Pour these chemicals over the sink, not over your workbench. If an acid or base gets on your skin or clothing, rinse it off with plenty of cold water. Immediately notify your teacher about an acid or base spill.
36. When diluting an acid, pour the acid into water. Never pour water into the acid.

Using Sharp Instruments

37. Use sharp instruments only as directed. Scissors, scalpels, pins, and knives are sharp and can cut or puncture your skin. Always direct sharp edges and points away from yourself and others.
38. Notify your teacher immediately if you cut yourself when in the laboratory.

End-of-Experiment Rules

39. All chemicals and any other materials used in the laboratory must be disposed of safely. Follow your teacher’s instructions.
40. Clean up your work area and return all equipment to its proper place. Thoroughly clean glassware before putting it away.
41. Wash your hands thoroughly with soap, or detergent, and warm water. Lather both sides of your hands and between your fingers. Rinse well.
42. Check that all burners are off and the gas supply for the burners is turned off.

Safety Symbols

-  **General Safety Awareness**
Follow all safety instructions.
-  **Physical Safety**
Use caution in physical activities.
-  **Safety Goggles**
Always wear goggles in the laboratory.
-  **Lab Apron**
Always wear a lab apron in the laboratory.
-  **Plastic Gloves**
Protect your hands from unsafe chemicals.
-  **Heating**
Be careful using sources of heat.
-  **Heat-Resistant Gloves**
Do not touch hot objects with bare hands.
-  **Flames**
Work carefully around open flames.
-  **No Flames**
Flammable materials may be present.
-  **Electric Shock**
Take precautions to avoid electric shock.
-  **Fragile Glassware**
Handle glassware carefully.
-  **Corrosive Chemical**
Work carefully with corrosive chemicals.
-  **Poison**
Avoid contact with poisonous chemicals.
-  **Fumes**
Avoid inhaling dangerous vapors.
-  **Sharp Object**
Use caution with sharp or pointed tools.
-  **Disposal**
Follow instructions for disposal.
-  **Hand Washing**
Wash your hands before leaving the lab.