

**Safety Rules for the Science Lab****DRESS CODE**

1. To protect your eyes from possible injury, wear safety goggles whenever you are working with chemicals, burners, or any substance that might get into your eyes. Never wear contact lenses in the lab.
2. Tie back long hair to keep it away from any chemicals, burners, and candles, or any other lab equipment.
3. Remove or tie back any article of clothing or jewelry that can hang down and touch chemicals and flames. Open shoes or sandals should not be worn in the lab.

**GENERAL SAFETY RULES**

4. Learn the location of all safety equipment, such as: safety goggles, fire extinguisher, fire blanket, fire alarm, eyewash fountains and showers. Learn when and how to use them.
5. Read all directions for an experiment several times and follow the directions exactly as written. If you are in doubt about any part of the experiment, ask your teacher for help.
6. Never perform activities that are not authorized by your teacher. Obtain permission before “experimenting” on your own.
7. Never carry hot equipment or dangerous chemicals through a crowd of students.
8. If you spill a chemical or material, immediately ask your teacher about the proper cleanup procedure.
9. Never eat or drink in the lab.
10. Always unplug electric cords by pulling on the plug, not the cord. Report damaged cords or outlets to your teacher.
11. Wash your hands with warm water and soap after each experiment.

**HEATING SAFETY**

12. Always wear safety goggles when using a heat source, such as a candle or burner.
13. Never heat a chemical you are not instructed to heat. A chemical that is harmless when cool may be dangerous when heated.
14. Never heat a flammable liquid over a Bunsen burner (or other open flame).
15. Maintain a clean work area and keep all materials away from flames.
16. Make sure you know how to light a Bunsen burner. (Your teacher will demonstrate the proper procedure.) If the flame leaps out of a burner toward you, immediately turn off the gas at the bench valve. Do not touch the burner. It may be hot.
17. Never reach across a flame.
18. Never leave a lighted burner unattended! The flame of a lighted Bunsen burner often has little or no color and may be invisible. Other students passing by may be burned.

19. Always turn off the gas at the bench valve, not at the base of the Bunsen burner.
20. When heating a liquid in a test tube, always point the open end away from yourself and others, as hot chemicals may shoot out of the test tube during heating.
21. Never heat a liquid in a closed container. The expanding gases produced may blow the container apart, injuring you and others.
22. When heating materials in a test tube, make sure the test tube is made of Pyrex and it is not cracked. Keep moving the test tube through the flame so that it is heated evenly.
23. When heating a liquid in a test tube, heat the top of the liquid first by holding the test tube at an angle in the burner flame.
24. Before picking up a container that has been heated, first hold the back of your hand near it. If you feel heat on the back of your hand, the container may be too hot. Move hot containers with clamps or tongs.
25. If you receive a burn, immediately run cold water over the burned area. This removes the heat from the area and lessens the amount of damage done.

#### **IF A FIRE OCCURS**

26. Shut off all gas supplies at the bench valve. Notify your teacher immediately.
27. If the fire is not easily put out, or if poisonous gases are escaping, pull the fire alarm and leave the building quickly and quietly.  
Note: Most small fires are easily put out with water. They can also be smothered by using an upside-down container (such as a beaker) or sand. If the fire extinguisher is required, your teacher should be informed.
28. If a student's clothing catches fire, make sure that the student immediately rolls on the floor to try to smother the flames. Then, get the fire blanket and wrap it around the student.

#### **USING CHEMICALS SAFELY**

29. Never mix chemicals for the "fun of it". You might produce a dangerous, possibly explosive substance.
30. Never touch, taste, or smell a chemical unless you are instructed by your teacher to do so. Many chemicals are poisonous. If you are instructed to smell a chemical, gently waft (wave your hand over the opening of the container and move any fumes toward your nose). Do not place your nose close to the container and inhale.
31. Use only those chemicals needed in the activity. Keep all lids closed when a chemical is not being used. Notify your teacher whenever chemicals are spilled.
32. Dispose of all chemicals as instructed by your teacher. When disposing a dissolved chemical in the sink, flush the sink well with water. Solid waste material must be disposed into a container provided, not into the sink.
33. Pour acids and bases very carefully (preferably over the sink). Notify your teacher if any acid spills. Clean up spilled chemicals as instructed by your teacher.
34. When diluting an acid, pour the acid into the water. Never pour water into the acid as the acid may begin to boil and spatter.

35. Wash any acid or other harmful chemical spilled on your skin or clothing with lots of water. If a harmful chemical gets into your eyes, wash them with water immediately and continuously for up to 10 minutes. Do not rub your eyes.
36. Never return unused chemicals to their original container unless instructed to do so. They may be contaminated.

#### **USING GLASSWARE SAFELY**

37. Never force glass tubing into a rubber stopper or rubber tubing. Wet the glass tubing and the rubber with water and then push the glass tubing using a turning motion.
38. After cutting glass tubing, fire-polish the cut ends to remove sharp edges.
39. Never use broken or chipped glassware. If glassware breaks, notify your teacher and dispose of the broken glass into a container provided for this purpose.
40. Never eat or drink from laboratory glassware.
41. Thoroughly clean glassware before putting it away.

#### **USING SHARP INSTRUMENTS**

42. Handle scalpels or razor blades with extreme care. Never cut material toward yourself; cut away from yourself.
43. Immediately notify your teacher if you cut your skin when working in the lab.

#### **END-OF-EXPERIMENT RULES**

44. Clean up your work area and return all equipment to its proper place.
45. Wash your hands after every experiment.
46. Turn off all burners or candles or hot plates. Double check that the gas valve to the burner is completely closed.





Use with textbook pages 8–15.

## What is wrong with this picture?

There are many unsafe situations in the science lab shown below. In the first column of the chart, identify seven unsafe situations. In the second column, describe an injury that might occur as a result of each situation.



Unsafe situation	Possible injury
1.	
2.	
3.	
4.	
5.	
6.	
7.	

## Reviewing Laboratory Safety Rules

Understanding the reason for a safety rule will make you aware of why it is important to follow that rule. Explain the reason for each of the following rules.

1. Never engage in horseplay or practical jokes.

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2. Never do unauthorized experiments.

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3. Never consume food or drinks in the laboratory.

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4. Never return unused chemicals to the stock (original) containers.

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5. Never used cracked, chipped, or broken glassware.

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6. Never lean backwards on stools or sit on tables.

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7. Never wear loose-fitting sleeves, neckties, or bulky outer clothing.

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8. Never wear open-toe shoes or walk bare-footed in the laboratory.

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9. Never put chemicals in unlabeled containers.

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10. Never leave a lighted burner with a blue flame on a hot plate unattended.

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11. Never touch electrical equipment with wet hands or use it in a wet area.

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12. Never wander around during a lab unnecessarily.

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13. Never taste, smell, or touch substances in the lab, except if directed by your teacher.

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14. Never add water to concentrated acid – *always add the acid to the water.*

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15. Never wear contact lenses when using chemicals that give off fumes.

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16. Never drink or consume food items from laboratory glassware.

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