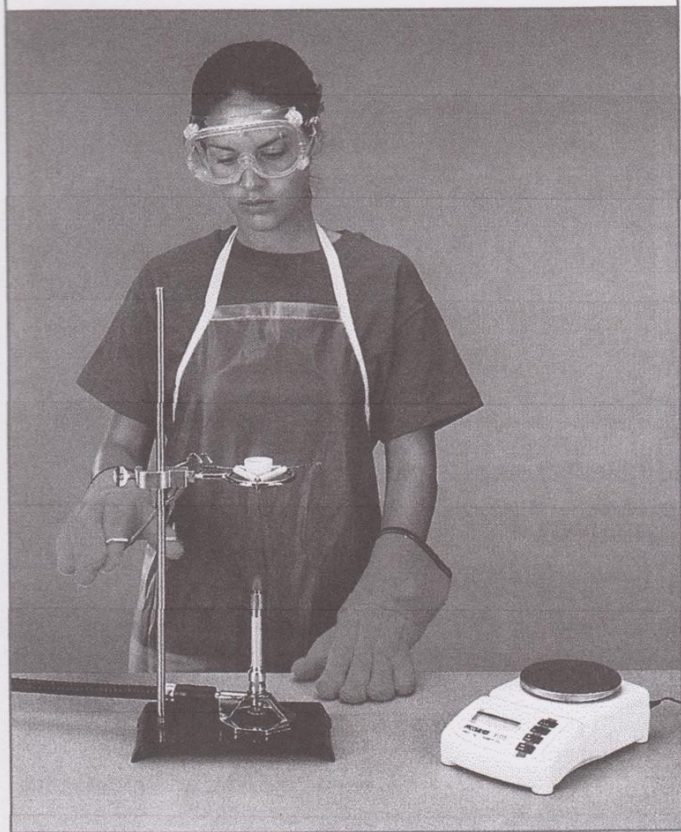


Table 1-2

Safety in the Laboratory

1. Study your lab assignment **before** you come to the lab. If you have any questions, be sure to ask your teacher for help.
2. Do not perform experiments without your teacher's permission. **Never** work alone in the laboratory.
3. Use the table on the inside front cover of this textbook to understand the safety symbols. Read all **CAUTION** statements.
4. Safety goggles and a laboratory apron must be worn whenever you are in the lab. Gloves should be worn whenever you use chemicals that cause irritations or can be absorbed through the skin. Long hair must be tied back. See the photo below.
5. Do not wear contact lenses in the lab, even under goggles. Lenses can absorb vapors and are difficult to remove in case of an emergency.
6. Avoid wearing loose, draping clothing and dangling jewelry. Bare feet and sandals are not permitted in the lab.
7. Eating, drinking, and chewing gum are not allowed in the lab.
8. Know where to find and how to use the fire extinguisher, safety shower, fire blanket, and first-aid kit.
9. Report any accident, injury, incorrect procedure, or damaged equipment to your teacher.
10. If chemicals come in contact with your eyes or skin, flush the area *immediately* with *large quantities* of water. Immediately inform your teacher of the nature of the spill.
11. Handle all chemicals carefully. Check the labels of all bottles **before** removing the contents. Read the label three times:
 - Before you pick up the container.
 - When the container is in your hand.
 - When you put the bottle back.
12. Do not take reagent bottles to your work area unless instructed to do so. Use test tubes, paper, or beakers to obtain your chemicals. Take only small amounts. It is easier to get more than to dispose of excess.
13. Do not return unused chemicals to the stock bottle.
14. Do not insert droppers into reagent bottles. Pour a small amount of the chemical into a beaker.
15. **Never** taste any chemicals. **Never** draw any chemicals into a pipette with your mouth.
16. Keep combustible materials away from open flames.
17. Handle toxic and combustible gases only under the direction of your teacher. Use the fume hood when such materials are present.
18. When heating a substance in a test tube, be careful not to point the mouth of the test tube at another person or yourself. Never look down the mouth of a test tube.
19. Do not heat graduated cylinders, burettes, or pipettes with a laboratory burner.
20. Use caution and proper equipment when handling hot apparatus or glassware. Hot glass looks the same as cool glass.
21. Dispose of broken glass, unused chemicals, and products of reactions only as directed by your teacher.
22. Know the correct procedure for preparing acid solutions. **Always** add the acid slowly to the water.
23. Keep the balance area clean. Never place chemicals directly on the pan of a balance.
24. After completing an experiment, clean and put away your equipment. Clean your work area. Make sure the gas and water are turned off. Wash your hands with soap and water before you leave the lab.



SAFETY SYMBOLS

	HAZARD	EXAMPLES	PRECAUTION	REMEDY
DISPOSAL 	Special disposal procedures need to be followed.	certain chemicals, living organisms	Do not dispose of these materials in the sink or trash can.	Dispose of wastes as directed by your teacher.
BIOLOGICAL 	Organisms or other biological materials that might be harmful to humans	bacteria, fungi, blood, unpreserved tissues, plant materials	Avoid skin contact with these materials. Wear mask or gloves.	Notify your teacher if you suspect contact with material. Wash hands thoroughly.
EXTREME TEMPERATURE 	Objects that can burn skin by being too cold or too hot	boiling liquids, hot plates, dry ice, liquid nitrogen	Use proper protection when handling.	Go to your teacher for first aid.
SHARP OBJECT 	Use of tools or glassware that can easily puncture or slice skin	razor blades, pins, scalpels, pointed tools, dissecting probes, broken glass	Practice common-sense behavior and follow guidelines for use of the tool.	Go to your teacher for first aid.
FUME 	Possible danger to respiratory tract from fumes	ammonia, acetone, nail polish remover, heated sulfur, moth balls	Make sure there is good ventilation. Never smell fumes directly. Wear a mask.	Leave foul area and notify your teacher immediately.
ELECTRICAL 	Possible danger from electrical shock or burn	improper grounding, liquid spills, short circuits, exposed wires	Double-check setup with teacher. Check condition of wires and apparatus.	Do not attempt to fix electrical problems. Notify your teacher immediately.
IRRITANT 	Substances that can irritate the skin or mucous membranes of the respiratory tract	pollen, moth balls, steel wool, fiberglass, potassium permanganate	Wear dust mask and gloves. Practice extra care when handling these materials.	Go to your teacher for first aid.
CHEMICAL 	Chemicals that can react with and destroy tissue and other materials	bleaches such as hydrogen peroxide; acids such as sulfuric acid, hydrochloric acid; bases such as ammonia, sodium hydroxide	Wear goggles, gloves, and an apron.	Immediately flush the affected area with water and notify your teacher.
TOXIC 	Substance may be poisonous if touched, inhaled, or swallowed	mercury, many metal compounds, iodine, poinsettia plant parts	Follow your teacher's instructions.	Always wash hands thoroughly after use. Go to your teacher for first aid.
OPEN FLAME 	Open flame may ignite flammable chemicals, loose clothing, or hair	alcohol, kerosene, potassium permanganate, hair, clothing	Tie back hair. Avoid wearing loose clothing. Avoid open flames when using flammable chemicals. Be aware of locations of fire safety equipment.	Notify your teacher immediately. Use fire safety equipment if applicable.



Eye Safety

Proper eye protection should be worn at all times by anyone performing or observing science activities.



Clothing Protection

This symbol appears when substances could stain or burn clothing.



Radioactivity

This symbol appears when radioactive materials are used.



Handwashing

After the lab, wash hands with soap and water before removing goggles.