

# **General Laboratory Safety Procedures**

## **Purpose**

Science is a hands-on laboratory class. You will be doing laboratory activities which require the use of hazardous chemicals. Safety in the science classroom is the #1 priority for students, teachers, and parents. To ensure a safe science classroom, a list of rules has been developed. These rules must be followed at all times.

## **General guidelines**

1. Conduct yourself in a responsible manner at all times in the laboratory.
2. Follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, ask the instructor before proceeding.
3. Never work alone. No student may work in the laboratory without an instructor present.
4. When first entering a science room, do not touch any equipment, chemicals or other materials in the laboratory area until you are instructed to do so.
5. Do not eat food, drink beverages, or chew gum in the laboratory. Do not use laboratory glassware as containers for food or beverages.
6. Perform only those experiments authorized by the instructor. Never do anything in the laboratory that is not called for in the laboratory procedures or by your instructor. Carefully follow all instructions, both written and oral. Unauthorized experiments are prohibited.
7. Be prepared for your work in the laboratory. Read all procedures thoroughly before entering the laboratory. Never fool around in the laboratory. Horseplay practical jokes and pranks are dangerous and prohibited.
8. Observe good housekeeping practices. Work area should be kept clean and tidy at all times. Bring only your laboratory instructions, worksheets, and/or reports to the work area. Other materials (books, purses, backpacks, etc.) should be stored in the classroom area.
9. Keep aisles clear. Push your chair under the desk when not in use.
10. Know the locations and operating procedures of all safety equipment including the first aid kit, eyewash station, safety shower, fire extinguisher, and fire blanket. Know where the fire alarm and the exits are located.

11. Always work in a well-ventilated area. Use the fume hood when working with volatile substances or poisonous vapors. Never place your head into the fume hood.
12. Be alert and proceed with caution at all times in the laboratory. Notify the instructor immediately of any unsafe conditions you observe.
13. Dispose of all chemicals waste properly. Never mix chemicals in sink drains. Sinks are to be used only for water and those solutions designated by the instructor. Solid chemicals, metals matches, filter paper, and all other insoluble materials are to be disposed of in the proper waste containers twice before adding your chemical waste to the container.
14. Labels and equipment instructions must be read carefully before use. Set up and use the prescribed apparatus as directed in the laboratory instructions or by your instructor.
15. Keep hands away from your face, eyes mouth and body while using chemicals or preserved specimens. Wash your hands with soap and water after performing all experiments. Clean (with detergent), rinse, and wipe dry all work surfaces (including the sink) and apparatus at the end of the experiment. Return all equipment clean and in working order to the proper storage area.
16. Experiments must be personally monitored at all times. You will be assigned a laboratory station at which to work. Do not wander around the room, distract other students, or interfere with laboratory experiments of others.
17. Students are never permitted in the science storage rooms or preparation areas.
18. Know what to do if there is a fire drill during a laboratory period; containers must be closed, gas valves turned off; fume hoods turned off, and any electrical equipment turned off.
19. Handle all living organisms used in a laboratory activity in a humane manner, preserved biological materials are to be treated with respect and disposed of properly.
20. When using knives and other sharp instruments, always carry with tips and points pointing down and away. Always cut away from your body. Never try to catch falling sharp instruments. Grasp sharp instruments only by the handles.

### **Clothing**

21. Any time chemicals, heat, or glassware are used, students are to wear laboratory goggles. There will be no exceptions to the rule!

22. Contact lenses should not be worn in the laboratory unless you have permission from your instructor.
23. Dress properly during a laboratory activity. Long hair, dangling jewelry, and loose or baggy clothing are a hazard in the laboratory. Long hair must be tied back and dangling jewelry and loose or baggy clothing must be secured. Shoes must completely cover the foot. No sandals allowed.
24. Lab aprons have been provided for your use and should be worn during laboratory activities.

### **Accidents and Injuries**

25. Report any accident (spill, breakage, etc) or injury (cut, burn, etc.) to the instructor immediately, no matter how trivial it may appear.
26. If you or your lab partners are hurt, immediately inform your instructor.
27. If a chemical should splash in your eye(s) or on your skin, immediately flush with running water from the eyewash station or safety shower for at least 20 minutes. Notify the instructor immediately.
28. When mercury thermometers are broken, mercury must not be touched. Notify the instructor immediately.

### **Handling Chemicals**

29. All chemicals in the laboratory are to be considered dangerous. Do not touch taste, or smell any chemicals unless specifically instructed to do so. The proper technique for smelling chemical fumes (Wafting) will be demonstrated to you.
30. Check the label on chemical bottles twice before removing any of the contents. Take only as much chemical as you need.
31. Never return unused chemicals to their original containers.
32. Never use mouth suction to fill a pipette. Use a rubber bulb or pipette pump.
33. When transferring reagents from one container to another, hold the containers away from your body.

34. Acids must be handled with extreme care. You will be shown the proper method for diluting strong acids. Always add acid to water, swirl or stir the solution and be careful of the heat produced, particularly with sulfuric acid.
35. Handle flammable hazardous liquids over a pan to contain spills. Never dispense flammable liquids anywhere near an open flame or source of heat.
36. Never remove chemicals or other materials from the laboratory area.
37. Take great care when transferring acids and other chemicals from one part of the laboratory to another. Hold them securely and walk carefully.

### **Handling Glassware and Equipment**

38. Carry glass tubing, especially long pieces, in a vertical position to minimize the likelihood of breakage and injury.
39. Never handle broken glass with your bare hands. Use a brush and dustpan to clean up broken glass. Place broken or waste glassware in the designated glass disposal container.
40. Inserting and removing glass tubing from rubber stoppers can be dangerous. Always lubricate glassware (tubing, thistle tubes, thermometers, etc.) before attempting to insert it in a stopper. Always protect your hands with towels or cotton gloves when inserting glass tubing into, or removing it from a rubber stopper. If a piece of glassware becomes "frozen" in a stopper, take it to your instructor for removal.
41. Fill wash bottles only with distilled water and use only as intended, e.g., rinsing glassware and equipment, or adding water to a container.
42. When removing an electrical plug from its socket, grasp the plug, not the electrical cord. Hands must be completely dry before touching and electrical switch plug or outlet.
43. Examine glassware before each use. Never use chipped or cracked glassware. Never use dirty glassware.
44. Report damaged electrical equipment immediately. Look for things such as frayed cords, exposed wires, and loose connections. Do not use damaged electrical equipment.
45. If you do not understand how to use a piece of equipment, ask the instructor for help.

46. Do not immerse hot glassware in cold water; it may shatter.

### **Heating Substances**

47. Exercise extreme caution when using a gas burner. Take care that hair, clothing and hands are at a safe distance from the flame at all times. Do not put any substance into the flame unless specifically instructed to do so. Never reach over an exposed flame. Light gas (or alcohol) burners only as instructed by the teacher.

48. Never leave a lit burner unattended. Never leave anything that is being heated or its visibility reacting unattended. Always turn the burner or hot plate off when not in use.

49. You will be instructed in the proper method of heating and boiling liquids in test tubes. Do not point the open end of a test tube being heated at yourself or anyone else.

50. Heated metals and glass remain very hot for a long time. They should be set aside to cool and picked up with caution. Use tongs or heat-protective gloves if necessary.

51. Never look into a container that is being heated.

52. Do not place hot apparatus directly on the laboratory desk. Always use an insulating pad. Allow plenty of time for hot apparatus to cool before touching it.