

# Science Safety Rules

One of the first things a scientist learns is that working in the laboratory can be an exciting experience. But the laboratory can also be quite dangerous if proper safety rules are not followed at all times. To prepare yourself for a safe year in the laboratory, read over the following safety rules. Then read them a second time. Make sure you understand each rule. If you do not, ask your teacher to explain any rules you are unsure of.

## Dress Code

1. Many materials in the laboratory can cause eye injury. To protect yourself 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 laboratory.
2. Wear a laboratory apron or coat whenever you are working with chemicals or heated substances.
3. Tie back long hair to keep your hair away from any chemicals, burners and candles, or other laboratory equipment.
4. Remove or tie back any article of clothing or jewelry that can hang down and touch chemicals and flames. Do not wear sandals or open-toed shoes in the laboratory. Never walk around the laboratory barefoot or in stocking feet.

## General Safety Rules

5. Be serious and alert when working in the laboratory. Never "horse around" in the laboratory.
6. Be prepared to work when you arrive in the laboratory. Be sure that you understand the procedure to be employed in any laboratory investigation and the possible hazards associated with it.
7. Read all directions for an investigation several times. Follow the directions exactly as they are written. If you are in doubt about any part of the investigation, ask your teacher for assistance.

8. Never perform activities that are not authorized by your teacher. Obtain permission before "experimenting" on your own.
9. Never handle any equipment unless you have specific permission.
10. Take extreme care not to spill any material in the laboratory. If spills occur, ask your teacher immediately about the proper cleanup procedure. Never simply pour chemicals or other substances into the sink or trash container.
11. Never eat or taste anything or apply cosmetics in the laboratory unless directed to do so. This includes food, drinks, candy, and gum, as well as chemicals. Wash your hands before and after performing every investigation.
12. Know the location and proper use of safety equipment such as the fire extinguisher, fire blanket, first-aid kit, safety shower, and eyewash station.
13. Notify your teacher of any medical problems you may have, such as allergies or asthma.
14. Keep your laboratory area clean and free of unnecessary books, papers, and equipment.

## First Aid

15. Report all accidents, no matter how minor, to your teacher immediately.
16. Learn what to do in case of specific accidents such as getting acid in your eyes or on your skin. (Rinse acids off your body with lots of water.)
17. Become aware of the location of the first-aid kit. Your teacher should administer any required first aid due to injury. Or your teacher may send you to the school nurse or call a physician.
18. Know where and how to report an accident or fire. Find out the location of the fire extinguisher, phone, and fire alarm. Keep a list of important phone numbers such as the fire department and school

nurse near the phone. Report any fires to your teacher at once.

### Heating and Fire Safety

19. Never use a heat source such as a candle or burner without wearing safety goggles.
20. Never heat a chemical you are not instructed to heat. A chemical that is harmless when cool can be dangerous when heated.
21. Maintain a clean work area and keep all materials away from flames.
22. Never reach across a flame.
23. Make sure you know how to light a Bunsen burner. (Your teacher will demonstrate the proper procedure for lighting a burner.) If the flame leaps out of a burner toward you, turn the gas off immediately. Do not touch the burner. It may be hot. And never leave a lighted burner unattended.
24. Point a test tube or bottle that is being heated away from you and others. Chemicals can splash or boil out of a heated test tube.
25. Never heat a liquid in a closed container. The expanding gases produced may blow the container apart, injuring you or others.
26. Never pick up a container that has been heated without first holding the back of your hand near it. If you can feel the heat on the back of your hand, the container may be too hot to handle. Use a clamp, tongs, or heat-resistant gloves when handling hot containers.

### Using Chemicals Safely

27. Never mix chemicals for the "fun of it." You might produce a dangerous, possibly explosive, substance.
28. Never touch, taste, or smell a chemical that you do not know for a fact is harmless. Many chemicals are poisonous. If you are instructed to note the fumes in an investigation, gently wave your hand over the opening of a container and direct the fumes toward your nose. Do not inhale the fumes directly from the container.

29. Use only those chemicals needed in the investigation. Keep all lids closed when a chemical is not being used. Notify your teacher whenever chemicals are spilled.
30. Dispose of all chemicals as instructed by your teacher. To avoid contamination, never return chemicals to their original containers.
31. Be extra careful when working with acids or bases. Pour such chemicals over the sink, not over your work bench.
32. When diluting an acid, pour the acid into water. Never pour water into the acid.
33. Rinse any acids off your skin or clothing with water. Immediately notify your teacher of any acid spill.

### Using Glassware Safely

34. Never force glass tubing into a rubber stopper. A turning motion and lubricant will be helpful when inserting glass tubing into rubber stoppers or rubber tubing. Your teacher will demonstrate the proper way to insert glass tubing.
35. Never heat glassware that is not thoroughly dry. Use a wire screen to protect glassware from any flame.
36. Keep in mind that hot glassware will not appear hot. Never pick up glassware without first checking to see if it is hot.
37. If you are instructed to cut glass tubing, fire polish the ends immediately to remove sharp edges.
38. Never use broken or chipped glassware. If glassware breaks, notify your teacher and dispose of the glassware in the proper trash container.
39. Never eat or drink from laboratory glassware. Clean glassware thoroughly before putting it away.

### Using Sharp Instruments

40. Handle scalpels or razor blades with extreme care. Never cut material toward you; cut away from you.
41. Be careful when handling sharp, pointed objects such as scissors, pins, and dissecting probes.

42. Notify your teacher immediately if you cut yourself or receive a cut.

### **Handling Living Organisms**

43. No investigations that will cause pain, discomfort, or harm to mammals, birds, reptiles, fish, and amphibians should be done in the classroom or at home.
44. Treat all living things with care and respect. Do not touch any organism in the classroom or laboratory unless given permission to do so. Many plants are poisonous or have thorns, and even tame animals may bite or scratch if alarmed.
45. Animals should be handled only if necessary. If an animal is excited or frightened, pregnant, feeding, or with its young, special handling is required.
46. Your teacher will instruct you as to how to handle each species that may be brought into the classroom.

47. Treat all microorganisms as if they were harmful. Use antiseptic procedure, as directed by your teacher, when working with microbes. Dispose of microbes as your teacher directs.

48. Clean your hands thoroughly after handling animals or the cage containing animals.

49. Wear gloves when handling small mammals. Report animal bites or stings to your teacher at once.

### **End-of-Investigation Rules**

50. When an investigation is completed, clean up your work area and return all equipment to its proper place.

51. Wash your hands after every investigation.

52. Turn off all burners before leaving the laboratory. Check that the gas line leading to the burner is off as well.