

Lab Safety

How can you work safely in a Science Laboratory?

Introduction

“A science laboratory is a safe place only for those who know that it is dangerous.” Familiarity with the potential hazards in a science laboratory makes it possible to take the proper precautions to make lab time safe. Most laboratory accidents are caused by carelessness, so remember to be ever mindful of safety procedures and always watch out for one another. After all, no one wants to burn their face off or have to have an eyeball dissolved by hot acid. Be careful out there-accidents can occur in a split second!

Focus

Pre-lab

- ~ General laboratory safety precautions
- ~ Special laboratory safety precautions
- ~ Using proper lab equipment
- ~ Safety contract

Procedure

Pre-lab

1. Read the safety regulations below. After completion of your reading fill out the Lab Safety Assessment worksheet.

Safety Regulations

General Laboratory Safety Precautions

- a. Follow all instructions carefully. Use special care when you see the word caution in your laboratory instructions. Follow the safety instructions given by your teacher.
- b. Know the location of all safety equipment in your classroom. This may include fire extinguishers, fire blankets, sand, safety showers, and eye wash fountain, and a first-aid kit.
- c. Never eat or drink in the science laboratory.
- d. Approach laboratory work with maturity. Never run, push, or engage in horseplay or practical jokes of any kind in the laboratory.
- e. Report all accidents or injuries and all breakage or spills to your teacher immediately.
- f. Dispose of used chemicals, matches, and living or preserved materials only as directed by your teacher.
- g. Never work alone in the laboratory.
- h. Keep your work area clean and uncluttered.
- i. Turn off all electrical equipment, water, and gas when it is not in use. Especially at the end of the laboratory period.

- j. Never perform unauthorized experiments. Do not mix together leftover materials to see what happens.

Special Precautions Regarding Laboratory Apparel

- a. Roll long sleeves up above the wrist.
- b. Do not wear loose-fitting sleeves or bulky outerwear.
- c. Tie back long hair.
- d. Wear safety goggles when using dangerous chemicals, hot liquids, or burners.
- e. Wear lab aprons when working with chemicals, hot materials, or preserved specimens.

Special Precautions for Working with Heat or Fire

- a. Never leave a lighted Bunsen burner or hot object unattended. When an object is removed from heat and left to cool, it should be placed where it is shielded from contact.
- b. Never reach over an exposed flame, plan carefully and position materials so you have no need to reach across hot apparatus.
- c. Use tongs, test tube holders, or pot holders to handle hot laboratory equipment.
- d. Never allow flammable materials such as alcohol near an open flame.
- e. When you are heating something in a container such as a test tube, always point the open end of the container away from yourself and others.
- f. Use only Pyrex glassware for heating.
- g. Set hot-plate thermostats at the desired temperature rather than at maximum.
- h. Allow hot materials to cool before moving them from your lab station.
- i. Before lighting a Bunsen burner, close the valve all the way and then open it slightly.
- j. Make sure that Bunsen burner hoses fit tightly and that they are not dry or cracked.

Special Precautions for working with Chemicals

- a. Never taste or touch substances in the laboratory without specific instructions.
- b. Never smell substances in the laboratory without specific instructions. Then wave the air above the substance toward your nose and sniff carefully. Do not inhale fumes directly.
- c. Use materials only from containers that are properly labeled.
- d. Wash your hands after working with chemicals.
- e. Do not add water to acid. Instead, dilute the acid by adding it to water.
- f. Mix heat-generating chemicals slowly.

Special precautions for working with Electrical Equipment

- a. Never use equipment with frayed insulation and loose or broken wires.
- b. Make sure the area under and around electrical equipment is dry.
- c. Never touch electrical equipment with wet hands.
- d. Make sure the area surrounding the electrical equipment is free of flammable materials.

- e. Turn off all power switches before plugging an appliance into an outlet.
- f. Never jerk plugs from outlets or pull them by the wire.

Special Precautions for Working with glassware and other laboratory equipment

- a. Become familiar with the names and appearances of all the laboratory equipment you will use. Use only the equipment specified in the laboratory instructions unless directed otherwise by your teacher.
- b. Never use broken or chipped glassware
- c. Make sure that all glassware is clean before you use it.
- d. Do not pick up broken glass with your bare hands. Use a dustpan and a brush.
- e. Do not force glass tubing or thermometers into rubber stoppers. Ask your teacher for help.
- f. If a thermometer breaks, do not touch the mercury. Notify your teacher immediately.
- g. Do not aim the mirror of your microscope directly at the sun. Direct sunlight can damage the eyes.
- h. Use care handling all sharp equipment, such as scalpels and dissecting needles.
- i. Never use a cutting device with a blade that has more than one cutting edge.

Special Precautions for Working with Live or Preserved Specimens

- a. If live animals are used, treat them gently. Follow instructions for their proper care.
- b. Always wash your hand after working with live or preserved organisms.
- c. Specimens for dissection should be properly mounted and supported. Do not try to cut a specimen while holding it in the air.
- d. Do not open petri dishes containing live cultures unless you are directed to do so. After completing work with cultures, Sterilize them for 20 minutes at 138 kPa of pressure.