

# Safety Symbols

The following safety symbols will appear in this text when you are asked to perform a procedure requiring extra precautions. Once you have familiarized yourself with these safety symbols, turn to pp. 558–561 for safety guidelines to use in all of your environmental science laboratory work.



## EYE PROTECTION

- ◆ Wear safety goggles when working around chemicals, acids, bases, flames or heating devices. Contents under pressure may become projectiles and cause serious injury.
- ◆ Never look directly at the sun through any optical device or use direct sunlight to illuminate a microscope.
- ◆ Avoid wearing contact lenses in the lab.
- ◆ If any substance gets into your eyes, notify your instructor immediately and flush your eyes with running water for at least 15 minutes.



## CLOTHING PROTECTION

- ◆ Secure loose clothing and remove dangling jewelry. Do not wear open-toed shoes or sandals in the lab.
- ◆ Wear an apron or lab coat to protect your clothing when you are working with chemicals.
- ◆ If a spill gets on your clothing, rinse it off immediately with water for at least 5 minutes while notifying your instructor.



## CAUSTIC SUBSTANCES

- ◆ If a chemical gets on your skin, on your clothing, or in your eyes, rinse it immediately and alert your instructor.
- ◆ If a chemical is spilled on the floor or lab bench, alert your instructor, but do not clean it up yourself unless your instructor directs you to do so.



## CHEMICAL SAFETY

- ◆ Always use caution when working with chemicals.
- ◆ Always wear appropriate protective equipment. Always wear eye goggles, gloves, and a lab apron or lab coat when you are working with any chemical or chemical solution.
- ◆ Never mix chemicals unless your instructor directs you to do so.
- ◆ Never taste, touch, or smell chemicals unless your instructor directs you to do so.
- ◆ Add an acid or base to water; never add water to an acid or base.
- ◆ Never return an unused chemical to its original container.
- ◆ Never transfer substances by sucking on a pipet or straw; use a suction bulb.
- ◆ Follow instructions for proper disposal.



## ANIMAL SAFETY

- ◆ Always obtain permission before bringing any animal to school.
- ◆ Handle animals carefully and respectfully.
- ◆ Wash your hands thoroughly after handling any animal.



## PLANT SAFETY

- ◆ Wear disposable polyethylene gloves when handling any wild plant.
- ◆ Do not eat any part of a plant or plant seed used in the lab.
- ◆ Wash hands thoroughly after handling any part of a plant.
- ◆ When outdoors, do not pick any wild plants unless your instructor directs you to do so.



## ELECTRICAL SAFETY

- ◆ Do not place electrical cords in walking areas or let cords hang over a table edge in a way

that could cause equipment to fall if the cord is accidentally pulled.

- ◆ Do not use equipment that has frayed electrical cords or loose plugs.
- ◆ Be sure that equipment is in the "off" position before you plug it in.
- ◆ Never use an electrical appliance around water or with wet hands or clothing.
- ◆ Be sure to turn off and unplug electrical equipment when you are finished using it.



## HEATING SAFETY

- ◆ Avoid wearing hair spray or hair gel on lab days.
- ◆ Whenever possible, use an electric hot plate instead of an open flame as a heat source.
- ◆ When heating materials in a test tube, always angle the test tube away from yourself and others.
- ◆ Glass containers used for heating should be made of heat-resistant glass.



## SHARP OBJECTS

- ◆ Use knives and other sharp instruments with extreme care.
- ◆ Never cut objects while holding them in your hands. Place objects on a suitable work surface for cutting.
- ◆ Never use a double-edged razor in the lab.



## HAND SAFETY

- ◆ To avoid burns, wear heat-resistant gloves whenever instructed to do so.
- ◆ Always wear protective gloves when working with an open flame, chemicals, solutions, or wild or unknown plants.
- ◆ If you do not know whether an object is hot, do not touch it.
- ◆ Use tongs when heating test tubes. Never hold a test tube in your hand to heat the test tube.



## FIRE SAFETY

- ◆ Know the location of laboratory fire extinguishers and fire-safety blankets.
- ◆ Know your school's fire-evacuation routes.



## GAS SAFETY

- ◆ Do not inhale any gas or vapor unless your instructor directs you to do so. Do not breathe pure gases.
- ◆ Handle materials prone to emit vapors or gases in a well-ventilated area. This work should be done in an approved chemical fume hood.



## GLASSWARE SAFETY

- ◆ Check the condition of glassware before and after using it. Inform your teacher of any broken, chipped, or cracked glassware, because it should not be used.
- ◆ Do not pick up broken glass with your bare hands. Place broken glass in a specially designated disposal container.



## WASTE DISPOSAL

- ◆ Clean and decontaminate all work surfaces and personal protective equipment as directed by your instructor.
- ◆ Dispose of all broken glass, contaminated sharp objects, and other contaminated materials (biological and chemical) in special containers as directed by your instructor.



## HYGIENIC CARE/CLEAN HANDS

- ◆ Keep your hands away from your face and mouth.
- ◆ Always wash your hands thoroughly when you have finished with an experiment.