

Table 1.1.3 Laboratory Safety Equipment

Safety Equipment	Information Regarding Operation
Fume hood	<ul style="list-style-type: none"> • Enclosed area equipped with fans to draw vapours out of the hood and vent them outside • May contain gas jets, sinks, lights, and electrical outlet • Enclosed by a sliding safety glass window • May store chemicals emitting toxic fumes • Useful for venting odours, smoke, and toxic fumes
Eyewash station	<ul style="list-style-type: none"> • If a chemical is splashed or spilled into the eyes, they should be held open and rinsed continuously for 10 to 15 min. Contact lenses should be removed. • Eyewash stations may be operated by pushing on a hand bar and/or a foot pedal. • Some labs may use a squeeze bottle apparatus or a piece of rubber tubing attached to a sink.
Safety shower	<ul style="list-style-type: none"> • Spills over a large portion of the body require removal of clothing and washing of the entire region for 10 to 15 min under the safety shower. • Safety showers are operated by pulling on a ring that will begin the flow of some 200 L of water over a drained area of the lab.
Fire extinguisher	<ul style="list-style-type: none"> • Small fires such as those that occur in a beaker or a crucible usually may be smothered by placing a ceramic pad or cover on top. • If a larger fire occurs, pull the safety pin from the top of the extinguisher, point the hose at the base of the fire, and squeeze. Extinguishers operate by depriving the fire of oxygen and by lowering the temperature. <ul style="list-style-type: none"> • There are five classes of fires: • Type A: wood or paper • Type B: oil or grease (most chemicals) • Type C: electrical equipment • Type D: metals (such as magnesium) • Type E: radioactive materials • Most extinguishers contain carbon dioxide and are good for class A, B, and C fires.
Fire blanket	<ul style="list-style-type: none"> • A fire extinguisher should <i>never</i> be used on a person. • <i>STOP, DROP, and ROLL</i> is the best way to extinguish a fire involving a person. A fire blanket may be used in combination with this process to smother the fire. • Fire blankets may be enclosed in a box or a cylindrical container attached to a wall, or they may be upright. An upright blanket may be wrapped around the victim while he or she is standing.
Emergency gas shut off	<ul style="list-style-type: none"> • The emergency gas shut off valve allows <i>all</i> gas outlets in the laboratory to be shut off at once. • To use the shut off, turn a handle so it is perpendicular to the gas line or simply push a large red button. • At the end of the day, this valve should always be left in the off position.

Spill control station	<ul style="list-style-type: none"> • Spill control stations contain absorbent pillows to soak up spills, safety goggles and gloves, and chemicals to neutralize acid and base spills. • Some labs simply have the neutralizing chemicals stored in a dedicated area. • Acid spills should be neutralized with sodium bicarbonate or baking soda. • Base spills should be neutralized with acetic acid or vinegar. • Neutralization is only necessary for large spills of concentrated reagents. Smaller spills may simply be diluted with water and wiped up with paper towel.
First aid kit	<ul style="list-style-type: none"> • All labs should have access to a first aid kit. The kit may be stored in a common storage area adjacent to the lab so that all teachers have easy access. • Such a kit should contain an antibiotic cream or ointment and plenty of bandages. • Burns are the most common injury in the chemistry lab. While ice followed by cold water is generally enough, the kit may contain a topical anesthetic cream. It is critical to ensure a student has no anesthetic allergies before using such a product. • Avoid burns from hot glass or metal by bringing your hand near the object first to test for heat. • Small cuts closely follow burns on the list of chemistry lab injuries. These may be treated with the antibiotic cream and a bandage.
Glass disposal container	<ul style="list-style-type: none"> • Broken glass should never be placed in the garbage can as this presents a hazard to the custodian. • A plastic bucket or a specially designated recyclables box can be found on a counter or the floor for the disposal of broken glassware or glass tubing.
Chemical disposal	<ul style="list-style-type: none"> • Containers clearly marked "Chemical Disposal" should be used for disposing solutions or precipitates containing heavy metals or any other toxic chemicals. • Some organic waste may release toxic fumes. Such waste often warrants its own container, which may be covered and/or placed in the fume hood. • Some chemicals such as dilute solutions of acids and bases and non-toxic salts may be flushed down the sink with plenty of water. • The ultimate judge of correct chemical disposal is, of course, your lab instructor.
Fire alarm	<ul style="list-style-type: none"> • Though it may be in the hall outside of your lab, you must know where the fire alarm is located.