2.0 Safety Equipment
SAFETY EQUIPMENT

Following is a description of the safety equipment located in the Chabot College chemistry stockroom as well as in the chemistry laboratories. Safety equipment and procedures are overseen by two agencies. These are:

OSHA - Occupational Safety and Health Administration.
The mission of the Occupational Safety and Health Administration (OSHA) is to save lives, prevent injuries and protect the health of America's workers.

ANSI - American National Standards Institute.
The American National Standards Institute is a voluntary membership organization (run with private funding) that develops national consensus standards for a wide variety of devices and procedures.

A. EyeWash/Emergency Showers

1. Description:

Eye wash stations provide an effective means of treatment when chemicals come in contact with the eyes. Eye wash stations should be readily available and accessible to all laboratory personnel and for personnel entering the laboratory where chemicals are being used or handled. The station should be clearly marked and in accessible locations no more than 10 seconds or 50 feet away from every lab work station. Laboratory workers should be able to locate the nearest eye wash station with their eyes closed (eye injuries may involve temporary blindness). Eye injury usually accompanies a skin injury. For this reason, eye wash stations should be located near the safety shower so that eyes and body can be washed.

Shower stations provide an effective means of treatment when a chemical spill occurs on a body surface too large to effectively rinse using a sink. Shower stations should be readily available and accessible to all laboratory personnel and for personnel entering the laboratory where chemicals are being used or handled. The station should be clearly marked and in accessible locations no more than 10 seconds or 50 feet away from every lab work station.

2. Requirements:

OSHA 29 CFR1910.151(C)
Where the eyes or body of any person may be exposed to materials, suitable facilities for quick drenching or flushing of the eyes must be provided within the work area for immediate use.

ANSI Z358.1
This is the definitive standard for meeting the OSHA requirement for suitable emergency eyewash/shower devices.

This national consensus standard provides details on emergency eyewash/shower equipment. The basic requirement is to have emergency eyewash/showers within 10 seconds travel distance of a hazard.

ANSI states that all employees who may be exposed to hazardous materials should be trained on the use of eyewash and shower devices. Specific areas that should be addressed include the location of the units, how to properly activate the systems and how to correctly maintain the devices. Instructors or lab techs can do this training.
3. Maintenance:

ANSI Standards

To ensure that your eyewash stations and showers are always ready when you need them, it is important that the requirements for test procedures and maintenance set forth in Z358.1-2004 are followed. The American National Standard for eyewashes and showers provides minimum requirements for these units to function properly.

The requirements for testing and maintaining any of the eye, eye/face washes and showers is based on the manufacturer’s instructions and ANSI requirements. Generally, the manufacturer’s instructions state that the units “should be inspected, tested and recorded weekly”. Individual owner manuals should be looked at for the specific manufacturer’s guidelines. The ANSI standard Z358.1 5.5.2 states that “plumbed eyewashes, eye/face washes and showers “...should be activated weekly for a period long enough to verify operation and ensure that the flushing fluid is available”. While activating plumbed eyewashes, eye/face washes and showers, you should also verify that they are providing luke-warm or tepid water (between 60º-100°F)

4. Use of EyeWash Station:

- Eyelids have to be FORCIBLY opened to ensure effective washing behind the eyelid.
- Wash from the nose out to the ear, this will avoid washing chemicals back into the eye or into the unaffected eye.
- Flood eyes and eyelids with water/eye solution for a minimum of 15 minutes.
- Remove contact lenses as soon as possible.
- Cover both of the victim’s eyes with clean or sterile gauze. Staff or security may apply gauze, time is critical to avoid further injuries.
- Call Campus Security X1699.
- When not in use, the protective covers should be over the nozzles to protect from contamination.
- Eyewash is for chemicals only, not for objects in eyes

5. Use of Showers:

- Contaminated clothing must be removed prior to using the shower
- Rinse contaminated area for a minimum of 15 minutes

B. Fume Hoods

1. Description:

Chemical fume hoods capture, contain, and expel emissions generated by hazardous chemicals. In general, it is a good idea to conduct all laboratory chemical experiments in a fume hood. While you may be able to predict the release of undesirable or hazardous effluents, in some laboratory operations surprises can happen. Therefore, the fume hood offers an extra measure of protection. Before use, check to see that your hood has an inspection tag. This will tell you the date of the most recent hood evaluation. If the fume hood in your lab does not appear to be in good working order (a Kimwipe taped to the sash of the fume hood can indicate if airflow is present), call for maintenance as soon as possible and be sure to perform any work in a working fume hood. Never perform tasks requiring ventilation in a non-working fume hood.

The purpose of a laboratory fume hood is to prevent the escape of contaminants into the laboratory. This is accomplished by drawing air from the laboratory, past the operator, into the hood. The concentration of the contaminant in the actual breathing zone of the operator must be kept as low as possible.
2. Requirements:

**CCR TITLE 8, SECTION 5154.1 AND 5209**
The California Code of Regulations includes two Titles that affect the energy efficiency of the laboratory facility. They are Title 8 and Title 24.

Section 5154.1. Ventilation Requirements for Laboratory-Type Hood Operations. Under Part (c), Ventilation Rates, a fume hood must have an "average face velocity of at least 100 linear feet per minute [lpm] with a minimum of 70 lpm at any point..." except for the handling of special hazardous materials. A more stringent face velocity rate is stipulated under Section 5209. Carcinogens, Part (b) (11) of 150 lpm with a minimum of 125 lpm [see the complete code for section cited].

**OSHA: Article 107**
Operations that give off flammable gases, toxic vapors, or noxious odors should be done in a chemical fume hood.

3. Maintenance:

Existing hoods are required by OSHA regulations to have their performance tested and certified annually.

Visual inspections for cracks, obstruction or lack of suction should be inspected quarterly but is not a required by OSHA.

4. Use of Fume Hoods:

1. Always make sure fume hoods are turned on before beginning any work
2. Check that sash is set to proper height before beginning any work (opening should never be greater than 18 inches).
3. Check to make sure air flow is occurring (check that Kimwipe attached to sash is moving) before beginning any work
4. Hoods may be shut down during non-operational laboratory hours as long as the chemicals are in proper containers and closed. No vapor should be allowed to escape or spill from any hazardous chemicals.

C. Fire Extinguishers, Alarms, Fire Blankets, Sand/ Absorbent/Sprinklers

**Fire Extinguishers**

Requirements: OSHA STANDARD 29CFR 1910.157

This requirement applies to the placement, use, maintenance, and testing of portable fire extinguishers provided for employee use. All portable fire extinguishers must be visually inspected monthly and subjected to an annual maintenance check. Records of the annual maintenance must be maintained. Specific testing such as hydrostatic testing for refillable extinguishers will be performed by the fire extinguisher maintenance contractor. An employee who will use a fire extinguisher must be trained on the use and hazards involved with firefighting initially and annually thereafter. Contact your fire extinguisher company for training.
Where the employer has established and implemented a written fire safety policy which requires the immediate and total evacuation of employees from the workplace upon the sounding of a fire alarm signal and which includes an emergency action plan and a fire prevention plan which meet the requirements of 29 CFR 1910.38 and 29 CFR 1910.39 respectively, and when extinguishers are not available in the workplace, the employer is exempt from all requirements of this section unless a specific standard in part 1910 requires that a portable fire extinguisher be provided.

Chabot College Emergency Procedures for Fire:

1. Alert others in the immediate area
2. Close the door and windows to the room where the fire is located
3. Sound building fire alarm
4. Call 911 to report the fire
5. Evacuate the building quickly and in an orderly manner when the fire alarm sounds. Use the nearest exit and go to a location at least 150 feet from the building
   a. Do no use elevators for evacuation
   b. Close room doors as you are leaving
   c. Assist the injured
   d. Assist the disabled
6. Notify Emergency Response Teams on the scene if you suspect someone may be trapped inside the building
7. Do not return to the building until cleared to do so

No laboratory employees are required to fight a fire, large or small. Lab personnel who are not trained in the use of fire extinguishers should never attempt to use one.

Campus police are trained and qualified to use fire extinguishers.

Blankets

Laboratory personnel are discouraged from using fire safety blankets as a means to extinguish a fire. If safe, pull victims out of harm’s way. Fire safety blankets should be used as a means to keep shock victims warm.

Sand/Absorbent Material

Designed for fast and easy extinguishing of small fires in the laboratory. These materials should be stored in a handy dispenser, appropriately labeled and used according to the type of fire.

Sprinklers

Sprinklers are automatically activated. Laboratory workers should not attempt to shut them off. Items in the lab should be stored at least 18 inches from the sprinkler heads. Do not hang items from shower heads. Intense heat should not be used near sprinkler heads.

Alarms

Alarms are designed so that all endangered laboratory personnel are alerted. All employees shall become familiar with the EXACT LOCATION of the fire alarm stations nearest to their laboratory. Employees should close all doors prior to evacuation.