224500  SAFETY SHOWERS AND EYEWASHES

PART 1  GENERAL

1.01  RELATED CORNELL DESIGN AND CONSTRUCTION STANDARDS

A. Section 013010 – Accessibility for People with Disabilities

B. Section 115000 – Laboratory Equipment

C. Section 220500 – Plumbing Basic Materials and Methods

D. Section 230540 – Laboratories

1.02  GENERAL REQUIREMENTS

A. Every Cornell laboratory workplace retrofit or new construction project must follow this standard. Where emergency showers and eyewashes are required, obtain design approval from Cornell's Department of Environmental Health and Safety (EH&S) and Facilities Engineering (FE).

B. Installations must meet the following Codes and Standards:


2. NFPA 70, National Electrical Code (NEC)

3. Building Codes of New York State

4. Occupational Safety and Health Administration (OSHA)

5. ICC/ANSI Standard A117.1 – Accessible and Usable Buildings and Facilities

C. The Consultant shall verify that the system pressure is adequate for the specified devices. New piping or system modifications shall be designed to ensure provision of the required flows at the devices. It is up to the Consultant to ensure that the design provides a complete, and operational system.
1.03 ACCESSIBLE EMERGENCY FIXTURES FOR LABORATORIES

A. Each laboratory, including research and teaching, shall have emergency fixtures that are accessible to people with disabilities in accordance with Chapters 3 of the ICC/ANSI A117.1-2009 and 2010 ADA Standards for Accessible Design.

B. If there is only one sink provided in a laboratory, a deep sink with side approach is generally preferred over using a shallow sink with front approach, which means that a bench top emergency eyewash is not suitable. In this event, it is generally recommended that an accessible combination eyewash/shower unit be provided within the lab.

1.04 DEFINITIONS

A. The following definitions are included in the ANSI Z358.1 Standard, and can be used to assist in choosing units that are allowable on the Cornell campus:

1. Combination Unit: An interconnected assembly of emergency equipment supplied by a single source of flushing fluid.

2. Drench Hose: A supplemental device consisting of a flexible hose connected to a flushing fluid supply and used to provide fluid to irrigate and flush face and body areas.

3. Emergency Shower: A device specifically designed and intended to deliver flushing fluid in sufficient volume to cause that fluid to cascade over the entire body.

4. Eye/Face Wash Equipment: A device used to provide fluid to irrigate and flush both the face and the eyes simultaneously.

5. Eyewash: A device used to provide fluid to irrigate and flush the eyes.

6. Flushing fluid: potable water, preserved water, preserved buffered saline solution or other medically acceptable solution manufactured and labeled in accordance with applicable government regulations.

7. Personal Wash: A supplementary device that supports plumbed and/or self-contained units, by delivering immediate flushing fluid to the eyes or body.
1.05 LOCATION

A. Emergency showers and eyewashes must be located such that they are accessible from any point in the lab or work area and can be reached within 10 seconds. An accessible emergency device shall be installed where a disabled person can access it within 10 seconds of an ADA fume hood.

B. Emergency showers and eyewashes must be in a location that is highly visible, well lit, and have a sign that is positioned such that it can be easily identified.

C. Emergency showers and eyewashes must not be located directly over or within 36-inches on either side of electric power sources such as outlets, switches, data ports, telephones, thermostats, or power supply panels.

D. It is not required that the shower be located near a floor drain.

E. A door is considered an obstruction. Where the hazard is corrosive, one door is permissible so long as it opens in the direction of travel and does not have a locking mechanism impeding access. For accessible labs, travel through a door is not recommended.

F. The eyewash should be located on a sink or be piped to drain.

1.06 PLUMBING CONNECTIONS

A. All new installations must be supplied with tempered water. Tempered water is anywhere between 60°F and 100°F, with the ideal temperature being set at 85°F.

B. The tempered water service to emergency showers must have a shut off valve. The valve must be accessible with a 6-foot ladder to provide shut off capability in order to service the fixture. The shut off valve shall have a removable handle.

C. Domestic cold and hot water lines to eyewashes and showers will be insulated to meet Cornell Standards. Provide PVC jacketing on exposed piping subject to damage.

D. Strainers are recommended in the hot and cold water lines ahead of tempering valves and eyewashes or showers.
PART 2 PRODUCTS

2.01 PREFERRED MANUFACTURERS

A. Emergency Showers and Eyewashes:
   1. Bradley
   2. Encon
   3. Watersaver

B. Thermostatic Mixing Valves:
   1. Bradley
   2. Encon
   3. Lawler

2.02 EMERGENCY SHOWERS

A. A plumbed emergency shower is required in a workplace where a risk assessment indicates the potential for significant skin exposure to concentrated corrosives (acids and bases), cleaners, disinfectants, or other chemicals or substances that could be injurious to the eyes or skin. During renovations, existing emergency showers must be upgraded to meet current standards.

B. Emergency showers shall meet the following requirements:
   1. Constructed of stainless steel or high impact plastic.
   2. The shower must deliver a minimum of 20 gallons per minute for 15 minutes.
   3. The shower head shall be installed between 82-inches and 96-inches above the finished floor.
   4. The center of the water spray pattern shall be at least 16-inches from any obstructions.
   5. The water pattern must be at least 20-inches in diameter when measured at 60-inches above the finished floor, and shall have the flushing fluid dispersed throughout the entire pattern.
   6. The stay-open activation valve shall open in one second or less, and shall remain on without requiring the further use of the operator’s hands. It shall remain activated until manually shutoff.
7. The activation pull must be located out of the normal pathway in the room. For standard emergency showers, the activation pull shall not be more than 69-inches above the finished floor; for ADA emergency showers, the activation pull shall not be more than 48-inches above the finished floor.

2.03 EMERGENCY EYEWASHES

A. A plumbed eyewash is required in a workplace wherever persons are subject to exposure to concentrated corrosives (acids and bases), cleaners, disinfectants, or other chemicals or substances that could be injurious to the eyes. During renovations, existing emergency eyewashes must be upgraded to meet current standards.

B. Allowable Devices:

1. Sink mounted, swing-a-way eyewashes, free standing eyewashes, and combination emergency shower/eyewash units are preferred in lab applications.

2. Faucet mounted eyewashes are not acceptable devices for new installations or renovations.

3. If drench hoses are required by the program, they must meet the performance requirements of an eyewash.

4. Hand held eyewash bottles are considered as supplemental equipment and will not be accepted as the sole means of an eyewash installation within a workspace. The use of these devices must be approved by EH&S and Facilities Engineering on a case by case basis.

C. Emergency eyewashes, and eye/face washes shall meet the following requirements:

1. Constructed of stainless steel or high impact plastic.

2. The eyewash equipment must deliver a minimum of 0.4 gallons per minute for 15 minutes.
3. For standard freestanding eyewashes, the nozzles should be positioned between 33 and 45-inches above the finished floor; and for ADA eyewashes, the nozzles should be positioned between 33 and 36-inches above the finished floor. A minimum of 6-inches shall be provided from the wall or nearest obstruction. The nozzles must be easily accessible to the operator with no obstructions.

4. The eyewash must be installed with sufficient space to allow the user to hold their eyelids open with both hands while the eyes are being rinsed.

5. Nozzles shall be protected from airborne contaminants with caps.

6. The spray pattern of eyewash and eye/face wash equipment shall conform to the relevant section in the ANSI Standard using an eyewash test gauge.