

Section 1.2 EMERGENCY EYEWASH AND SAFETY SHOWER EQUIPMENT**TABLE OF CONTENTS**

	<u>Page</u>
A. Regulations, Standards and References	1.2-2
B. Scope	1.2-2
C. Applications	1.2-3
D. General Location	1.2-3
E. Eyewash Requirements	1.2-5
F. Deluge Shower Requirements	1.2-5
G. Testing	1.2-7
H. Approved Equipment	1.2-7

A. Regulations, Standards and References***Regulations:***

California Code of Regulations (CCR), Title 8, General Industry Safety Orders
Section 5162, Emergency Eyewash and Shower Equipment

California Code of Regulations, Title 8, General Industry Safety Orders
Section 5217(i), Formaldehyde Hygiene Protection

Standards and References:

American National Standards Institute (ANSI), Z358.1
Emergency Eyewash and Shower Equipment

National Fire Protection Association
Health Care Facilities, Handbook 99, Chapter 10-6, Emergency Shower

The CalDAG – California Disable Accessibility Guidebook

B. Scope

This Guide presents the minimum performance requirements for eyewash and shower equipment for the emergency treatment of the eyes or body of a person exposed to injurious materials. It covers the following types of equipment: emergency showers, eyewash equipment, and combination shower and eyewash or eye/face wash.

- 1. A plumbed eyewash shall be provided for all work areas where, during normal operations or foreseeable emergencies, the eyes of an employee may come into contact with a substance which can cause corrosion, severe irritation, or is toxic by skin absorption. Drench hoses, sink faucets, or showers are not acceptable eyewash facilities. A plumbed eyewash shall be provided at all work areas where formaldehyde solutions in concentrations greater than or equal to 0.1% are handled.**

CCR, Title 8, Section 5162(a)
CCR, Title 8, Section 5217(i)(3)
NFPA 99 Chapter 10-6

An eyewash safety station should be installed within all acid washing areas. An eyewash safety station should be installed in N₂ dispensing stations and film processing areas using chemical developers and fixers.

- 2. An emergency shower shall be provided for all work areas where, during normal operations or foreseeable emergencies, areas of the body may come into contact with a substance which is corrosive, severely irritating to the skin or is toxic by skin absorption. A deluge shower shall be provided at all work areas where formaldehyde solutions in concentrations greater than or equal to 1% are handled.**

CCR, Title 8, Section 5162(b)
CCR, Title 8, Section 5217(i)(2)
NFPA 99 Chapter 10-6

A deluge shower should be installed within all acid washing areas. A deluge shower should be installed in N₂ dispensing stations and film processing areas using chemical developers and fixers.

C. Applications

Where the eyes or body of any person may be exposed to injurious or corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. These situations include:

- Areas where corrosive or injurious chemicals are used, such as:
 - Solutions of inorganic or organic acids or bases with a pH of 2.0 or less, or 12.5 or more,
 - Other organic or inorganic materials that are corrosive or irritating to eyes or skin (e.g., methylene chloride, phenol, or)
 - Organic or inorganic materials that are significantly toxic by skin absorption (e.g., phenol),
- Areas where corrosive chemicals are used in a closed system that can catastrophically fail and cause the chemicals to leak (i.e., liquid lead-acid battery charging areas, or areas where pressurized systems with corrosive liquids are used),
- Storage areas where breakable containers of injurious or corrosive materials (1 gal or more) are handled outside their original shipping cartons,
- Waste accumulation areas that could contain corrosive waste materials,
- All work areas where formaldehyde solutions in concentrations greater than or equal to 0.1% are handled, and
- Areas where operations involve the use of air or water reactive liquids or solids.

[29 CFR 1910.151](#)
[8 CCR 5162](#)
[22 CCR 66261.22](#)

D. General Location

➤ *Where to Install*

1. **Emergency eyewash facilities and deluge showers shall be in unobstructed and accessible locations that require no more than 10 seconds for the injured person to reach along an unobstructed pathway (i.e., no doors without panic bars or which don't swing open when pushed). If both eyewash and shower are needed, they shall be located so that both can be used at the same time by one person.**

CCR, Title 8, Section 5162(c)

ANSI Z358.1, 4.6.1 and 5.4.4
NFPA 99, Chapter 10-6

2. **American with Disabilities Act (ADA) Emergency Eyewash/Showers: Install an emergency eyewash/shower so that a disabled person can access it within 10 seconds of an ADA fumehood (minimally one ADA hood per laboratory floor). These emergency eyewash/showers must provide appropriate accessibility (e.g., activation of controls and height of eyecups) to individuals in wheelchairs.**

The CalDAG – California Disabled Accessibility Guidebook.

The location of at least one ADA hood per floor will enable disabled individuals to conduct their research without having to transport chemicals, etc. in elevators. Fume hoods are assumed to contain substances which are "corrosive or severely irritating to the skin or are toxic by skin absorption," hence the need for emergency eyewash/shower stations.

➤ **Signage**

3. **Emergency eyewash and shower locations shall be identified with a highly visible sign. The areas around the eyewash or shower shall be well lighted and highly visible.**

CCR, Title 8, Section 5162(a-b)
ANSI Z358.1, 4.6
ANSI Z358.1, 5.4.5

4. **Whenever possible, the floor immediately beneath the eyewash and emergency shower, and to a radius of between about 12-30 inches, shall be a distinctive pattern and color to facilitate promoting a clear path of access.**

Good Practice per Stanford University EH&S

➤ **Prohibitions Around Equipment**

5. **No obstructions, protrusions, or sharp objects shall be located within 16 inches from the center of the spray pattern of the emergency shower facility.**

CCR, Title 8, Section 5162(c)
ANSI Z358.1

6. **Electrical apparatus, telephones, thermostats, or power outlets should not be located within 18 inches of either side of the emergency shower or emergency eyewash facility (i.e., a 36-inch clearance zone).**

Good Practice per Stanford University EH&S

Prevent potential electrical hazards posed when the water generated by the activated emergency eyewash/safety shower is in proximity to live electrical equipment.

E. Eyewash Requirements

➤ *Flushing Rates*

1. **A means shall be provided to ensure that a controlled flow of flushing fluid is provided to both eyes simultaneously.**

CCR, Title 8, Section 5162(a)
ANSI Z358.1, 5.1.1

2. **Eyewash equipment shall be capable of delivering to the eyes not less than 0.4 gallons per minute of flushing fluid for 15 minutes.**

CCR, Title 8, Section 5162

➤ *Eyewash Positioning*

3. **The eyewash unit shall be positioned with the water nozzles 33-45 inches from the floor and 6 inches minimum from the wall or nearest obstruction. The unit must be located at an operable sink.**

CCR, Title 8, Section 5162(a)
ANSI Z358.1, 5.4.1

➤ *Equipment Activation*

4. **The valve shall be designed so that the flushing fluid remains on without requiring the use of the operator's hands. The valve shall be designed to remain activated until intentionally shut off.**

CCR, Title 8, Section 5162(d)
ANSI Z358.1, 5.2 (a)
ANSI Z358.1, 5.1.5

➤ *Eyewash Equipment Protection*

5. **Nozzles shall be protected from airborne contaminants. The removal of the nozzle protection shall not require a separate motion by the operator when activating the unit.**

CCR, Title 8, Section 5162(a)
ANSI Z358.1, 5.1.3

F. Deluge Shower Requirements

➤ *Deluge Shower Positioning*

1. **The emergency shower location must have a level surface beneath the shower head.**

Good Practice per Stanford University EH&S

Having a level surface will prevent the users from tripping while trying to access and use the emergency shower.

2. **Emergency shower heads shall be designed so that a flushing fluid column is**

provided that is not less than 82 inches and not more than 96 inches in height from the surface on which the user stands.

CCR, Title 8, Section 5162(b)
ANSI Z358.1, 4.1

- 3. The shower head should not be mounted flush or recessed within any constructed surfaces or partitions and the center of the spray pattern shall be located at least 16 inches from any obstruction.**

Good Practice per Stanford University EH&S
ANSI Z358.1, 4.1

Recessing the shower head may limit access and/ or affect spray pattern.

- 4. The spray pattern shall have a minimum diameter of 20 inches at 60 inches above the surface on which the user stands**

CCR, Title 8, Section 5162(b)
ANSI Z358.1, 4.1

➤ **Flushing Rates**

- 5. Emergency shower heads shall be capable of delivering a minimum of 75.7 liters per minute (20 gpm) of flushing fluid.**

CCR, Title 8, Section 5162(b)
ANSI Z358.1, 4.1

- 6. The shower should be attached to a flushing fluid supply from a 1-inch minimum iron pipe size (IPS).**

Good Practice (based on ANSI manufacturer's test procedures)

➤ **Equipment Activation**

- 7. The valve shall be designed so that the flushing fluid remains on without requiring the use of the operator's hands. The valve shall be designed to remain activated until intentionally shut off.**

CCR, Title 8, Section 5162(d)
ANSI Z358.1, 4.2

- 8. The manual actuator, triangle pull, shall be located not more than 69 inches above the surface on which the user stands. The manual actuator shall be free from obstruction for 18 to 24 inches in all directions. The actuator shall not be mounted flush or recessed within any constructed surfaces or partitions.**

CCR, Title 8, Section 5162(b)
ANSI Z358.1, 4.3

➤ **Design for Maintenance/Use**

9. **The water supply to showers and/or shower/eyewash combination units should be controlled by a ball-type shutoff valve which is visible and accessible to shower testing personnel in the event of leaking or failed shower head valves.**

Good Practice per Stanford EH&S

This design will make maintenance easier.

10. **Any floor drain which may be in service during safety shower use shall be installed with a temporary plug which remains closed except when the shower is in use, or if protected from spills by a covered sump or berm system.**

P.A. Ordinance, 16.09.032(b)(1)(B)

G. Testing

1. **Proper operation of the equipment must be demonstrated by the contractor installing the emergency eyewash or shower equipment prior to project closeout and facility occupation. Tags to allow monthly testing records to be kept shall be affixed to the showers and eyewash fountains.**

Good Practice per Stanford University

By testing the equipment, Stanford can be assured that it is working properly before the users begin their research.

H. Approved Equipment

1. **All emergency showers and eyewash facilities shall meet the requirements of CCR Title 8, Section 5162, NFPA 99 Chapter 10, and ANSI Z358.1 and shall be installed in accordance with ANSI Z358.1.**

8 CCR 5125
NFPA 99, Chapter 10
ANSI Z358.1