

## LOYOLA UNIVERSITY CHICAGO EMERGENCY EYEWASH STATION AND SAFETY SHOWER GUIDELINES

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### **PURPOSE:**

To ensure emergency eyewash stations and safety showers provide clean, potable water and are in proper working condition.

### **REGULATORY:**

Occupational Safety and Health Administration (OSHA) 29 CFR 1910.151(c)  
Medical services and first aid

American National Standards Institute (ANSI) Standard Z358.1-2014 (R 2020)  
American National Standard for Emergency Eyewash and Shower Equipment

### **DEFINITIONS:**

**Eye Wash or Eye/Face Wash:** A device specifically designed and intended to deliver potable water in sufficient volume to cause the fluid to flush the eyes and/or the eyes and face simultaneously.

**Flow Pressure:** The pressure in the water supply pipe near the water outlet while the faucet or outlet is fully open.

**Hazardous Material:** Any substance or compound that has the capability of producing adverse effects on the health and safety of humans.

**Potable Water:** Water that is suitable for drinking.

**Safety Shower:** A device specifically designed and intended to deliver potable water in sufficient volume to cause that fluid to cascade over the entire body.

### **REGULATORY REQUIREMENTS:**

OSHA 29 CFR 1910.151(c) focuses on emergency showers and eye wash stations specifically by addressing the need for facilities to enable workers to flush themselves of corrosive materials. The regulation states, "Where the eyes or body of any person may be exposed to injurious 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."

### **INSTALLATION:**

To meet the ANSI requirements, the following criteria must be met regarding eyewash stations and/or safety showers:

- The emergency eyewash station and/or safety shower must be within 10 seconds reach from where an accident occurs (approximately 55 feet).
- The emergency safety equipment should also be installed on the same level as a potential hazard. A single step up into an enclosure where the equipment can be accessed is not considered to be an obstruction.

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- The path to the emergency shower and/or eyewash station needs to remain unobstructed in the event that a person's vision is affected.
- The Standard indicates that a door is considered an obstacle. If the hazard is non-corrosive, one door can be present as long as it opens in the same direction of travel as the person requiring the use of the eyewash and/or safety shower unit.
- Emergency safety equipment must be placed in a clearly visible and well-lit area with a highly visible sign.
- Safety showers shall be designed, manufactured, and installed in such a manner that, once activated, they can be used without requiring the use of the operator's hands. Units which combine a shower and eyewash unit must accommodate simultaneous use (both the eyewash and shower must be fully operable at the same time to properly flush the skin and eyes).
- Plumbed emergency equipment must be connected to a potable water supply.
- Eyewashes shall be capable of delivering flushing fluid to the eyes not less than 1.5 liters/minute (0.4gpm) at 30 PSI for 15 minutes. Shut-off valves must prevent unauthorized shut-off. Where shut-off valves are installed on the supply line provisions must be in place to prevent unauthorized shut-off. Lock-out tag-out devices are the most common method to secure shut-off valves.

Nozzles and flushing fluid units shall be protected from airborne contaminants. Whatever means is used to afford such protection, its removal shall not require a separate motion by the operator when activating the unit.

Eyewashes shall be constructed of materials that will not corrode in the presence of the flushing fluid.

### **FLOW RATE AND OPERATION:**

#### **Emergency Eye/Face Wash:**

- Emergency eye/face washes must deliver at least 3.0 US gallons (11.4 liters) per minute for 15 minutes at 30 PSI to ensure a thorough decontamination. Minimum flow for plumbed and portable eyewash units is 0.4 gallons per minute at a flow pressure of 30 pounds per square inch (PSI).
- Eye/face wash units must be capable of being activated in 1 second or less and stay open until it is manually closed.
- The flow from the nozzles needs to be sufficiently high to allow the user to hold their eyes open while rinsing. The velocity of the water flow must be strong enough to enable the user to completely rinse their eyes and face without injury.
- Dust protection caps must be installed to protect the eye/face wash units from contaminants.

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- Flushing fluids must be delivered to both eyes simultaneously.
- Temperature of the flushing fluid must be between 60 degrees Fahrenheit (60F) and 100 degrees Fahrenheit (100F). Temperatures that exceed this range can scald the injured person and cause a higher rate of chemical absorption by the skin. Lower temperatures can lead to hypothermia or thermal shock. The affected person is less likely to remove their contaminated clothing in cold water, thus prolonging exposure to the chemical substance.
- Spray heads must be positioned between 33 inches and 45 inches from the floor and at least 6 inches from the wall or nearest obstruction. Clear the area at least 30 inches around the eye/face wash station to enable comfortable use and movement.
- Even with impaired vision, eyewash stations must be easy to access and operate. The control valves must switch from 'off' to 'on' in one second or less. These valves should be designed so the flushing flow remains on without the use of the operator's hands.
- The recommended supply pipe size is ½ inch (1.27 cm) iron pipe size (IPS) for eyewash stations and eye/face wash stations. The recommended incoming supply pipe size is 1 inch (2.54 cm) iron pipe size (IPS) for drench showers. The recommended incoming supply pipe size is 1 ¼ inch (3.175 cm) iron pipe size (IPS) for combination eyewash drench showers.

All water supply lines must be provided to meet the ANSI minimum flow requirements at 30-90 PSI.

- The Standard indicates that a drench hose may supplement but may not be used in place of dedicated eyewash stations.

**See Appendix A for additional information.**

### **Personal Wash Units/Bottled Eyewash:**

- These are considered supplemental equipment only and not an alternative for a 15-minute flushing station.
- They do not meet ANSI's requirements for eyewash and/or shower stations and should not be used as an alternative to a plumbed or self-contained 15-minute flushing station.
- A personal wash unit may be kept in the immediate vicinity of employees working in a potentially hazardous area. The main purpose of these units is to supply immediate flushing. After initial flushing, the injured individual must proceed to a plumbed or self-contained eyewash and flush the eyes for the required 15-minute period to ensure complete flushing of contaminants.

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### **Safety Shower:**

- Safety showers must flow at a minimum rate of 20 US gallons (76 liters) at a flow pressure of 30 PSI of potable water per minute for 15 minutes to ensure enough time to remove contaminated clothing and rinse any chemical residue.
- Must be capable of being activated in 1 second or less and stay open until manually closed.
- After the pull-rod is pulled to activate the shower unit, the shower unit must remain active without requiring further use of the operator's hands.
- Temperature of the flushing fluid must be between 60F and 100F.
- The shower pull-rod must be installed not more than 69 inches from the floor.
- The shower spray head must be positioned between 82 inches and 96 inches from the floor. The diameter of the water spray-pattern must be 20 inches in diameter at 60 inches above the floor. The center of the spray pattern must be at least 16 inches away from any obstruction.
- Even with impaired vision, safety showers must be easy to access and operate. The control valves must switch the safety shower from 'off' to 'on' in one second or less. These valves should be designed so the flushing flow remains on without the use of the operator's hands.
- If provided, the shower enclosure shall have a minimum diameter of 34 inches.

**See Appendix A for additional information.**

### **TRAINING:**

Per section 4.6.4 of the ANSI Standard, "all students, faculty, and staff who may be exposed to hazardous, particulate, or corrosive materials shall be instructed on the proper operation of emergency eyewash and shower equipment and made aware of the locations of flushing stations."

### **INSPECTIONS:**

The ANSI Standard provides guidance by stating that plumbed emergency eyewash and safety showers should be activated weekly to verify proper operation and inspected annually. Weekly flushing ensures the units are operating properly, helps to keep the units free of clutter, and helps prevent the growth of bacteria within the plumbing lines, which can cause eye infections. If there is a period of time where an area with an eyewash or safety shower is inactive, the weekly flushing may be deemed unnecessary, but must be documented on the inspection sheet/tag provided (with date and initials). All inspections must be documented on the inspection sheet/tag provided (with date and initials).

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It is recommended to allow the water to run for at least 3 minutes. A work order request should be placed immediately for eyewash stations or safety showers which are not operating correctly or are missing parts.

### **Emergency Eyewash Weekly or Annual Inspections:**

1. Ensure that the path to the eyewash is not obstructed.
2. Verify that nozzle caps are in place to prevent contamination and that the nozzles, nozzle caps, and sink are clean and sanitary.
3. Where feasible, place a catch pan or bucket under the unit if a plumbed drain is not available. Any water collected can be emptied at the most convenient location such as a sink, custodial floor sink or a floor drain. (Do not attempt to flush units that will drain onto a wall or directly on the floor)
4. Actuate valve to the full open position. Water must flow within 1 second.
5. Verify that nozzle caps come off when the eyewash is activated.
6. Verify that water continues to flow until manually turned off and can be used without requiring the use of the operator's hands.
7. Look at the flow pattern. It should provide a gentle non-injurious flow. If a dual-stream eyewash, both streams should rise to equal height in a pattern that will flush both eyes simultaneously.
8. Continue to flush until water is clear or approximately 3 minutes whichever is longer.
9. Submit a work order request for any necessary issues/repairs

### **Safety Shower Weekly or Annual Inspections:**

1. Ensure the location of the emergency equipment is well lit and identified with a highly visible sign.
2. Ensure access to the shower is free of obstructions from all areas of the laboratory or hallway.
3. Flush shower for at least 10 seconds or until the water runs clear. Make sure there is a catch basin, drain, or 5-gallon bucket underneath the safety shower to catch all the water.
4. Water should be clear.
5. Evaluate for adequate flow.
6. Ensure the water continues to flow until the pull handle is turned off.
7. Ensure the plumbing free from leakage.
8. Promptly clean up any water that is spilled on the floor as a result of the inspection. Any water collected can be emptied at the most convenient location such as a sink, custodial floor sink or a floor drain.
9. Date and initial the weekly inspection log below.
10. Submit a work order request for any necessary issues/repairs.

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## APPENDIX A

### Emergency Eyewash/Safety Shower Combination



### Eye/Face Wash Stations



### Safety Showers



### Typical Systems in Use

