



## **STANDARD OPERATING PROCEDURE EMERGENCY EYEWASH AND SHOWER EQUIPMENT**



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Accidental chemical exposures can still occur even with good engineering controls, personal protective equipment, and safety precautions. Emergency eye/face washes and showers provide an immediate mechanism to mitigate chemical exposure and further injury by allowing team members a method of decontaminating areas of the body which have been exposed to an injurious material.

## **I. PURPOSE**

The purpose of the standard is intended to provide guidance concerning the minimum performance requirements, use, test procedures, and training of emergency eyewash and shower equipment in accordance with ANSI/ISEA Z358.1-2014.

## **II. SCOPE**

This standard establishes the minimum performance requirements for eye wash and shower equipment for the emergency treatment of the eyes or body of a team member who has been exposed to injurious materials. It covers the following types of equipment: emergency showers, combination showers and eyewashes or eye/face washes.

**A. Plumbed eyewash unit** shall be provided for all work areas where, during normal operations or foreseeable emergencies, the eyes of a team member or visitor may come into contact with any substance which can cause corrosion, severe irritation, or permanent tissue damage or which is toxic by absorption. Drench and water hoses, sink faucets, or showers are not acceptable eyewash facilities. If there is any possibility that an individual's eyes may be splashed with toxic materials such as chemicals or cleaners, the employer shall provide acceptable eyewash facilities within the immediate work area for emergency use.

**B. 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 any substance which can cause corrosion, severe irritation, or permanent tissue damage or which is toxic by absorption.

### III. DEFINITIONS

**American National Standards Institute (ANSI):** Is a non-profit organization that coordinates the standardization and conformity assessment systems in the United States.

**Combination Units:** An interconnected assembly of emergency equipment supplied by a single source of flushing fluid. The unit consists of both the emergency shower and an eye/face wash.

**Drench Hose Units:** A supplemental, hand-held device consisting of a flexible hose connected to a flushing supply and used to provide fluid to irrigate and flush face and body areas.

**Emergency Shower:** A device which delivers flushing fluid that utilizes a valve which remains open during use to enable the user to have water cascading over the entire body while the hands are free.

**Emergency Units or Equipment:** general term for emergency eyewash, eye/face wash, shower, drench hose and combination units.

**Eyewash:** a unit that flushes water specifically to the eyes.

**Eye/Face Wash:** device that flushes both eyes and face.

**Hazardous/Injurious Material:** any substance that could cause corrosion, severe irritation, or permanent tissue damage or is toxic by absorption.

**Plumbed Eyewash:** eyewash unit permanently connected to a source of potable water.

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

**Stay-Open Valve:** a valve that manually opens and closes the emergency units.

**Tepid:** A flushing temperature conducive to promoting a minimum 15-minute irrigation period. A suitable range of 16°-38°C (60-100°F)

**Valve Actuator:** A device connected to the valve to facilitate its operation.

(Note: Self-contained or personal washes will not be addressed in this document)

#### **IV. RESPONSIBILITIES**

##### **A. Department of Safety & Compliance**

- Ensures that each department is aware of their responsibilities under this standard.
- Reviews the standard periodically and updates as necessary.
- Verifies inspection records and locations of all emergency units/equipment.
- Assists with plan review and placement of new equipment during new construction or major renovation.
- Provides consultation and guidance concerning the operations and testing of eyewash units to Principal Investigators and Supervisors.

##### **B. Facilities Management**

- Performs inspections, monthly flushing test and annual flow test of emergency eye/face wash and safety shower equipment.
- Maintains accurate record of locations of all emergency eyewash and shower stations.
- Provides equipment and protocols required to perform testing and flushing of eyewash, shower, combination eyewash shower units.
- Ensures that inspections and activations are recorded on inspection tags.
- Coordinates immediate modifications, maintenance, repair, and replacement of equipment as deemed necessary to meet current standards.

- Informs Department of Safety & Compliance of any new installations and current repair status of existing equipment.

### **C. Site Safety Officer**

Each has the following responsibility under this standard to:

- Ensure that any individual under the supervisor's authority understand their responsibilities and comply with this standard.
- Ensure that all team members and visitors have received instruction in the proper use and operation of the emergency unit/equipment provided for the area.
- Ensure that procedures, equipment, and materials appropriate for the specific work locations are provided to protect the health and safety of all team members.
- Prior to assigning work involving the potential for hazardous materials to splash onto the skin or into the eyes, the Site Safety Officer must verify that:
  - o Emergency Units/Equipment i.e.-Emergency showers, eyewash equipment, eye/face wash equipment, or combination shower and eyewash or eye/face wash equipment are provided in the workplace and are accessible and operable.
  - o All shut-off valves between the sanitary water supply and the eyewash and/or safety shower are secured in the open position.
  - o Any individual working in the area is comfortable with their use.
- Performs and or assigns monthly testing and documentation of plumbed eyewash units for their areas.
- Routes to the shower/eyewash station and the area around the equipment are kept clear.
- Promptly submit a work order to Facilities Management when any unit is not functioning properly. Clearly tag the unit- "DO NOT USE"-Out of Service.

### **D. Team Members**

Each Team Member is responsible for knowing the following when working in an area where emergency units/equipment is required:

- How to properly use emergency units/equipment.
- The location of the nearest emergency units/equipment.
- The routes to the emergency units/equipment and the area around them are kept clear of obstructions at all times.
- The equipment is operable and has passed the required inspection/maintenance test.
- When any unit is not functioning properly notify the supervisor immediately and clearly tag the unit- "DO NOT USE"-Out of Service.

## **V.APPLICATIONS**

Where the eyes or body of any person may be exposed to hazardous, injurious, or corrosive materials, suitable emergency units or equipment for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. Some area examples would be:

- Where corrosive or injurious chemicals are used, such as:
  - o Solutions of inorganic/organic acids or bases with a pH of 2.0 or less, or 12.5 or more,
  - o Other organic or inorganic materials that is corrosive or irritating to eyes or skin.
  - o Organic or inorganic materials that is significantly toxic by skin absorption.
- Areas where operations involve the use of air or water reactive liquids or solids.
- Other materials to include irritants, sensitizers, carcinogens, highly toxic materials.
- 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.
- Where cryogenic materials are dispensed.
- Areas where corrosive chemicals are used in a closed or pressurized systems that can catastrophically fail and cause the chemicals to leak.

## **VI. GENERAL REQUIREMENTS**

- Emergency units shall be located in immediately accessible locations that require no more than 10 seconds (approximately 25 feet) for the injured person to reach along unobstructed pathways within the work area and where the user shall not have to pass through a door to reach the unit. The unit should be mounted between **33 and 52 inches** above the floor. There should be no other items below or above the unit.
- Emergency unit shall be identified with a highly visible sign in well lighted area.
- The area around the emergency units shall be clear, unobstructed and have no items hanging on them. The unit should not be mounted above or below any other object.
- There shall be no sharp projections anywhere in the operating area of the unit.
- The valve actuator shall be designed so that the water flow remains in the on position without the use of the operator's hands and must remain open until manually shut off. The valve shall be large enough to be easily located and operated by the user.
- Any electrical apparatus, telephone and thermostats should not be located within 18 inches of the units. Where electrical outlets are necessary, they must be protected by ground fault circuit interrupters.
- The eyewash and eyewash/face equipment shall be located to provide enough room to allow the eyelids to be held open with the hands while the eyes are in the water stream.
- Emergency eyewash equipment shall ensure that a controlled flow of potable tepid water (Drinking Water) is provided to both eyes simultaneously at a velocity low enough not to be injurious to the user.

## **VII. OPERATIONS AND PROCEDURES**

The American National Standards Institute (ANSI) Standard for Emergency Eyewash and Shower Equipment (ANSI Z358.1-2014) recommends that the affected body part must be flushed immediately and thoroughly for at least 15 minutes using a large supply of clean fluid under low pressure. Water does not neutralize contaminants -- it only dilutes and washes them away.

Begin flushing as quickly as possible after the eye comes in contact with a harmful substance as the first 10 seconds are critical. Toxic substances, when coming in contact with the eye, immediately begin to damage sensitive eye tissues. The longer they remain in contact, the greater the damage to the eye. Besides tissue damage, acids and alkali can change the pH in the

eye itself. When the pH of the eye begins to get out of the narrow tolerable range, severe eye damage, including blindness, may result.

However, other references recommend a minimum 20-minute flushing period if the nature of the contaminant is not known. The flushing or rinsing time can be modified if the identity and properties of the chemical are known. For example:

- A minimum 5-minute flushing time is recommended for mildly irritating chemicals,
- At least 20 minutes for moderate-to-severe irritants,
- 20 minutes for non-penetrating corrosives, and
- At least 60 minutes for penetrating corrosives.

Non-penetrating corrosives are chemicals which react with human tissue to form a protective layer which limits the extent of damage. Most acids are non-penetrating corrosives. Penetrating corrosives, such as most alkalis, hydrofluoric acid and phenol, enter the skin or eyes deeply. Penetrating corrosives require longer water flushing (a minimum of 60 minutes) than nonpenetrating corrosives (a minimum of 20 minutes). In all cases, if irritation persists, repeat the flushing procedure. It is important to get medical attention as soon as possible after first aid has been given. A physician familiar with procedures for treating chemical contamination of the eyes and body should be consulted.

#### **General checklist to use for chemical exposures**

- In case of chemical exposure, flush skin or eyes with cool water for at least 15 minutes-or more and if possible until medical assistance arrives. DO NOT RUB!
- Contact 911 in order to get medical assistance as soon as possible. Provide Safety Data Sheets (SDSs) to medical personnel.
- Know the effects of chemicals with which you are working. Read, ask questions about, and understand SDSs for each chemical with which you work.
- Always wear personal protective equipment to include eye, face, body, and foot protection.
- Learn the location and use of all emergency equipment, even if you are working in a new area for only a brief time.
- Know how to help others reach showers or eyewashes and how to help them get medical assistance.

- Hold your eyes open with your hands while using eyewash to be sure water reaches the eyes.
- While assisting injured person provide clean cover for privacy while removing contaminated clothing after the shower has been activated.
- Immediately wash off even small amounts of chemicals.
- Notify supervisor as soon as emergency has subsided.
- Supervisor should immediately notify the Safety & Compliance Director and/or Safety & Compliance Manager.

### **VIII. Testing**

Eyewashes should be activated monthly for a period long enough to verify operation and ensure that flushing fluid is available and clean. This flushing helps clean out any rust, scale deposits, or bacteria that may accumulate and cause additional eye injury.

The monthly inspections should include the following:

1. Ensure that access to the eyewash is unobstructed.
2. Visually inspect the eyewash to ensure that there are no broken parts, leakage, etc.
3. Verify that protective eyewash covers are properly positioned, clean, intact, and operate properly when activated.
4. Activate eyewash unit - flush pipes: check that the spouts are clean and that the water flow is effective and continuous. Operate the eyewash for 1 minute.
5. The unit must deliver low-pressure “soft” flow to both eyes so it does not injure the open eyes.
6. Check that the unit’s valve activator remains open without the use of the operator’s hands.
7. Ensure each station has a highly visible emergency sign.
8. Ensure the eye wash unit is securely attached to the mounting hardware
9. Ensure that problems identified during the monthly inspection are reported immediately to either the Regional Safety & Compliance Manager or Regional Safety & Compliance Director.
10. Initial the Monthly Eye Wash Inspection Tag in the appropriate area next to the month/year.

### Eyewash/Shower Monthly Inspection Tag Example:

**ULINE** 5-21108 1-800-295-5510, [uline.com](http://uline.com)

Training Sign in Document

COURSE	Emergency Eyewash/Shower Training	INSTRUCTOR	
LOCATION		DATE	

	PRINTED NAME	SIGNATURE	Position
1			
2			
3			
4			
5			
6			
7			
8			
9			
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11			
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23			

# Safety Showers and Eye Wash Stations from SafetyVideos.com

(copy and paste)

<https://www.youtube.com/watch?v=sMBtU9hXByM>

## Funny But Effective Eyewash (PPE) Training Video

(copy and paste)

<https://www.youtube.com/watch?v=2O95MzSr1rE>

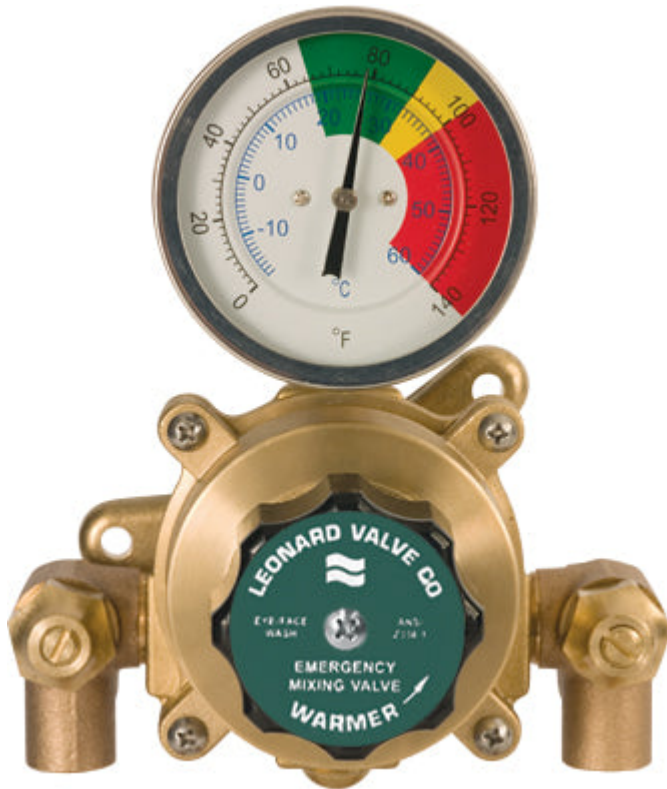
## Eyewash/Shower Inspections

(copy and paste)

<https://www.youtube.com/watch?v=A0IRufHcC5Q>

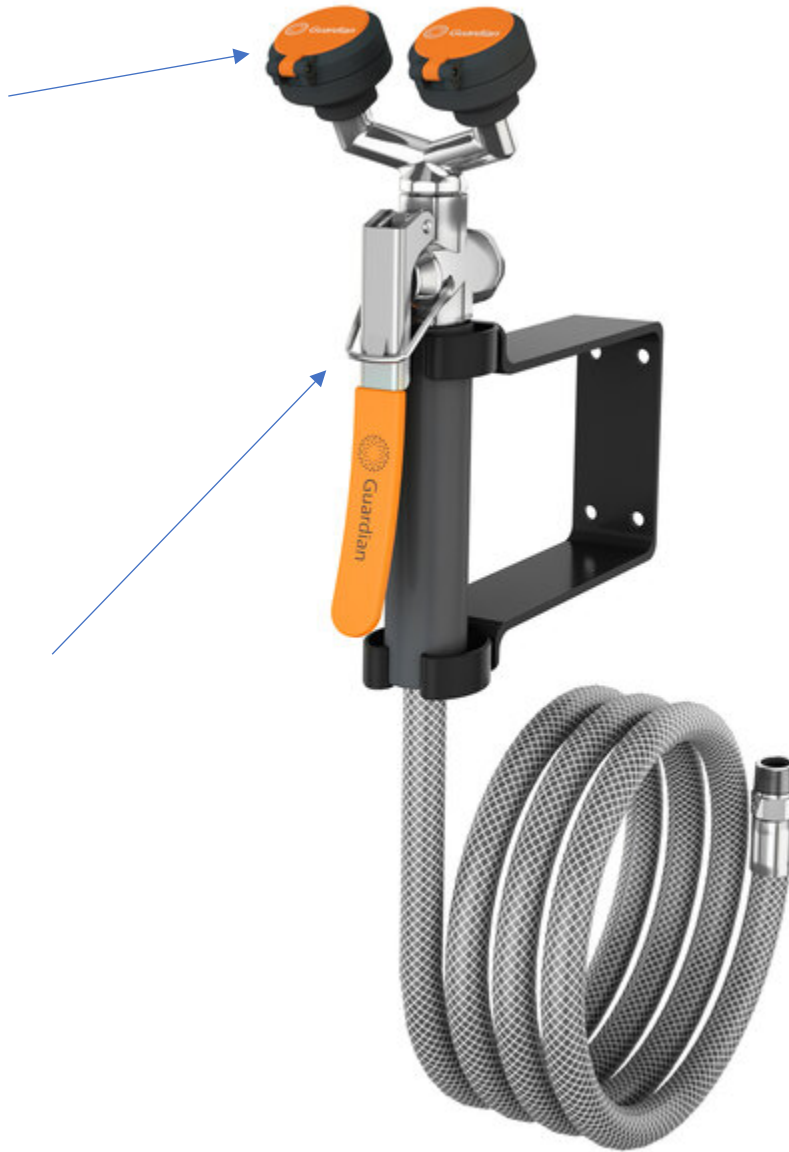
## What is an eye wash tempering valve?

**“Emergency Tempering Valves** thermostatically blend hot and cold water to deliver tepid water to emergency fixtures like drench showers, eye wash, face wash, or combinations. These valves quickly compensate for temperature variations due to changes in inlet temperature or pressure.”



**\*These valves are normally seen in colder climates where normal ambient temperatures interfere with keeping the eye wash/shower water between 60 and 100 degrees Fahrenheit.**

**IX. Attachments/Additional Information: Guardian Eyewash/Drench Hose (recommended)**



Arrows point to the dust covers on the eye wash ports as well as the locking lever to lock the system open for continuous flow of water.

# User Guide: How to Use an Emergency Eye Wash Station



## How to Use an Eyewash Station in an Emergency

In an emergency scenario, an **eyewash station** can save your sight - if it's properly used. Such accidents are fortunately very rare, but it's paramount that you and your colleagues are prepared **should the worst happen**. Read on to find out how to use an emergency eye wash unit the right way

### Don't delay

The second a hazardous material enters your eyes, you should make your way to an eyewash station. According to **ANSI regulations**, these should be located no more than a ten-second walk away from any hazard. All safety equipment should also be clearly signposted. Make sure you know the location of relevant safety fixtures before handling any hazardous substances.

Don't hesitate, even if it's only a minor spill - the longer a hazardous substance is in contact with the eye, **the more damage it does**. Even small amounts of contamination can cause serious injury and even permanent loss of vision.

### Activate the unit

Pull/squeeze the activation lever on the eyewash station till it locks in place. In order to be compliant with ANSI regulations, the lever will be clearly marked and operable with a single easy motion. All staff should already have been shown how eyewash stations are activated.

When the lever has been pulled/squeezed, the dust covers will pop open and each of the two eyewash nozzles will begin discharging water.

### Flush out your eyes

Once activated, the eyewash station will continue to discharge water until you manually release the lever, meaning that it can be operated hands-free.

Using your fingers to keep your eyelids open, lower your eyes into the stream of water issuing from the nozzles. Roll your eyes gently up and down and from side to side, ensuring that the water reaches as much of the eyeballs as possible.

### **Contact lenses**

If you wear contacts, gently remove them once you have begun the flushing process. While failing to remove contact lenses can prevent the eye wash from properly irrigating the eyes, it is important not to delay flushing in order to take them out. Only do this once flushing has begun.

### **Keep on flushing**

Continue to use the eyewash station in this manner for a full 15 minutes, and no less. This is the minimum amount of time that it takes to sufficiently clear the eyes of harmful chemicals - if you remove your eyes from the stream before this time has elapsed, you run the risk of permanent injury.

### **After flushing**

When the 15-minute flushing period is over, seek medical assistance immediately. Have a colleague drive you to the accident and emergency department of your local hospital. Do not be tempted to drive yourself, as your vision may be impaired.

**If the Emergency Situation persists, call 911 immediately!!!**

**“Remember to always wear required PPE when performing normal daily tasks”**