

## Best Practices for the Proper Installation and Operation of Safety Shower / Eyewash Systems

### Scope

The scope of this best practice consists of guidelines that a facility could use to develop their own detailed and specific procedures, specifications, or checklists for the safe installation and use of safety shower / eyewash installations. Applicable U.S. regulations include 29 CFR 1910.151(c); the requirements are broadly defined in this standard. OSHA refers the regulated community to the consensus standard ANSI/ISEA Z358.1-2014, although this ANSI standard don't have the force of regulation, it is certainly a best practice. See OSHA Letters of Interpretation [here](#) and [here](#) regarding this ANSI standard. This ANSI standard is recognized and used worldwide. The reader shall be familiar with all applicable codes and regulations.

### Key Points

- Water used shall be potable.
- Maintaining water temperature in the desired range is typically the biggest concern. Consider insulating the water lines to maintain heat in colder months and to protect against solar heating in warmer months.
- Best Practice is to include, as a checklist item, workers locating the nearest safety shower/eyewash stations prior to beginning work.

### **Water Temperature**

Water delivered by the emergency safety equipment should be tepid, between 16-38°C (60-100°F). At temperatures above 38°C (100°F) there is the added danger of scalding and increased damage from harmful chemicals to the skin. Prolonged exposure to water below 16°C (60°F) increases the risk of thermal shock or hypothermia.

Temperature control can be an issue, especially hot water in warmer climates. Potential best practices are listed below.

- Temperature actuated scald protection valves.
- Freeze protection valves to prevent freezing and managing icy areas that may result.
- Electric heat tracing of safety shower / eyewash stations and supply line.
- Circulating water systems to control temperature and water supply.
- Steam/water mixers to maintain minimum temperature in cold months.
- Insulating water lines to retain heat in the colder months and to be protected from solar heating in the warmer months.

### **Location**

Emergency safety equipment should be installed within 10 seconds reach, or about 17 m (55 ft.), and on the same level (i.e., not up or downstairs) as a potential hazard. They must be situated in a prominent position, clearly visible, well-lit, and free from any obstructions. There



should never be more than one door between the worker and the safety shower / eyewash station.

When working in an area where there is no nearby safety shower / eyewash station, best practice is to have a policy to use portable/self-contained stations. Permanent stations should be installed if areas require frequent use of portable stations.

Best Practice is to include, as a checklist item, workers locating the nearest safety shower/eyewash stations prior to beginning work.

### **Water Flow**

Emergency safety showers should deliver a minimum of 76 liters (20 US gallons) per minute of potable water for up to 15 minutes in the required spray pattern. Eye/face wash units should deliver 11.4 liters (3 US gallons) per minute for up to 15 minutes. Eyewash-only units should deliver 1.5 liters (0.4 US gallons) per minute for up to 15 minutes. Water pressure is to be 30-90 psig. Water supply is typically potable water, although other sources may be used as specified by the ANSI standard. Shutoff valves to the units should be secured in the open position.

Best practice, and a requirement in many municipalities, is to have a backflow preventer (special type of check valve) installed on the incoming city water line or at any cross-connection to other non-potable pipelines. These backflow preventers shall be tested by a certified testing company annually or other frequency specified by local regulators.

When potable water outages occur, best practice is to have a procedure in place to suspend certain activities and to use of temporary safety shower/eyewash devices. Note that some of these have water capacity issues.

### **Operation**

Equipment must be both accessible and easy to operate, even if the victim has impaired vision. Both emergency safety showers and eyewashes must be designed so that the valves remain open (flushing flow remains on) without the use of the operator's hands until intentionally closed. The on-off valve must be simple to operate and go from 'off' to 'on' in 1 second or less.

### **Inspection**

Emergency safety equipment must be visually inspected and activated weekly along with an annual service to guarantee reliable and effective operation and conformance with the standard. Test kits that divert water flow to a bucket for easy cleanup are commercially available. Inspections should also include signage and ensuring no obstructions are present. Annual inspections include, among other things, verifying the flow pattern and ensuring there is adequate flow for at least 15 minutes.



## **Training**

Personnel who may be exposed to hazardous materials should be instructed on the safe and proper use of the emergency safety equipment and be advised of their location. This is typically part of general safety training done initially and every one to three years.

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