

SAFETY SHOWERS & EYE WASHES – CORROSIVE LIQUIDS



Introduction

The following information is meant to provide general guidance on key items to consider when locating, installing, and inspecting emergency safety shower and eye wash equipment. In many situations, equipment is installed without properly evaluating its effective uses or hazards that may impede safe use. The information below, though non-inclusive, should provide key items to consider.

The Standard

To better understand the requirements of safety shower and eye wash equipment, a thorough and complete review of the ANSI/ISEA Z0358.1 standard is recommended. The information contained in this document is not inclusive and is intended solely for guidance regarding portions of the standard. Also, it may be beneficial to contact your city, county, and state agencies about conducting a thorough review of your safety shower and eye wash equipment, as there may be additional local or state requirements beyond those found in the ANSI/ISEA Z0358.1 standard.

Location and Number of Safety Showers and Eye Washes

There is significant discussion on properly locating safety shower/eye wash units. ANSI/ISEA Z0358.1 is considered the definitive standard. OSHA requirements, while somewhat non-specific, are also included in 29 CFR1910.

ANSI/ISEA Z0358.1 recommends showers/eye washes to be located within **10 seconds** from the potential exposure point. However, for certain chemicals including highly corrosive chemicals, it recommends they be installed adjacent to the hazard, but situated in a manner such that exposure to the splash hazard or other hazards does not occur while using the safety shower/eye wash equipment.

Placement of Emergency Eye Wash and Shower Equipment

Emergency eye wash stations and showers must be in accessible locations that require no more than **10 seconds to reach**. The safety shower eye/face wash shall be located on the same level as the hazard and the path of travel shall be free of obstructions that may inhibit the immediate use of the equipment.

There are several factors that might influence the location of emergency facilities. It is recognized that the average person covers a distance of **approximately 55 ft. (16.8 m) in 10 seconds** when walking at a normal pace. The physical and emotional state of a potential victim (visually impaired, with some level of discomfort/pain, and possibly in a state of panic) should be considered along with the likelihood of personnel in the immediate area to assist.

The installer should also consider *other potential hazards* that may be adjacent to the path of travel that *might cause further injury*. A single step up into an enclosure where the equipment can be accessed is not considered to be an obstruction. Additionally, installers should allow for adequate overhead clearance to accommodate the presence of cabinets over counter- or faucet-mounted emergency eye washes, so as not to create an additional hazard that could be encountered when using the device.

A door is considered to be an obstruction. When a safety shower and eye wash station is located on the other side of a door, the door should open in the direction of travel in case of emergency. In cases where this is not possible, the door must be kept open during the entire product unloading process.

In situations that might warrant the placement of emergency eye wash and shower equipment close to the hazard, such as exposure to highly corrosive chemicals, the appropriate professional should be contacted for advice on the proper distances. *Equipment should be located adjacent to the hazard, but situated in such a manner that exposure to the splash hazard or other hazards (e.g., exposed electrical conductors) does not occur while using the eye wash.*

Flushing Fluid Temperature

Continuous and timely irrigation of affected tissues for the recommended irrigation period are the principal factors in providing first aid. Providing flushing fluid at temperatures conducive to use for the recommended irrigation period is considered an integral part of providing suitable facilities. Medical recommendations suggest a flushing fluid at tepid temperatures be delivered to affected chemically injured tissue.

The temperature range for tepid flushing fluid is defined as 60 °F to 100 °F (16 °C to 38 °C). Temperatures in excess of 38 °C (100 °F) have proven to be harmful to the eyes and can enhance chemical interaction with the skin and eye tissue. Consideration should be given to the impact of isolated ambient temperature changes.

Temperatures lower than 60 °F (16 °C) are less effective at flushing some chemicals and may require a longer flushing time. This prolonged exposure to cold fluid may lead to the premature cessation of first aid or even hypothermia.

Colder ambient temperature might require an enclosure for added protection. Warmer ambient temperature might require a re-evaluation of the water temperature.

Weekly Activation for Plumbed Emergency Eye Wash and Shower Equipment

The intent of the weekly activation to be conducted on plumbed emergency eye wash and shower equipment is to ensure that there is a flushing fluid supply at the head of the device, to clear the supply line of any sediment build-up that could prevent fluid from being delivered to the head of the device, and to minimize microbial contamination due to stagnant water. The duration of this test is dependent on the volume of water contained in the unit itself and all sections of pipework that do not form part of a constant circulation system (also known as “dead leg” portions). Water in these sections is stagnant until a flow is activated by opening a valve. The goal is to flush out stagnant water in the dead leg completely. Where mixing valves are used, both the hot water and cold water supplies to the valve must be considered.

Identification of Safety Showers and Eye Wash Stations

The safety shower/eye wash units should stand out visually from their surroundings to help in locating them in the event of an exposure to a hazardous chemical, especially to the eyes.

An individual with even minor eye exposure to corrosive liquids (KOH, NaOH, NaOCl, HCl, or H₂SO₄) can have significantly impaired vision at the time of the incident. Therefore, highly contrasting coloring on the eye wash/shower stations can be advantageous to quickly finding the unit for emergency washing.

- A commonly used option to improve visibility is to paint the unit and surrounding area (green or yellow are the colors most people use).
- To additionally improve visibility, reflective paint or tape can be added so there is significant contrast surrounding equipment, piping, buildings, or steelwork.
- Some facilities equip the safety shower/eye wash units with a colored strobe or steady light beacon. Facilities specializing in production or distribution of safety shower and eye wash equipment have options available to aid end use facilities to enhance visibility of the units.

Inspection

Additional considerations should be given to the inspection process aside from the requirement of weekly flushing and annual verifications.

- Units should be verified prior to performing any operational tasks that which may expose persons to potential hazards.
- Reassess surroundings for hazards (e.g., hoses or equipment that may impede accessibility).
- Confirm safety shower and eye wash station are located on same level as potential hazard.

Alarms

An additional safety consideration is to connect safety shower and eye wash units to a visual and audible alarm that sounds when the unit is activated. This alerts others to go to the aid of an injured or disabled person.

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