

MIOSHA Fact Sheet

Eyewashes and Safety Showers

When must eyewashes and safety showers be provided?

Suitable facilities for quick drenching or flushing of the eyes and body must be provided within the work area for immediate emergency use when the eyes or body of any person may be exposed to injurious or corrosive substances.

What is an “injurious substance?”

Injurious substances include certain organic substances; e.g., formaldehyde, methylene chloride, methyl ethyl ketone peroxide [MEKP], phenol, etc. Such substances are not classified as acids (low pH, less than 4) or bases (high pH, greater than 9), but they can still cause severe injury with skin or eye contact.

What is a “corrosive substance?”

Corrosive substances include acids, pH of less than 4.0; and bases (alkaline), pH greater than 9.0. Common acids include sulfuric (vehicle battery acid), hydrochloric (muriatic acid), nitric and phosphoric. Sodium hypochlorite (bleach), sodium hydroxide (caustic soda), and potassium hydroxide are all bases. Some substances may be technically classified as acids or bases, but the actual level of corrosiveness is very low and contact with the eyes or body would not be considered likely to cause injuries. These substances include hand soaps which tend to be bases and acidic food items. For example, vinegar (weak acetic acid), and lemon, lime, and grapefruit juice are all acidic.

What does “suitable facilities” mean?

The terms suitable facilities, appropriate eyewash facilities, and other such terms that appear in various MIOSHA standards/rules, can be met by

following the ANSI (American National Standard Institute) standard for Emergency Eyewash and Shower Equipment (Z358.1 – 2004). MIOSHA’s policy does differ from the ANSI standard regarding the location of the suitable facility. Please see the question on location for this difference. The ANSI standard also provides eyewash/shower specifications, inspection requirements, and other important elements.

Does MIOSHA permit the use of personal use eyewash units in lieu of suitable eyewash facilities?

Personal use eyewash units (e.g., 12 to 16 ounce eyewash bottles) do not meet the criteria of plumbed or self-contained eyewash equipment. These units are only supplemental devices that support plumbed and/or self-contained units by delivering immediate flushing fluid to the eyes or body. MIOSHA will accept their use in two specific situations:

- A suitable emergency eyewash/shower facility must be located in a retail establishment where employees transport liquid-filled batteries, such as automotive batteries, through the establishment. However, a personal use eyewash unit may be used to provide immediate flushing until the employee can reach the eyewash/shower.
- In a similar manner, custodial and housekeeping staff may use a personal eyewash unit when they may be exposed to chemical products that are injurious or corrosive.

In both exceptions stated above, employees must be properly trained in accordance with the Hazard Communication Standard and wear appropriate personal protective equipment.



Auxiliary aids, services and other reasonable accommodations are available upon request to individuals with disabilities.
General Industry Safety and Health Division

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Where does the suitable eyewash/shower have to be located?

The location of the emergency shower and/or eyewash facility shall be determined by the injurious or corrosive nature of the chemical(s). ANSI Z358.1 – 2004 recommends the placement of emergency eye wash/shower equipment dependent upon a time-response basis. However, because this recommendation can create the potential for confusion such as what travel speed is used, MIOSHA's policy is as follows for injurious and corrosive substances:

- 100 feet or less from the hazardous operation:
 - Acidic substances: greater than ($>$) 2 pH or less than or equal to (\leq) 4 pH or;
 - Bases (alkaline/caustic) substances: \geq 9 pH or \leq 11.5 pH.
- 25 feet or less from the hazardous operation:
 - Acidic substances: $\text{pH} \leq 2$ pH or;
 - Bases (alkaline/caustic) substances: $\text{pH} \geq 11.5$.
 - Certain organic materials at concentrations known to cause severe tissue damage (e.g., formaldehyde, methylene chloride, methyl ethyl ketone peroxide [MEKP], phenol).

The location of the shower and/or eyewash facility shall be on the same level as the hazard, easily accessible (no obstacles, closeable doorways, or turns), clearly marked, and well lighted.

Does MIOSHA require testing of such facilities?

MIOSHA standards do not specifically require testing of plumbed emergency eyewashes or safety showers. However, ANSI Z358.1 – 2004 does require the testing of such equipment on a weekly basis. The pertinent point to remember is that such facilities are provided for "emergency use." Facilities that are not routinely tested may not perform per the manufacturer's specifications and deliver uncontaminated water. This can result in the employer failing to provide a "suitable facility" and more importantly leave employees unprotected.

The purpose of testing is to ensure the unit will operate properly and the water is uncontaminated.

Failure to routinely flush the water supply pipe can cause the water to be rust colored, contain sediments, and have microbial growth due to stagnant water.

Self-contained eyewashes do not require routine flow-testing. However, they must be serviced per the manufacturer's guidelines and routinely inspected to ensure proper operation. An important, but often overlooked item is changing of the unit's treated water per the manufacturer's schedule. This action may have to be done as often as every 3 months.

Does MIOSHA require the supply of tempered water at plumbed eyewash and safety showers?

MIOSHA standards do not require any specific temperatures. However, implied in the term "suitable facility" is providing a water temperature that is not too cold or hot. ANSI Z358.1 – 2004 recommends that tepid water (temperatures between 60°-to-100° F) be supplied. Temperatures below 60° F may cause the employee not to use the facility long enough (15-minutes). Temperatures above 100° F may be too hot and enhance chemical interactions with the eyes and skin.

Are there any MIOSHA Standards that specifically require emergency eyewashes and safety showers?

Yes. There are several MIOSHA standards that require the availability of suitable facilities to protect employees. In addition, the first item below is MIOSHA's policy on eyewash/shower equipment.

- [Application of Standards Requiring Emergency Eyewash/Shower Equipment.](#)
- [Act 154, Michigan Occupational Safety and Health Act, General Duty Clause.](#)
- [Part 21, Power Industrial Trucks.](#)
- [Part 78, Storage and Handling of Anhydrous Ammonia.](#)
- [Part 306, Formaldehyde.](#)
- [Part 313, Methylene Chloride.](#)
- [Part 472, Medical Services and First Aid.](#)

- [Part 526, Dipping and Coating Operations.](#)
- [Part 554, Bloodborne Infectious Diseases.](#)
- [Part 621, Health Hazard Control for Specific Equipment and Operations for Construction.](#)

Additional Information

Please visit the MIOSHA website at www.michigan.gov/mioshapublications where additional information may be available; or contact the Consultation, Education & Training Division at (517) 284-7720.