

## Eyewash/Safety Shower Maintenance & Use Instructions

### **Purpose**

To provide information about emergency eyewash and safety shower stations available to students and employees.

### **Scope**

The scope of the procedure is the installation, maintenance, performance, testing, training, and use of emergency eyewashes and safety showers, which are first aid for chemical exposures. For convenience, eyewashes in this procedure will refer to eyewashes and eye/face washes, unless otherwise specified. Eyewash and safety shower stations are installed based on the use of corrosives - materials that may easily damage the eyes, wear away skin, or abrade metal- and may also be used for first aid in exposure to other chemicals or agents that contact the eyes, face, or body. Stations are primarily installed in laboratories, but these are also in areas where bulk corrosive chemicals may be located such as warehouses, workshops, and areas dedicated to chemical storage and use. The procedure applies to plumbed eyewash stations unless otherwise specified.

### **Responsibilities**

#### **A. Environmental Health & Safety (EHS)**

1. EHS will provide safety training and information as required.
2. EHS will perform annual inspections for safety equipment and test as required.

#### **B. Facilities Management (FM)**

1. FM will perform installation, maintenance, and repairs on equipment by request.
2. FM will perform testing as required.

#### **C. Managers & Principal Investigators (Supervisors)**

1. Supervisors will ensure that access to equipment is maintained.
2. Supervisor will provide training to personnel.
3. Supervisors will ensure that equipment is tested by personnel.

#### **D. Personnel**

1. Personnel will perform testing as required.
2. Personnel will receive training on the equipment locations and use methods.
3. Personnel will report equipment issues to FM and EHS.

### **Introduction**

OSHA mandates that suitable facilities for quick flushing of eyes and bodies be available where employees are exposed to injurious corrosive materials. Emergency eyewashes (EW) and safety showers (SS) are dedicated safety devices used to flush the eyes, face, and/or body of an individual in case of emergency only and considered to be a form of first aid. Eyewash and

safety shower fixtures are used to wash away corrosive chemicals, but they may potentially be useful in washing away other chemical hazards such as irritants, toxics, and flammables; biological materials; or physical hazards such as dust, grit, or other particles. They may also provide some comfort for other injuries to the eye/face such as an impact. Eye injuries may lead to temporary or permanent damage, so it is beneficial to use an eyewash and have availability to the unit as soon as possible.

On campus, there are plumbed and portable stations for eyewashes/safety showers. Plumbed units that are permanently installed in the facility, attached to fixtures or are directly piped for water service are primary stations. A unit that uses portable bottles of flushing fluid which may have a fixed holder in a facility or the unit itself being portable is considered a secondary station. A secondary station must be supported by assisting an individual to a primary station nearby as it may have a limited supply of flushing liquid and flushing must be done continuously for a minimum of fifteen (15) minutes.

There are several types of plumbed EW/SS installed on campus: deck-mounted/sink-mounted (EW); faucet-mounted (EW); pedestal-mounted (EW/SS); and wall-mounted, fixed or recessed/pull-down (EW/SS). Locations will have different EW/SS based on need, space, and plumbing capabilities. The device may be installed as a separate eyewash or shower, or they may be installed as a combination unit that is designed to have the fixtures work simultaneously, but each is able to work independently. Drench hoses may also be classified in this category of first aid, but they are supplemental to eyewashes and safety showers. To briefly differentiate between eyewashes and eye/face washes, the latter provides the benefit of flushing additional space beyond the eyes, which is helpful as there may be a higher likelihood of hazards contacting the face beyond the eye.

EW/SS stations must be kept in good repair, clean, accessible, and able to provide flushing fluid free of contamination. The stations should be highly visible with signage, be understood how to use, and personnel should be informed of their location(s) within the workplace. Each unit must be checked periodically or if plumbed, tested/flushed on a weekly basis, and inspected on an annual basis per ANSI Standard. This is completed to ensure that the units can provide adequate first aid in case of emergency and not hinder recovery.

## **Procedure**

### **A. Installation & Performance**

#### **1. Fluid Requirements**

- a) Only clean, potable water, saline solution, or other flushing solution treated with bacteriostatic preservative may be used for flushing.
- b) Fixtures should deliver tepid flushing fluid (60-100 degrees Fahrenheit).
- c) Fixtures should deliver fluid at 30 psi.
- d) An eyewash must have a minimum flow rate of 0.4 gallons per minute (gpm), an eye/face wash must have a minimum of 3.0 gpm; and a shower must deliver a minimum of 20 gpm, and a water column 20 inches wide at 60 inches above the floor of the user.
- e) Eyewashes must provide controlled flow to both eyes at a velocity low enough to not be injurious to the eyes.

## 2. Assembly, Placement, & Parts Performance Requirements

- a) Materials may mainly be composed of plastic or stainless steel.
- b) Stations will be placed on or near a countertop, sink, wall, or area that is accessible and in a manner that does not cause injury to the user or passersby.
- c) All primary eyewash/shower stations will be plumbed.
- d) Hot and cold water lines should be plumbed to the station with a thermostatic mixing valve to maintain the fluid within the appropriate temperature range.
- e) All units must be properly assembled and mounted to avoid damage, difficulty in operation, or injury to the user.
- f) The unit must be installed to the proper height above the floor.
  - i. *Eyewash (spray pattern) should be 33-53 inches above the floor.*
  - ii. *Shower heads must be 82-96 inches above the floor.*
- g) Actuators
  - i. *Actuators (including handles, paddles, foot pedals) should move easily when activating the unit, whether pushed for an eyewash or pulled for a safety shower. If it does not, this must be corrected.*
  - ii. *Actuators must be placed at the wall or on the unit and at a height easily accessible to the user.*
    - 1) *Handles for showers should not be higher than 69 inches from the surface floor for the user.*
  - iii. *Handles must rotate freely (toward or away from the individual) and activate within one second, while a shower handle must pull down toward the individual freely and activate within one second.*
  - iv. *Handles, etc. which are attached to control valves for the equipment, must have the ability to keep the valve open (continue to automatically flow) without contact once activated until the user manually turns off the unit.*
- h) Spray Heads
  - i. *Spray heads allow for gentle distribution of pressure to the eyes through aerators while also delivering adequate flow to wash the hazard thoroughly.*
  - ii. *If one or more heads are missing, the eyewash is considered inoperable and the missing spray head(s) should be replaced.*
  - iii. *Spray heads should either be fully enclosed (such as in a covered bowl or recessed wall unit) or equipped with dust caps.*
    - 1) *Enclosures or dust caps prevent dust or other contaminants from entering the spray head, which could block/ damage it, or result in dust or other particles being forced into the eyes when the eyewash is used.*
    - 2) *Covers and dust caps should come off easily with applied water pressure.*
    - 3) *Replace the cover or dust caps if damaged, permanently defaced or marked, or missing.*
    - 4) *If applicable, the cabinet door for a pull-down, wall-mounted eyewash should easily swing down and stay horizontal during use/testing, and close flush with the wall when not in use.*

### 3. Signage

- a) Signs must be present, highly visible, and legible.
- b) Signs may use words or symbols that are understood per ANSI Z358.1 and demonstrate that an emergency eyewash/shower is present.

### 4. Access

- a) The workplace must have adequate placement and number of EW/SS stations if required.
- b) The station shall be located on the same level (floor/ground) as the hazard.
- c) Its location must take no more than 55 feet or 10 seconds walking distance to reach from the hazard in which an individual would be exposed.
- d) There shall not be any obstructions on the way to the unit. Aisles or other pathways should be clear.
- e) The eyewash/shower station must be positioned so that it is highly visible and accessible.
- f) No obstructions such as doors shall be between the hazard and the station.
- g) Eyewashes must have at least 6 inches of clearance in front of the unit (away from the wall) and safety showers must have at least 32 feet of clearance in front of the unit (16-inch radius from the center of the showerhead). There must not be objects on or in front of the unit preventing its use. The unit must be accessible at all times, so the unit shall not be blocked.
- h) Eyewashes must be protected from contaminants when not in use.

### 5. Decommissioning/Removal

- a) A station may be decommissioned and/or removed if no corrosive hazards are deemed to be in the location. This would be done by request with FM and EHS.
- b) If the decommissioned station is not removed
  - i. *The water valve(s) must be closed to stop service to the fixtures.*
  - ii. *Fixture heads must be removed or sealed.*
  - iii. *A decommissioning notice must be posted on the unit.*

## B. Use

### 1. General Operation

- a) Eyewash
  - i. *The affected person or an aide must activate the eyewash and the affected person's eyes and face must be positioned at the center of the spray pattern to allow proper flushing.*
  - ii. *The affected person must use the eyewash for a minimum of fifteen (15) minutes to make sure that their eyes/bodies are cleared of the hazard. They may assist their eyes in being exposed to flushing fluid by using their forefinger (index finger) and thumb to keep eyelids open.*
  - iii. *Rotate eyes in all directions to ensure all sides are flushed.*

- iv. *Eyewashes must be unencumbered during use and stay activated until manually shut off.*
- v. *Close the caps/cover when the eyewash is not in use.*

b) **Safety Shower**

- i. *The affected person or an aide must activate the shower and the affected person must be positioned directly below the shower head.*
- ii. *The affected person must use the shower for a minimum of fifteen (15) minutes to make sure that their eyes/bodies are cleared of the hazard.*
- iii. *Contaminated clothing should be removed to avoid trapping hazards against the skin. Other personnel should exit the area while this takes place, with a supervisor providing oversight at the entrance to the area and be present for assistance.*
- iv. *Showers must be unencumbered during use and stay activated until manually shut off.*

2. **Operation by Type**

a) **Deck-Mounted/Sink-Mounted Station**

- i. *Deck-mounted and sink-mounted stations are each eyewash types that are installed on a platform typically below the eye level of the user. A deck-mounted station is an eyewash that sits atop a counter or laboratory benchtop, typically next to a sink, while a sink-mounted station is directly attached to the sink, but independently of the faucet.*
- ii. *A drench hose may be equipped with a single spray head or dual spray heads, treated as an eye/face wash, and seated in either manner listed above.*
  - 1) *The eyewash attached to the hose should be pulled out to the face of the user, with the user's face over the nearby sink and the spray heads aimed at the eyes and face.*
  - 2) *The handle on the device must be squeezed/pushed to activate.*
  - 3) *The handle should be released and placed back into its holder.*
- iii. *A pull-down eyewash that is ADA-compliant may be seated in either manner listed above.*
  - 1) *The stem or frame is pulled down and horizontal (90° angle from the wall) to access and activate the unit.*
  - 2) *The stem or frame is pushed up/back to turn off unit.*

b) **Faucet-Mounted Station**

- i. *A faucet-mounted eyewash is an attachment screwed onto the sink faucet, which requires that the faucet remain in the "ON" position (both hot and cold water valves should be open). Water will not be released from the faucet nor the attached eyewash with the valve knob in the neutral position.*
- ii. *The valve knob must be pulled open to activate the eyewash.*

iii. *If the valve knob is pushed/pressed, water releases from the faucet for normal (non-emergency) use. The knob must be returned to the neutral position.*

c) Pedestal-Mounted Station

i. *A pedestal-mounted station is an upright, vertical device that sits on the floor, and whose standpipe supplies the flushing fluid. A pedestal may include an eyewash (with bowl), a shower (with head), or a combination. In the case of a combination unit, it will be designed to operate both functions simultaneously, though they can be used separately.*

ii. *Eyewash*

1) *The handle at the level of the eyewash must be pushed to activate.*

2) *The handle may be pulled back to a neutral position to turn off.*

iii. *Safety Shower*

1) *The shower will typically have an overhead handle that is triangle-shaped for proper leverage.*

2) *The handle must be pulled downward to activate.*

3) *The handle may be pushed upward to turn off.*

d) Wall-Mounted Station

i. *Eyewash, Fixed*

1) *The eyewash is stationary and protrudes from the wall.*

2) *The unit may be readily accessible and open, in which case, the handle must be pushed to activate. The eyewash may have a bowl cover/lid, in which case, it is accessible by pushing/pressing the handle or foot pedal, which removes the cover and activates the unit.*

3) *The handle may be pulled back to a neutral position to turn off.*

ii. *Eyewash, Recessed*

1) *The eyewash is recessed into the wall within a small cabinet, and is accessible by pulling down the handle, which also activates the unit. The cabinet door should be horizontal (90° angle from the wall) to be used.*

2) *The cabinet door may be closed, flush with the wall, to turn off.*

iii. *Safety Shower*

1) *The shower head may be attached to a pipe that comes directly from the ceiling or a pipe that protrudes from the wall.*

2) *The handle must be pulled downward to activate.*

3) *The handle may be pushed upward to turn off.*

**C. Inspections & Maintenance**

1. Cleaning

a) Occasional dust build-up may occur on fixtures, dependent upon the work environment. Minor cleaning with a damp cloth may clean caps, bowls, or fixture heads.

- b) Any moderate or worse hazardous substance contacting the device should involve decontamination and cleaning with compatible materials for the device (i.e. cleaner should not compromise the metal, rubber, or plastic parts involved).

2. Repair

- a) Any unit damage, loose/stuck valves, mounting issue, missing/broken parts (caps/cover, handle), or leak should be reported to FM and EHS to repair/replace and test.
- b) Place a Do Not Use sign on the unit to alert others.

3. Inspection

- a) All units must be regularly inspected to ensure proper performance.
- b) Inspection of Portable Stations
  - i. *Portable stations must be visually inspected on a weekly basis.*
  - ii. *This practice should be done by individuals responsible for the area or whom work in the area where the device is located, and it should be recorded on a test log sheet (see Appendix A).*
  - iii. *Inspection for eyewash station includes the following:*
    - 1) *The station is clearly signed, labeled, or marked.*
    - 2) *The station is accessible (no obstructions).*
    - 3) *No damage to the station or exterior of fluid bottles.*
    - 4) *Caps/covers are intact and clean.*
    - 5) *The contents are visually checked for contaminants (bottle and contents should be clear) and confirmed to not be expired by checking its printed expiration date.*
  - iv. *For self-pressurized units, the pressure gauge will be checked to ensure it reads within the manufacturer's recommended range.*
  - v. *Data will be recorded and initialed by the EHS inspector and kept on file.*
- c) Weekly Test (Flush) for Plumbed Stations
  - i. *All plumbed eyewashes and safety showers must be tested on a weekly basis to check proper operation by flushing the device until the water appears to be clear. Activating the unit to test or flush it ensures functionality, but it also helps reduce further potential injury from unsafe water. Corrosion of service lines resulting from stagnant water leads to turbid, amber/brown water that contains precipitates or grit, which could further injury the eye during use and the growth of bacteria within the lines could cause infection of the eyes.*
  - ii. *This practice should be done by individuals responsible for the area or who work in the area where the device is located.*
  - iii. *It is recommended to flush each fixture for 1-3 minutes until the flushing fluid is clear to remove stagnant water.*
  - iv. *After testing, personnel must fill out the Eyewash/Safety Shower Weekly Test Log Sheet (see Appendix A) with the test date, check mark indicating that the fixture ran clear fluid by end of testing, and their initials.*

v. *The test log sheet should be posted in the workplace near the station or kept in an accessible notebook.*

d) Annual Inspection for Plumbed Stations

- i. *EHS performs annual inspections of eyewashes and emergency showers.*
- ii. *EHS will test units for compliance with ANSI Z358.1-2014 including:*
  - 1) *Color (appearance, turbidity, precipitation),*
  - 2) *Flow, pressure, and spray pattern for the flushing fluid,*
  - 3) *Spray heads are capped or properly enclosed,*
  - 4) *Signage is posted and legible,*
  - 5) *Inspection tag(s) are present, dated, and initialed. An additional tag will be attached to the unit when necessary.*
  - 6) *Flow rate is adequate and measured in unit volume per unit time.*
  - 7) *Observations and notes for additional concerns such as soil/waste, damage, corrosion, odor, improper clearance to the unit, valves or parts not operating properly or are missing, or other violations.*
- iii. *Measurements will determine whether the unit passes inspection.*
- iv. *Data will be recorded, dated, and initialed by the EHS inspector and kept on file.*

**D. Training**

1. Personnel may be informed of station location and use method within the workplace by their supervisor or may contact EHS to provide guidance.
2. Click the following link to learn unit types and locations for your area or watch the video on proper use (under the “Chemical Hygiene” and “Eyewash/Safety Shower Use” subheaders on the Chemical Safety & Hazard webpage): [Eyewash/Safety Shower Information](#)

**Resources**

**A. ANSI**

1. ANSI Z358.1-2014 – Emergency Eyewash & Shower Standard

**B. OSHA**

1. [Medical Services and First Aid](#)
2. [Occupational Exposure to Hazardous Chemicals in Laboratories & Appendix A](#)

**C. Environmental Health & Safety**

For issues with equipment or general inquiries, contact EHS by emailing [safety@towson.edu](mailto:safety@towson.edu) or by calling the Environmental Health & Safety (EHS) office at 410-704-2949.

**D. Facilities Management**

For equipment installation, maintenance, or repairs, contact Work Control at [workcontrol@towson.edu](mailto:workcontrol@towson.edu) or 410-704-2481.



## Appendix A: Eyewash/Safety Shower Weekly Test Log Sheet

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