

# Section 22 45 13 and 16

## York University Emergency Eyewash and Shower Equipment

### 1. Scope

This standard establishes minimum performance and use requirements for eyewash and shower equipment for the emergency treatment of the eyes or body of a person who has been exposed to hazardous materials.

### 2. Purpose

The standard is intended to provide uniform minimum requirements for the performance, use, installation, test procedures, maintenance and training of emergency eyewash and shower Equipment. These requirements apply throughout the University and for off-site activities performed by University faculty and staff where emergency eyewash stations and safety showers are required.

### 3. Applicable Legislation & Standards

- a) *Occupational Health and Safety Act, Industrial Establishments (Reg. 851) Sections 81,124,125*
  
- b) *American National Standard s Institute (ANSI) Standard Z358.1-2009 "Emergency Eyewash and Shower Equipment"*

Note: For specific details, please refer to the ANSI Standard, a copy of which can be obtained from the Department of Occupational Health and Safety (DOHS)".

### 4. Definitions

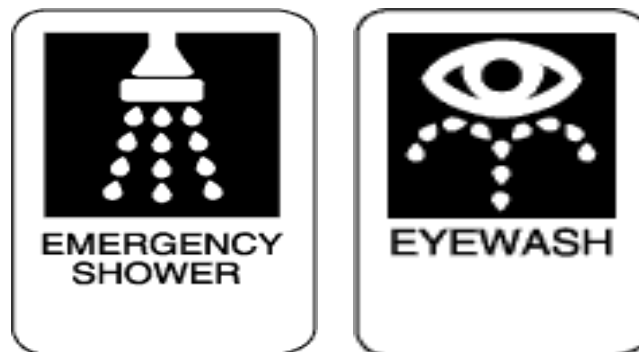
- Combination Unit: An interconnected assembly of drenching and flushing equipment that is supplied by a single flushing fluid source.
- Emergency (Deluge) Shower: A device to deliver flushing fluid that utilizes a valve which remains open during use to enable the user to have water cascading over the entire body while the hands are free.
- Eye/Face Wash: A device used to provide fluid to irrigate and flush both the face and the eyes.
- Eyewash: A device used to provide tepid fluid to irrigate and flush both eyes simultaneously at a velocity low enough not to be injurious to the user.
- Hand-Held Drench Hose: A flexible hose connected to a water supply that is used to provide fluid to irrigate eyes, face and body area.
- Hazardous Material: Any substance or compound that has the capability of producing adverse effects on the health and safety of humans.
- Personal Eyewash: A supplementary eyewash that supports plumbed or self-contained eyewash equipment by delivering immediate flushing for less than 15 minutes.
- Plumbed Eyewash: An eyewash unit permanently connected to a source of potable water.
- Tepid: Moderately warm, lukewarm 16-38deg.C (60-100 deg. F)

## 5. Responsibilities

- The following parties: Area Supervisors/Managers, CSBO-Maintenance, Department of Occupational Health and Safety, and users have responsibilities regarding the installation, inspection, and using these devices. Refer to York University Guidelines on “Emergency Eyewash and Shower Equipment” for details:  
<http://www.yorku.ca/dohs/guidelinesnotices.htm>

## 6. Installation / Location Requirements

- Where a worker is exposed to a potential hazard of injury to the eye and the skin due to a contact with a biological or chemical substance, an eye wash and a quick-acting deluge shower shall be provided (**Ont. Reg. 851, s. 124, 125**). A job hazard analysis shall be conducted, if required, to determine if potential for an injury exists.
- The eyewash and shower equipment must be certified by the manufacturer as meeting the performance specifications contained in ANSI Z358.1-2009.
- The equipment must be readily accessible and be reached within 10 seconds from the area(s) (approximate distance of 16-17meters or 55ft) where there is a reasonable potential for injury due to contact with a hazardous material.
- The temperature of the flushing fluid for emergency equipment should be tepid (lukewarm). A means of controlling the temperature to more than 16<sup>0</sup> C (60<sup>0</sup> F) and less than 38<sup>0</sup> C (100<sup>0</sup> F) must be included in tempered flushing fluid systems.
- Flushing fluid shut off valves located within branch lines serving emergency eyewash and safety shower equipment should be tagged to indicate that turning off the valve would turn off the supply to the emergency equipment.
- Emergency flushing equipment must be identified by highly visible signage



**Example- Signage for Emergency Shower and Eye wash**

## **7. Performance Requirements**

### **7.1 Plumbed and self-contained emergency showers:**

- Plumbed and self-contained emergency showers must supply at least 75.7 litres per minute (20 gallon per minute) of flushing fluid at a velocity low enough to be non-injurious to the user.
- At least a fifteen minute supply of flushing fluid must be available.
- The flushing fluid supply valve must stay open without the use of the operator's hands.
- The operation valve (or lever, handle) should not be more than 173.3cm (69 inches) in height.
- Shower head height must be between 208.3-243.8cm (82-96 in) from the floor.
- Protection from freezing or freeze protected equipment is required where the possibility of freezing exists.
- Shower enclosures (if used) require at least a 86.4 cm (34 in) diameter unobstructed area to provide adequate space for the user.

### **7.2 Plumbed and self-contained eyewash:**

- Plumbed and self-contained eyewash units must supply at least 1.5 litres/minute (0.4 gpm) of flushing fluid and at a velocity low enough to be non-injurious to the user.
- At least a fifteen minute supply of flushing fluid must be available.
- Eyewash units must supply flushing fluid to both eyes simultaneously.
- The flushing fluid supply valve must stay open without the use of the operator's hands.
- Nozzles must be protected from airborne contaminants. Nozzle protective device removal must be automatic (not require a separate motion by the user) when the unit is turned on.
- Eyewash units must be placed between 83.8-114.5 cm (33-45 in) from the user's standing surface and at least 15.3 cm (6 in) from the nearest wall or other obstruction.

### **7.3 Eye/Face wash equipment:**

- Plumbed and self-contained eye/face wash units must supply at least 11.4 litres (3.0 gpm) of flushing fluid and at a velocity low enough to be non-injurious to the user.
- At least a fifteen minute supply of flushing fluid must be available.
- Eye/Face wash units must supply flushing fluid to both eyes simultaneously.
- The flushing fluid supply valve must stay open without the use of the operator's hands.
- Nozzles must be protected from airborne contaminants. Nozzle protective device removal must be automatic (not require a separate motion by the user) when the unit is turned on.
- Eyewash units must be placed between 83.8 cm (33 in) and 114.3 cm (45 in) from the user's standing surface and at least 15.3 cm (6 in) from the nearest wall or other obstruction.

#### **7.4 Combination Units:**

- Combination units such as an eyewash and shower combination are ideal in many situations. Installation and performance requirements for combination units are as presented for the individual components.

### **8. Use**

- Users of the emergency eyewash and safety showers must be trained on the proper use of these equipment. The following guidelines should aid in minimizing injury due to contact with hazardous materials:
  - Flush eyes and/or skin for at least 15 minutes. Never use home-made neutralizing solutions to flush chemicals from the body.
  - Immediately remove contaminated clothing. Do this while under the shower when cross contamination has occurred. Have someone assist with clothing removal when possible.
  - Hold eyelids open with fingers so flushing fluid can fully irrigate the eyes.  
Note: People may not always be able to flush their eyes on their own because of intense pain. Nearby helpers should be prepared to assist with holding the eyelids open. Other helpers may need to assist with keeping the person under the flushing fluid for at least 15 minutes.
  - Seek medical attention after flushing the areas of contact for at least 15 minutes.
  - Notify supervisor as soon as the emergency has subsided.
- An assistant may use a fire blanket or uncontaminated article of clothing as a shield to provide privacy for someone who needs to remove their clothes while under an emergency shower, and for body coverage while seeking medical attention.

## 9. Flushing and Inspection

- Emergency eyewash station, emergency shower, combination units in laboratories should be activated **weekly** for at least 3 minutes to ensure flushing fluid is available as well as clear the supply line of sediments and minimize microbial contamination caused by “still” or sitting water. An inspection tag should be attached to the equipment. The weekly inspection is conducted by the area/lab occupants.
- **Annual flushing/inspections** should be conducted on emergency eyewash stations and safety showers to ensure that they are in proper working condition, are in compliance with current ANSI standards and to identify areas for improvement. The annual inspection includes but is not limited to measuring the fluid (water) flow rate, checking the operation of the valve. Refer to ANSI Standard for details on this inspection.
- Because of the technical aspect, the annual flushing and inspections are conducted by **CSBO Maintenance** (ext. 22401).

## 10. Training

-Manufacturers shall provide operation, inspection and maintenance instructions with emergency shower equipment. Instructions shall be readily accessible to maintenance and training personnel.

-Employees who may be exposed to hazardous materials shall be instructed in the location and proper use of emergency showers.

## 11. Repairs

- Whenever an eyewash station is non-functional, a portable eyewash station or equivalent must be available if work with injurious hazardous materials cannot be delayed.
- The area/lab supervisor is responsible for ensuring that eyewash and safety shower equipment not passing inspection is repaired in a priority manner. When emergency eyewash and safety shower equipment is non-functional, it must be clearly tagged/signed as being out-of-service. Anyone removing emergency eyewash and safety shower equipment from service must notify the Area/Faculty’s Health & Safety Officer and the affected department beforehand.

## 12. Resources

- a) American National Standards Institute (ANSI) Standard Z358.1-2009 “Emergency Eyewash and Shower Equipment”
- b) Canadian Centre for Occupational Health & Safety (CCOHS): Emergency showers and Eye Wash Stations [http://www.ccohs.ca/oshanswers/safety\\_haz/emergency\\_showers.html](http://www.ccohs.ca/oshanswers/safety_haz/emergency_showers.html)