



## EMERGENCY EYEWASH, DRENCH HOSE, SAFETY SHOWER PROGRAM

	Date	Comments
1	July 2023	Initial Emergency Eyewash, Drench Hose, Safety Shower Program
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### PURPOSE:

The purpose of this program is to ensure that all safety eyewashes, drench hoses, and safety showers supply clean, potable water and are in proper working order. This program describes procedures for emergency use, selection, installation and placement, guidelines for activation, inspection, testing, and maintenance of emergency eyewash and shower equipment.

Questions about this program should be directed to Environmental, Health, Safety and Risk Management.

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### DEFINITIONS

Combination Unit: An interconnected assembly of drenching and flushing equipment that is supplied by a single flushing fluid source.

Corrosive Chemical: A corrosive chemical for the purposes of this Standard Practice is a chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact.

Emergency Shower: An assembly that utilizes a valve that remains open during use to enable the



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user to have water cascading over the entire body while the hands are free.

**Eye/Face Wash:** A device used to irrigate and flush both the face and the eyes. **Flushing Fluid:** Potable (drinkable) water or other medically acceptable solution.

**Hand-Held Drench Hose:** A flexible hose connected to a water supply that is used to irrigate eyes, face, and body areas.

**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.

**Self-Contained Eyewash:** An eyewash device that contains its own flushing fluid that must be refilled or replaced after each use.

### **RESPONSIBILITIES**

Environmental, Health, Safety and Risk Management (EHSRM) is responsible for:

- Assisting departments on the need and placement of equipment.
- Conducting periodic audits to ensure that drenching and flushing equipment inspections are occurring at least at the frequency called for in this Standard Practice.
- Providing checklists (upon departmental request) that can be used to record flushing/testing activities for emergency drenching and flushing equipment.
- Coordination of training regarding the use and testing of emergency drenching and flushing equipment.

Managers/Supervisors are responsible for:

- Ensuring that personnel who may need to use emergency drenching and flushing equipment are trained on its location and use.
- Ensuring that the necessary emergency drenching and flushing equipment called for in this Standard Practice is provided or, if such equipment is not available, that any work requiring the availability of the equipment is not performed until the equipment is available.
- Requesting immediate repair for malfunctioning emergency drenching and flushing equipment.
- Ensuring that weekly flushing/inspection of equipment occurs as outlined in this Standard Practice.
- Maintaining drenching and flushing equipment test records and equipment location files.

Areas that Utilize Corrosive materials are responsible for:

- Ensuring that students are informed of the appropriate personal protective equipment to use while using injurious corrosive materials.



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- Ensuring that students know where emergency drenching and flushing equipment is located and how to use it.
- Requesting immediate repair for any malfunctioning emergency drenching and flushing equipment.

Affected individuals are responsible for:

- Following the requirements of this Standard Practice.
- Utilizing appropriate personal protective equipment such as goggles, face shields, and chemical resistant garments as a means of defense against splash from injurious corrosive materials.
- Becoming familiar with the location and operation of the nearest emergency drenching and flushing equipment.
- Using emergency drenching and flushing equipment as trained.
- Reporting incidents that require the use of emergency drenching and flushing equipment to supervisory or faculty personnel as soon as the emergency has been brought under control.

## **EMERGENCY DRENCHING AND FLUSHING EQUIPMENT**

- Each new University facility must have emergency drenching and flushing equipment incorporated into it by design whenever injurious corrosive materials are planned for use within it. Installation of such equipment must be as specified in ANSI Z358.1-2014. Only equipment that is certified by the manufacturer as meeting the performance specifications contained in ANSI Z358.1-2014 may be placed in new facilities.
- Existing University facilities must be equipped as necessary to include emergency drenching Plumbed and self-contained eyewash:
- Plumbed and self-contained eyewash units must supply at least 0.4 gpm per minute 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 and/or flushing equipment that is readily accessible and can be reached within 10 seconds from the area(s) where injurious, and corrosive materials are used. Equipment
- Off-site/remote locations must have drenching/flushing equipment available whenever work involves the use of injurious corrosive materials. Plumbed units that are maintained by the owner/controller of an off-site facility may be used or self-contained units can be purchased. A water hose supplying potable water and equipped with a proper face and body wash nozzle can be used at off-site locations where the possibility of exposure to injurious corrosive materials is very low and when proper personal protective equipment is used.
- The temperature of the flushing fluid for emergency drenching and flushing equipment



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should be lukewarm. A means of controlling the temperature to less than 100 F must be included in tempered flushing fluid systems.

- Flushing fluid shut off valves located within branch lines serving emergency drenching and flushing equipment should be tagged to indicate that turning off the valve would turn off the supply to the emergency equipment.
- Emergency drenching and flushing equipment must be identified by highly visible signage whenever the equipment cannot be readily seen by its potential users. The attachment to this program may also be posted.

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

- Plumbed and self-contained emergency showers must supply at least 20 gallons per minute (gpm) 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.
- Shower head height must be between 82 and 96 inches (84" is optimal) from the user's standing surface.
- Protection from freezing or freeze protected equipment is required where the possibility of freezing exists.
- Shower enclosures (if used) require at least a 34-inch diameter unobstructed area to provide adequate space for the user. g)
- The shower should be designed to activate in less than 1 second, and remain operational without the operator's hand on the valve (or lever). The valve or lever should be no more than 69 inches in height.

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

- Plumbed and self-contained eyewash units must supply at least 0.4 gpm per minute 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 33 and 53 inches from the user's standing surface and at least 6 inches from the nearest wall or other obstruction.

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

- Plumbed and self-contained eye/face wash units must supply at least 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.



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- 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 33 and 53 inches from the user's standing surface and at least 6 inches from the nearest wall or other obstruction.

### Hand-held drench hoses:

- Hand-held drench hoses provide support for emergency shower and eyewash units but they are not intended to replace them.
- Plumbed and self-contained drench hoses must supply at least 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.

### 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.

### Personal eyewash equipment/ Eyewash bottles:

- Personal eyewash equipment, such as bottles and small portable units, are designed for personal, immediate flushing of the eyes without being injurious to the user. Personal eyewash equipment supports plumbed and self-contained units, but it does not provide adequate replacement.
- Operator instructions must be maintained on personal eyewash equipment.
- Water must be changed out at least once per week when it is used without a preservative. An expiration date must be maintained according to the manufacturer's specifications on equipment containing flushing solutions or preservatives

## **FLUSHING / INSPECTIONS**

Each department is responsible for making sure that flushing, inspection, and repair of the emergency drenching and flushing equipment within its area(s) occurs. This responsibility includes changing flushing fluid in portable units at the frequencies recommended by the manufacturer. Departments may request assistance from EHSRM or Physical Resources to fulfill these requirements. Minimum flushing and inspection requirements are presented below.

### Flushing Requirements:

- Plumbed eyewash and eye/face wash stations must be activated and flushed at least once per week. Flush for at least three minutes.
- Inspect eyewash and eye/face wash stations while flushing to make sure that water rises to approximately equal heights, and that fluid flow is sufficient to flush both eyes



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simultaneously while at a velocity low enough to be non-injurious to the user.

- Water in self-contained eyewash and eye/face wash stations must be replaced with fresh potable water at least once per week. Follow the manufacturer's recommendations for functionality tests and solution replacement when a preserved solution is used in these units.
- Each week, eyewash station/unit must be reviewed weekly to make sure components are in place, the station/unit is readily accessible, and that flushing solution has not passed its expiration date. Also verify that bottles with seals/tamper indicators are sealed, replacing those that are not.
- Plumbed emergency showers and drench hose stations must be activated and flushed at least once per month.
- Each eyewash, shower, or drench hose unit not passing inspection or requiring repair, must be signed to warn people that the emergency flushing station is not functioning properly. Repair of defective units must be expedited.
- Records of each flush/inspection must be kept. These records may be recorded on tags that are attached to drenching and flushing equipment, by means of a checklist, or by both. Copies of flush/inspection records must be forwarded to EHSRM once per year.

### **Responsibilities to Inspect and Maintain Eye Wash Stations**

It is the responsibility of each department who have eyewash stations and emergency showers to conduct the weekly flushing, monthly inspections, and routine maintenance. Damage or defects to the units should be repaired and serviced by Physical Resources. Annually, EHSRM is responsible for conducting the annual inspections on each eyewash station and emergency shower throughout the University. Any necessary repairs should be executed.

## **TRAINING**

Workers require instruction on the proper use and location of emergency showers and eyewash stations before they begin to work with hazardous substances. Written instructions should be made available to all workers and posted beside the emergency shower or eye wash station. It is highly recommended that instruction pertaining to emergency showers and eyewash stations include 'hands-on' drills on how to find and use the equipment.

Contact lenses cause an additional hazard when exposed to chemicals as they can trap the chemical against the eye. Prompt removal of the contact lenses is necessary to prevent serious injury. Training should include the removal of contact lenses.

## **INSPECTION**

Eye wash stations, combination units, drench hoses and emergency showers should be inspected and flushed weekly by departments/schools responsible for those areas. A weekly activation ensures that the units are operating correctly, and clears the supply lines of sediment



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and minimizes microbial contamination caused by stagnant water. Inspections should be documented, signed by the person conducting the inspection and dated. A more thorough inspection is recommended, by the ANSI standard, on an annual basis. Preventative maintenance inspections should check for such problems as valve leaks, clogged openings, spigots and lines, and adequate water pressure and temperature.

### **REPAIRS**

- Whenever an eyewash station is non-functional, a portable eyewash station or equivalent must be available if work with injurious corrosive materials cannot be delayed.
- Each department is responsible for ensuring that drenching and flushing equipment not passing inspection is repaired in a priority manner. When emergency drenching and flushing equipment is non-functional, it must be clearly tagged/signed as being out-of-service. Physical Resources must be called in to conduct any repairs.
- Anyone removing emergency drenching and flushing equipment from service must notify EHSRM and the affected department beforehand. This requirement includes those periods when main or branch water lines that serve drenching and flushing equipment are turned off.

### **LIMITATIONS**

Plumbed Eyewash Stations and Emergency Showers:

- Although a 15-minute flush time is recommended, typically users do not flush for more than 5 minutes.
- If the temperature is not regulated to be lukewarm/tempered, it can cause extreme discomfort to the injured person if the water is cold.
- If they are not properly flushed and maintained to reduce sediment and microbial matter, they could cause additional complications to the injury.

Portable and Self-Contained Eyewash Stations:

- Have a limited amount of fluid so it is crucial to ensure that they are fully charged at all times.
- They have an expiration date. The preservative used to control bacterial growth is only effective for a certain period.
- Small amoebae capable of causing serious eye infections have been found in portable and stationary eyewash stations, so it is important to monitor the shelf life of the solution and replace it when it expires.





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### **USE OF EMERGENCY DRENCHING AND FLUSHING EQUIPMENT (Attachment)**

Immediate and proper use of emergency drenching and flushing is essential to minimizing injury upon injurious corrosive chemical contact. The following guidelines should aid in minimizing injury due to contact with corrosive materials:

- 15-20 minutes for moderate to severe irritants and chemicals that cause acute toxicity if absorbed through the skin,
- 30 minutes for most corrosives, and
- 60 minutes for strong alkalis (e.g., sodium, potassium or calcium hydroxide).
- Never use home-made neutralizing solutions to flush chemicals from the body.
- Immediately remove contaminated clothing. Do this while under the shower when gross contamination has occurred. Have someone assist with clothing removal when possible.
- Hold eyelids open with fingers so flushing fluid can fully irrigate the eyes.
- Seek medical attention after flushing the areas of contact for at least 15 minutes.
- Notify supervisor/Manager 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.

**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.