

Applies to: (examples; Faculty, Staff, Students, etc)

Faculty , Staff , Students

Policy Overview:

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The Occupational Safety and Health Administration (OSHA) 29CFR 1910.151 requires that suitable means for flushing and quick drenching of the eyes and body must be provided in any area where corrosive materials are used.

Departments/offices that have areas where hazardous materials are used are responsible for ensuring that emergency eyewash stations and safety showers are installed and maintained before allowing work with hazardous materials to be performed.

In most cases, the initial first aid treatment for a hazardous materials exposure is to rinse the affected area with water for at least 15 minutes prior to seeking any other medical treatment. It is often critical that the eyes be flushed during the first few seconds following an exposure with contaminant free water if injury is to be minimized. That's why it is important that eyewash stations and showers are kept in proper working order and inspected with a documented program.

In order to reduce exposure risks, proper personal protective equipment should always be worn when working with hazardous chemicals or engaged in hazardous activities. Emergency showers and eyewash stations are not a substitute for proper primary protective devices. Please refer to the University of Health Sciences and Pharmacy in St. Louis policy on personal protective equipment for further guidance.

Applies to Office of Environmental Health & Safety, Office of Facilities Management, students, faculty, and staff, all offices with eyewash, drenching hoses, and shower equipment in laboratories.

Definitions:

Term	Definition
Combination Unit	An interconnected assembly of showers and eyewashes that is supplied by a single flushing fluid source.
Hazardous Material	Means a substance or material that has determined to be capable of posing an unreasonable risk to health, safety, and property when handled. The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, etc.
Emergency Shower	An assembly that utilizes a valve that remains open during use to enable the user to have water cascading over the entire body while the hands are free.
Eye/Facewash	A device used to irrigate and flush both the face and the eyes.
Flushing Fluid	Potable (drinkable) water or other medically acceptable solution.
Grandfather Clause	A clause creating an exemption based on the circumstances previously existing.
Hand-Held Drench Hose	A flexible hose connected to a water supply that is used to irrigate eyes, face, and body areas.
Personal Eyewash	An eyewash unit permanently connected to a source of potable water.
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.
Tepid water	Defined by ANSI Z358.1-2009 as water with a temperature between 60°F and 100°F.

Details:

1. Purpose and Scope

- a. This policy provides minimum requirements for performance, use, installation, and testing of equipment that is used for emergency drenching and/or flushing of the eyes and body. This policy provides minimum requirements for eyewash stations and safety showers for the emergency treatment of the eyes and the body of persons exposed to hazardous materials. It outlines uniform minimal requirements for equipment procurement, equipment installation, test procedures, and maintenance and training to assure workers the availability of at least a minimum level of first aid.
- b. This policy covers emergency showers, eyewash equipment, eye/face wash equipment, handheld drench hoses and applies to all students, faculty, and staff. Contractors are responsible for supplying their own suitable showers and eyewashes unless an agreement to the contrary is made with the appropriate UHSP contract coordinator beforehand.

Procedures:

1. a. Responsibilities

- i. Office of Environmental Health & Safety is responsible for:
 - i. Assisting as necessary with the periodic testing of all emergency showers and eyewash stations for compliance with ANSI Z358.1-2009.
 - ii. Assisting Facilities with plan review in the placement of new equipment during new construction or major renovation.
 - iii. Assisting departments with the need for and placement of equipment.
 - iv. Maintaining a campus-wide showers and eyewashes test records and equipment location files.
 - v. Conducting periodic audits to ensure that showers and eyewashes inspections are occurring at least at the frequency called for in this policy.
 - vi. Providing checklists (upon departmental request) that can be used to record flushing/testing activities for emergency showers and eyewashes.
 - vii. Assist with training regarding the use and testing of emergency showers and eyewashes, as necessary.
- ii. Office of Facilities Management is responsible for:
 - i. Making any and all necessary repairs to emergency showers and eyewash stations so that they operate according to the current standards and regulations.
 - ii. Conducting all repairs and replacements in kind of existing equipment.
 - iii. If the equipment cannot be repaired, Office of Facilities Management and Office of EH&S will work together to replace the existing equipment with new equipment that complies with the current ANSI Z358.1 standards.
 - iv. Working with Office of EH&S personnel to accomplish the scheduled testing of the equipment.
- iii. Managers/Supervisors are responsible for:
 - i. Making sure that personnel who may need to use emergency showers and eyewashes are trained on its location and use.
 - ii. Making sure that the necessary emergency equipment called for in this policy 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.
 - iii. Requesting immediate repair for malfunctioning emergency showers and eyewashes.
 - iv. Making sure flushing/inspection of equipment occurs as outlined in this policy.
 - v. Weekly activation of the emergency eyewash/drench hose is encouraged, but not required.
- iv. Instructors of laboratories that maintain hazardous materials are responsible for:
 - i. Making sure that students are informed of the appropriate personal protective equipment to use while using hazardous materials.
 - ii. Making sure that students know where emergency showers and eyewashes are located and how to use it.
 - iii. Requesting immediate repair for any malfunctioning emergency showers and eyewashes.
 - iv. Weekly activation of the emergency eyewash/drench hose is encouraged, but not required.
- v. Affected individuals are responsible for:
 - i. Following the requirements of this policy.
 - ii. Utilizing appropriate personal protective equipment, such as goggles, face shields, and chemical resistant garments, as a means of defense against unnecessary/unexpected exposure to hazardous materials.
 - iii. Becoming familiar with the location and operation of the nearest emergency showers and eyewashes.
 - iv. Using emergency equipment as trained and seeking treatment without delay.
 - v. Reporting incidents that require the use of emergency showers and eyewashes to supervisory or faculty personnel as soon as the emergency has been brought under control.

b. Training

- i. All faculty, staff and students with the potential of exposure to hazardous, particulate, or corrosive materials shall be instructed on the proper operation of eyewashes & emergency showers (see section 6.0(H) below). All faculty, staff and students must be made aware of the locations of the emergency equipment. Refresher training should be completed annually and any time a faculty/staff member or student changes their worksite or if an area is remodeled. If different model eyewash is installed, training is also required for all faculty, staff and students who are reliant upon the equipment.

c. Emergency Eyewash, Drench Hose and Shower

- i. Each new University facility must have emergency showers and eyewashes incorporated into it by design whenever hazardous materials are planned for use within it. Installation of such equipment must be as specified in ANSI Z358.1-2009. Only equipment that is certified by the manufacturer as meeting the performance specifications contained in ANSI Z358.1-2009 may be placed in new facilities.
- ii. Existing University facilities must be equipped as necessary to include emergency drenching and/or flushing equipment that is readily accessible and can be reached within 10 seconds from the area(s) where hazardous materials are used. Equipment performance specifications, height, and clearance distances should be as stated in ANSI Z358.1-2009.
- iii. Off-site/remote locations must have drenching/flushing equipment available whenever work involves the use of hazardous 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 hazardous materials is very low and when proper personal protective equipment is used.
- iv. The temperature of the water for emergency showers and eyewashes should be lukewarm. A means of controlling the temperature of the water to less than 100°F must be included in system design. Existing emergency equipment without tepid water is operating under a grandfather clause. All new and replacement emergency equipment will include a medical grade mixing valve to provide tepid water as stated in ANSI Z358.1-2009.
- v. Flushing fluid shut off valves located within branch lines serving emergency showers and eyewashes should be tagged to indicate that turning off the valve would turn off the supply to the emergency equipment.
- vi. Emergency showers and eyewashes must be identified by highly visible signage near the equipment so it can be seen by potential users.
- vii. The following are the key specifications from ANSI Z358.1-2009.
 - i. Plumbed and self-contained emergency showers:
 - ii. 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.
 - iii. At least a fifteen minute supply of flushing fluid must be available.
 - iv. The flushing fluid supply valve must stay open without the use of the operator's hands.
 - v. Shower head height must be between 82 and 96 inches (84" is optimal) from the user's standing surface.
 - vi. Protection from freezing or freeze protected equipment is required where the possibility of freezing exists.
 - vii. Shower enclosures (if used) require at least a 34-inch diameter unobstructed area to provide adequate space for the user.
 - ii. Plumbed and self-contained eyewash:
 - iii. Plumbed and self-contained eyewash units must supply at least 0.4 gpm of flushing fluid and at a velocity low enough to be non-injurious to the user.
 - iv. Self-contained eyewash devices (e.g. standalone eyewash stations) are generally not permitted because of numerous safety and compliance considerations.
 - v. Requests for self-contained equipment will have to be approved by the Office of EH&S prior to ordering and use.
 - vi. At least a fifteen minute supply of flushing fluid must be available.
 - vii. Eyewash units must supply flushing fluid to both eyes simultaneously.
 - viii. The flushing fluid supply valve must stay open without the use of the operator's hands.
 - ix. 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.
 - x. Eyewash units must be placed between 33 and 45 inches from the user's standing surface and at least 6 inches from the nearest wall or other obstruction.
 - iii. Hand-held drench hoses:
 - iv. All hand held drench hoses units must supply flushing fluid to both eyes simultaneously.
 - v. The flushing fluid supply valve must stay open without the use of the operator's hands.
 - vi. 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.
 - vii. At least a fifteen minute supply of flushing fluid must be available.
 - iv. 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.
 - v. Personal eyewash equipment:
 - vi. These devices (e.g. eyewash bottles) are not permitted as a primary piece of emergency equipment and are generally discouraged because of numerous safety and compliance considerations.
 - viii. Personal eyewash equipment, such as bottles and small portable units, are designed for 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.
 - ix. Operator instructions must be maintained on personal eyewash equipment.
 - x. 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.
 - vii. Requests for personal eyewash equipment will have to be approved by the Office of EH&S prior to ordering and use.

viii. Use:

- i. Immediate and proper use of emergency equipment is essential to minimizing injury when exposed to a hazardous material. The following guidelines should aid in minimizing injury due to contact with hazardous materials:
 - i. Flush eyes and/or skin for at least 15 minutes. Never use home-made neutralizing solutions to flush hazardous materials from the body.
 - ii. Immediately remove contaminated clothing. Do this while under the shower when gross contamination has occurred. Have someone assist with clothing removal when possible.
 - iii. 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.
 - iv. Seek medical attention after flushing the areas of contact for at least 15 minutes.
 - v. Notify supervisor as soon as the emergency has subsided.
 - vi. 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.

d. Testing Requirements

- i. Each department is responsible for confirming that flushing, inspection, and repair of the emergency showers and eyewashes within its area(s) occur. Each department is also responsible for reporting any equipment that does not meet the standards outlined in this document. Departments may request assistance from the Office of EH&S or the Office of Facilities Management to fulfill these requirements. Minimum flushing and inspection requirements are presented below.
- ii. Monthly flushing requirements:
 - i. Plumbed eyewash must be tested and flushed at least once per month or as needed. A complete flush will consist of activation of the equipment for at least three minutes.
 - ii. 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 simultaneously while at a velocity low enough to be non-injurious to the user.
 - iii. If granted permission for use, 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.
 - iv. If granted permission for use, each personal 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.
- iii. Plumbed emergency showers must be activated and flushed at least once per semester, preferably at the beginning, or as needed. A complete flush will consist of activation of the equipment for at least 15 seconds.
- iv. Each eyewash, shower, or drench hose unit not passing inspection or requiring repair, must be labeled to warn people that the emergency flushing station is not functioning properly. Repair of defective units must be expedited.
- v. Inspections will be done using the checklist as a reference and the date of the inspection will be recorded kept electronically in a database. Access to the inspection information will be granted upon request.

e. Maintenance and Repairs

- i. All routine maintenance of showers and eyewashes will be coordinated with the users, as well as the Office of EH&S.
- ii. If the equipment is not functioning properly, a work order will be placed by urgent e-mail and/or by telephone to the Office of Facilities Management. Upon notification, Facilities staff will give this job high priority and will promptly complete the necessary repairs. When emergency showers and eyewashes are non-functional, it must be clearly tagged/signed as being out-of-service.
- iii. Anyone removing emergency showers and eyewashes from service must notify the Office of EH&S and the affected department beforehand. This requirement includes those periods when main or branch water lines that serve showers and eyewashes are turned off.

EMERGENCY EQUIPMENT QUICK CHECKLIST:

Single and Dual Head Eyewashes Drench Hoses

- Equipment must be activated monthly for 3 minutes and until water is sediment-free.
- Water must come on within one second of activation.

- Water must feel tepid (if so equipped).
- Water must have adequate pressure (based on hand and visual inspection).
- Eyewash caps must be present and in working condition.
- Area near shower must be unobstructed.

Overhead Emergency Showers

- Equipment must be activated once a semester for a minimum of 15 seconds and until water is sediment-free.
- Water must come on within one second of activation.
- Water must feel tepid (if so equipped).
- Water must have adequate pressure (based on hand and visual inspection).
- Area near shower must be unobstructed.

Responsibilities:

Position/Office/Department	Responsibility
User of equipment	Reporting equipment defects or other emergencies
Office of EH&S	Maintaining equipment inspection and test records, ensuring plan for placement of new equipment
Office of Facilities Management	Conducting any necessary repairs and replacements on equipment
Managers/Supervisors of Labs	Requesting emergency repairs for any malfunctioning equipment, making sure personnel who may need to use the equipment are trained on its location and use

Resources:

References:

- ANSI Standard, Z358.1-2009, American National Standard for Emergency Eyewash and Shower Equipment
- OSHA Standard, 29 CFR 1910.151 Medical and First Aid
- OSHA Standard, 29 CFR 1926.50 - Medical Services and First Aid OSHA Standard, 29 CFR 1910.1003, 13 Carcinogens
- OSHA Standard, 29 CFR 1910.1048, Formaldehyde
- OSHA Standard, 29 CFR 1910.1052, Methylene Chloride.

OSHA Standard, 29 CFR 1926.441, Batteries and Battery Charging

OSHA Standard, 29 CFR 1910.1450, Appendix A, Occupational Exposures to Hazardous Chemicals in Laboratories

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