TITLE:

EMERGENCY EYEWASH AND SHOWER GUIDELINES

Table of Contents

1.0 Introduction 2
1.1 Purpose 2
1.2 Scope 2
1.3 Definitions 2
1.4 Responsibilities 3
Environmental Health and Safety Office (EHSO) 3
Directors, Supervisors, and Managers/Principal Investigators (PIs) 3
1.5 Recordkeeping Requirements 3
2.0 General Requirements 3
2.1 Eyewash Station Performance Requirements 4
2.2 Eye/Face Wash Equipment Performance Requirements 5
2.3 Emergency Shower Performance Requirements 5
2.4 Combination Units 5
3.0 Inspections 6
3.1 Weekly Activations 6
3.2 Annual Inspection and Flow Test 6
4.0 Supplemental Equipment 6
4.1 Personal Wash Units 6
4.2 Drench Hoses 7
5.0 References 7
Appendix A: Annual Safety Equipment Inspection Requirements 8

1.0 Introduction

1.1 Purpose

This document provides guidance on evaluating the proper function of emergency showers and eyewash units.

1.2 Scope

This safety guideline covers the installation, use, and maintenance of eyewash and safety showers throughout Emory University and Emory University Healthcare locations with potential exposure to eye and skin irritants, corrosives, and biological agents.

1.3 Definitions

Combination unit. An interconnected assembly of emergency eyewash/shower equipment supplied by a single source of flushing fluid.

Drench hose. This is supplemental emergency eyewash equipment consisting of a flexible hose connected to a flushing fluid supply and used to irrigate and flush face and body areas.

Emergency shower. A device specifically designed and intended to deliver flushing fluid in sufficient volume to cause that fluid to cascade over the entire body to remove hazards from the body.

Eyewash. A device used to provide fluid to irrigate and flush both eyes simultaneously.

Eye/face wash. A device used to provide fluid to irrigate and flush the face and the eyes simultaneously.

Flushing fluid. Potable water, preserved water, preserved buffered saline solution, or other medically acceptable solutions manufactured and labeled per applicable government regulations used in emergency eyewash and shower applications.

Freeze protection. This is a means to protect flushing fluid in an apparatus from freezing and rendering it inoperable. Several means can be used, including mechanical valves and electrical heat tracing.

Hazardous material. Any substance or compound, not including radioactive material, can adversely affect human health and safety.

Personal wash unit. A supplementary device that supports plumbed and/or self-contained units by delivering immediate flushing fluid to the eyes or body.

Plumbed. Describes equipment that is connected to a continual source of potable water.

Self-closing valve. A valve that closes automatically when released by the user.

Tepid flushing fluid. Water at a temperature of 60-100ºF (16-38ºC).

1.4 Responsibilities

Environmental Health and Safety Office (EHSO)

- EHSO provides information regarding when and where emergency eyewash and showers will be installed. These recommendations follow ANSI guidance. Conduct periodic audits of emergency eyewash and safety shower stations to ensure compliance.

Directors, Supervisors, and Managers/Principal Investigators (PIs)

- Emory's EHSO must be informed of chemical hazards in the workplace so that the type and location of emergency equipment can be evaluated. Instruct employees or students potentially exposed to hazardous materials that may contact their eyes, faces, or skin on the location and proper use of emergency showers and eyewash stations.
- If equipment malfunctions or fails, notify EHSO or Campus Services for repair.
- Ensure that all emergency eyewashes are activated and flushed weekly and that a record/log of the weekly activations is maintained. (Campus Services maintains safety showers, combination units, and in-wall set eyewash equipment (those not mounted at a sink))
- Communicate to EHSO any difficulties with implementing this guideline so that the guideline can be reviewed and revised as needed.

1.5 Recordkeeping Requirements

Records for emergency eyewash, eye/face wash, safety showers, and combination unit activations and inspections must be kept on a written log or electronically. These logs must be available for inspection.

Records must include:

- The location of the equipment
- Date of the activation/inspection
- The identity of the person performing the activation/inspection.

2.0 General Requirements

The following requirements are for all emergency eyewashes, eye/face washes, safety showers, and combination units:

- Notify EHSO of plans to install new eyewashes, eye/face washes, safety

showers, or combination units in a location.

- In circumstances where the temperature of the flushing fluid accelerates a chemical reaction, EHSO will assist with determining the optimum water temperature for the application.
- Equipment must be assembled and installed according to the manufacturer's instructions. Units should meet the requirements of the American National Standard Institute (ANSI) Emergency Eyewash and Safety Shower Equipment Standard Z358.1 (current version), including:
    - Emergency eyewashes, eye/face wash units, safety showers, and combination units must be installed so that they can be used without requiring the operator's hands once activated.
    - Emergency eyewash and safety showers should be equipped with a device to ensure tepid water is provided.
    - The equipment must deliver tepid flushing fluid for a full 15 minutes.
    - To ensure water is tepid, thermostatic mixing valves should be installed.
    - Path of travel from the hazard to the equipment is free from obstructions and as straight as possible.
    - Keep dust covers, which protect eyewash spray heads, in place when the unit is not in use.
    - In areas where corrosive materials are used, and there is an exposure risk, an eyewash station must be accessible within 10 seconds (approximately 55 feet for most able-bodied persons) located on the same level as the hazard, with no obstructions or doors between the hazard and the eyewash.

      NOTE: Special consideration must be given to employees with disabilities and to work areas with highly injurious materials.

    - Emergency Eye Wash/Shower stations must be marked with a visible sign.
    - The emergency equipment must go from "off" to "on" in one second or less when operated.
    - The equipment and all components must be resistant to corrosion.
    - For outdoor installations, the units must be installed with freeze protection.
    - If shut-off valves are installed in the supply line for maintenance, provisions must be made to prevent unauthorized shut-off.

2.1 Eyewash Station Performance Requirements

- The eyewash must provide a controlled flow of flushing fluid to both eyes simultaneously at a low velocity to be non-injurious to the user.
- The eyewash nozzle must be positioned 33 to 53 inches from the surface on

which the user stands and at least 6 inches from the wall or nearest obstruction.

- The maximum height from the spray head to the top of the water stream cannot exceed 8 inches.
- The eyewash must provide tepid flushing fluid at a rate of 0.4 gallons per minute at a pressure of 30 pounds per square inch (psi) for at least 15 minutes.
- The spray heads must have attached dust covers. The dust covers must remain attached when not in use.

2.2 Eye/Face Wash Equipment Performance Requirements

- Where installed, the eye/face wash equipment must provide a controlled flow of flushing fluid to both eyes and face simultaneously at a low velocity to be non-injurious to the user as described in section 2.1. There must be enough room for the eyelids to be held open with hands while the eyes and face are in the fluid-flushing stream.
- Nozzles and flushing fluid units must be protected from airborne contaminants, and removing the protection caps cannot require a separate motion by the operator when activating the unit.
- Eye/face washes must provide tepid flushing fluid at a rate of 3.0 gallons per minute at 30 psi for 15 minutes.
- The eye/face wash must be arranged so that the flushing fluid flow pattern is at least 33 inches, not more than 53 inches from the surface on which the user stands, and at least 6 inches from the wall or nearest obstruction.

2.3 Emergency Shower Performance Requirements

- Emergency Showers will provide flushing from a height of at least 82 inches and not more than 96 inches from the surface on which the user stands.
- The center of the spray will be at least 16 inches from any obstruction.
- The spray pattern diameter will be a minimum of 20 inches wide at 60 inches above the floor on which the user stands.
- The shower must provide tepid flushing fluid at a minimum flow rate of 20 gallons per minute at a pressure of 30 psi for 15 minutes.
- The installation of a floor drain is optional. If a floor drain is installed, it should be fitted with a temporary plug to protect the floor drains from chemical hazards (unless protected from spills by a covered sump or berm system).
- The valve actuator must not be more than 69 inches above the floor, be simple to operate, and must activate the shower.

2.4 Combination Units

- Components of combination units must operate individually and simultaneously per the following:
    - Eyewashes must meet the eyewash station requirements.
    - Eye/face washes must meet the eye/face requirements.

- Emergency showers must meet the emergency shower requirements.
- Drench hoses must meet the drench hose requirements at the pressure and flow specified by the manufacturer (See Section 4.2).

NOTE: A combination unit's eyewash or eye/face wash section is not considered an “obstruction” since they allow for simultaneous use of the emergency shower and eyewash equipment.

3.0 Inspections

3.1 Weekly/Monthly Activations

- The equipment owner or other designee will activate and flush the plumbed emergency eyewash and eye/face wash weekly to verify proper operation and ensure flushing fluid is available.
- Campus Services will activate and flush the plumbed emergency showers monthly to verify proper operation and ensure flushing fluid is available.
- Self-contained emergency eyewashes, eye/face washes, emergency showers, and combination units do not need to be activated. Still, the equipment's owner must visually check them weekly to determine if the flushing fluid needs to be changed or supplemented.
- Expired solutions must be changed.
- Inspections must be conducted in accordance with the manufacturer’s instructions.

NOTE: Campus Services inspects and activates emergency eyewash and shower equipment in corridors and hallways.

- If the emergency eyewash or shower equipment fails to activate, the inspection person must tag it out of service and submit a work request to repair it.
- Inspections must be documented to include the date of inspection.

3.2 Annual Inspection and Flow Test

All equipment must be inspected annually to ensure compliance with general installation and performance requirements as Appendix A outlines.

4.0 Supplemental Equipment

4.1 Personal Wash Units

- Personal wash units do not meet the criteria of plumbed or self-contained eyewash equipment and may not be used when the chemical splash hazard is corrosive and/or formaldehyde.

- Units must deliver immediate flushing fluid without injuring the user.
- Units must be protected from freezing and cannot be exposed to ambient temperatures exceeding 100F.

4.2 Drench Hoses

- Drench hoses must provide a controlled flushing fluid flow at a low velocity to be non-injurious to the user.
- To prevent cross-connection contamination, a drench hose should be installed with a backflow preventer that meets local codes and ordinances.

NOTE: A drench hose may be considered an eyewash or eye/face wash if the device meets the performance requirements of eyewash and eye/face wash equipment and the general installation and inspection requirements of the other emergency equipment.

5.0 References

- OSHA Medical and First Aid Standard – 29 CFR 1910 Subpart K
- American National Standard for Emergency Eyewash and Shower Equipment – ANSI/ISEA Z358.1
- International Safety Equipment Association Emergency Eyewash and Shower Equipment Selection, Installation, and Use Guide

Appendix A: Annual Safety Equipment Inspection Requirements

Item #	Requirement	Yes	No	Comments
1.0	Equipment can be reached in 10 seconds when traveling from the location of the hazard.			
2.0	Equipment is on the same level as the hazard.			
3.0	Path to the equipment is free of obstructions.			
4.0	There is a highly visible sign indicating location of equipment.			
5.0	The area around the equipment is well-lit.			
6.0	All employees subject to exposure of hazardous materials are instructed in the location and proper use of emergency equipment.			
7.0	The delivered flushing fluid is tepid (60F-100F).			
8.0	The valve remains open without the use of operator's hands, once activated.			
9.0	Where the possibility of freezing conditions exists, the unit is protected from freezing or is freeze-protected equipment installed.			

Item #	Requirement	Yes	No	Comments
10.0	Emergency showers meet the following additional requirements: • Shower delivers 20 gallons per minute for 15 minutes. • The height of the water column is between 82”-96” above floor. • The center of water pattern is at least 16” from any obstruction. • The actuator is no more than 69” above floor. • At least 60” above the floor, the water pattern is at least 20” in diameter. • If provided, the shower enclosure has a minimum diameter of 34”.			
11.0	Eyewash and Eye/Face Wash meet the following additional requirements: • Capable of rinsing both eyes simultaneously. • Eyewash delivers 0.4 gallons of flushing fluid per minute for 15 minutes. • Eye/face wash delivers 3 gallons of flushing fluid per minute for 15 minutes. • Flushing fluid flow patten is between 33” – 53” from the floor and 6” from the wall or nearest obstruction. • Water flow covers area indicated on test gauge at no more than 8” above spray heads.			
12.0	Combination units meet the following additional requirements: • Meet the requirements of their respected components. • Positioned so that components may be used simultaneously by the same user.			
13.0	Any drench hose being used as a primary eyewash or eye/face wash meets the eyewash and eye/face wash requirements.			