

SECTION 22 45 16: EMERGENCY EYE WASHES & SHOWERS

1. GENERAL

- A. The design and installation of emergency showers, emergency eye wash units, and combination-type emergency eye wash stations and showers shall be determined based on the guidelines provided herein, as well as in consultation with Brown Facilities Management and Department of Environmental Health and Safety staff
- B. Locations Required: Where the eyes or body of any person may be exposed to injurious or corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area and laboratory for immediate emergency use. These situations include:
1. Solutions of inorganic or organic acids or bases with a pH of 2.0 or less, or 12.5 or more.
 2. Other organic or inorganic materials that is corrosive or irritating to eyes or skin (e.g., methylene chloride, phenol)
 3. Organic or inorganic materials that is significantly toxic by skin absorption (e.g. phenol)
 4. Areas where corrosive chemicals are used in a closed system that can catastrophically fail and cause the chemicals to leak (i.e., liquid lead-acid battery charging areas, water treatment chemical use/storage areas or areas where pressurized systems with corrosive liquids are used)
 5. Storage areas where breakable containers of injurious or corrosive materials (1 gal or more) are handled outside their original shipping cartons
 6. Waste accumulation areas that could contain corrosive waste materials
- C. Unit Locations:
1. Units shall be located in accessible locations that require no more than 10 seconds to reach.
 2. The unit shall be located on the same level as the hazard and the path of travel shall be free of obstructions that may inhibit the immediate use of the equipment.
 3. A door is considered to be an obstruction. Where the hazard is not corrosive, one intervening door can be present so long as it opens in the same direction of travel as the person attempting to reach the emergency equipment and the door is equipped with a closing mechanism that cannot be locked to impede access to the equipment.
 4. ADA Accessible: In labs designated as accessible provide combination eyewash shower units that conform to space and reach requirements of the ADA and ANSI A117.1 standards.
- D. All plumbing devices associated with emergency showers, emergency eye wash units and combination-type emergency eye wash stations and showers, including isolation valves, that may require scheduled preventive maintenance, shall be located where they are readily accessible for inspection, service and repair. Do not locate these devices in or above drop ceilings in laboratory spaces.

- E. All pipe, insulation and equipment supports shall be configured and placed in such a way that it does not interfere with the installation or removal of serviceable plumbing components including mixing valves and isolation valves
- F. Signage:
 - 1. Units shall be identified with a highly visible sign positioned so the sign is visible within the area served by the unit
 - 2. In most interior rooms, flat wall mounted signs will be adequate. In other locations, such as hallways, a flat wall mounted sign may not be adequate; in this instance, double sided or triangular signs visible from either end of the hallway are required
- G. Properly label and identify all eye wash and shower locations, isolation and mixing valves and water lines. Identify and label locations of concealed valves and water lines at eye wash location
- H. Drains:
 - 1. Connect emergency eye wash drains to building plumbing drains via a visible air gap in new installations that utilize recessed-type eye washes.
 - 2. For all other eye wash installations, terminate eye wash drains ~ 24" AFF to allow for installation of typical 5 gallon pail under the drain for flushing and system testing purposes.
 - 3. Floor drains are not required at eye wash and emergency shower locations
- I. Water Supply:
 - 1. Water supply for emergency eye wash and shower systems shall be tepid, moderately warm; design shall permit mixing of hot and cold water near the showerhead or eye wash; the warm water section of pipe between the control valve and the showerhead shall be self-draining. Tepid is defined per ANSI Standard Z358.1 as between 60F and 100F.
 - 2. Emergency eye wash and shower systems shall be connected to building Potable water systems only; connection to lab water or non-potable water supplies is not permitted.
 - 3. Eye wash and shower water supply design should consider recirculation of the tepid water back to hot water source to help prevent Legionella Pneumophila.
 - 4. Thermostatic Mixing Valves: Symmons, model based on required water flow rates and operating pressure.
 - 5. Piping: Copper, type L
- J. Electrical:
 - 1. For new installations, no electrical branch circuit wiring devices, such as receptacles and wall switches, lighting fixtures, electrical junction boxes, or telecommunications/data wiring jacks, shall be located within 6 feet of eye wash and emergency shower locations.
 - 2. For retrofit installations in existing building spaces, every effort shall be made to relocate any electrical branch circuit wiring devices, lighting fixtures, and electrical junction boxes located within 6 feet of an eyewash or shower location.

Where such devices are required to remain within this zone, all affected electrical circuits shall be provided with personnel protective ground fault circuit (GFCI) interrupter protection

- K. Testing:
1. With the unit correctly connected to the water source and the valve(s) closed, visually check the piping for leaks
 2. Remove eye wash filters
 3. Open the valve to the full open position. The valve shall remain open without requiring further use of the operator's hands. Flush to ensure all foreign materials from installation are removed from piping system
 4. Ensure proper delivered water temperature to eye washes and showers
 5. After successful testing, reinstall eye wash filters and caps

2. SHOWERS

- A. Showers shall be located so that the water column is provided that is not less than 82 inches nor more than 96 inches in height from the surface on which the user stands.
- B. The center of the spray pattern shall be located 32-48" from any obstruction; spray pattern shall be a minimum diameter of 20" measured 60" from the shower head.
- C. Showers shall be capable of delivering a minimum of 20 gallons per minute at 30 PSI.
- D. Manufacturers:
1. Haws # 8123 or # 8133 series
 2. Guardian # G1643 (horizontal), # G1635 (vertical) or # G-1629 (concealed)

3. EYEWASH STATIONS

- A. Eyewash stations shall be positioned with the water nozzles 33 inches to 45 inches from the surface on which the user stands and 6 inches minimum from the wall or nearest obstruction
- B. Manufacturers:
1. Haws # 7360
 2. Guardian # G1724 or # GBF1721
- C. Deck-mounted (sink mounted) Eyewash Stations: only approved for use in limited circumstances where installation of a wall-mounted eyewash or combination eyewash/shower is impractical. Written approval from EHS for installation of deck-mounted eyewash must be obtained prior to installation.
Manufacturers:
Guardian # G1805
- D. Floor - Mounted Combination Emergency Shower/Eye Wash Manufacturers:
1. Haws # 8309 series
 2. Guardian # G1902
- E. Recessed Wall Mounted Combination Emergency Shower/Eye Wash, With Exposed Shower Head Manufacturers:
1. Guardian # GBF2172

