

# **DIVISION 22 - PLUMBING**

## **22 45 00 EMERGENCY WASHING FACILITIES**

### **PART 1 - GENERAL**

#### 1.01 SCOPE

- A. Emergency Washing Facilities (EWFs) shall be readily available in the immediate work area for employees, students and visitors who may be at risk for exposure to corrosives, strong irritants, or toxic chemicals.
- B. At-risk persons are considered to be exposed if there is a reasonable likelihood that the material can get on their skin or into their eyes at a concentration that would be harmful regardless of the use of PPE. An emergency shower is required when there is potential for major portions of their body to be impacted by these materials.
- C. EWFs shall deliver the quality and quantity of water that is satisfactory for emergency washing purposes.
- D. EWFs shall be readily available where abrading operations (e.g., sanding, grinding, sawing) may cause injury to the eye or face.

#### 1.02 DESIGN CRITERIA

- A. Location:
  - 1. EWFs shall be available within 10 seconds and fifty (50) feet of potential exposure to corrosives, strong irritants, or toxic chemicals.
  - 2. If strong acids or bases are used, EWFs should be installed in the immediate vicinity of chemical use (i.e. within ten feet), but outside the area where continued exposure to the hazardous material may occur or electrical hazards may be present.
  - 3. EWFs shall be kept free of obstacles blocking their use. A door is an obstacle to EWFs. However, if the door is equipped with a "panic bar" and opens from the exposure side in the direction of the emergency washing facility, an emergency shower may be located outside the door. Protective covers such as plastic caps and shower caps are only considered obstacles if the water pressure will not easily push the cover out of the way once the unit has been activated.
  - 4. EWFs shall be located on the same level of travel as the hazard.
  - 5. Emergency eyewash capture bowls shall be directly plumbed to drain.
  - 6. Providing floor drains for emergency showers is highly recommended, to capture and drain away water produced during use of the unit. If a floor

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drain is provided, the piping for the drain shall have a trap primer designed to resist failure due to buildup of hard water scale. The trap primer shall be protected with an air gap.

- i. It is recommended that ANSI approved eyewash units are installed adjacent to a sink and designed to discharge to the sink when activated.
  - ii. It is also recommended that drench hose units be installed adjacent to a sink to which they may discharge when activated. If a sink is not available to collect discharge water, it is recommended that a floor drain (equipped with a trap) be installed to capture and drain away fluid produced from use of the unit.
7. Any laboratory which has a fume hood shall be equipped with access to both an emergency shower and an eyewash unit.
  8. Design shall include all consideration and requirements for barrier free installations to comply with the Americans with Disabilities Act (ADA).
  9. Do not locate isolation valves for EWFs where accessible to the general public.
  10. Precautions shall be taken to prevent water in the emergency washing facility from freezing.
  11. All emergency washing facilities using non-potable water must have signs stating the water is "not fit for drinking" or "non-potable."

## **PART 2 - PRODUCTS**

### **2.01 EQUIPMENT**

#### **A. Emergency Shower:**

1. The shower head shall be an "Emergency Drench/Deluge Shower" as manufactured by Guardian, Lab Safety Supply, HAWS Company, or Encon Safety meeting the American National Standards Institute standard for Emergency Eyewash and Shower Equipment per the most current and adopted version of ANSI Z358.1.
2. A vertical, universal, highly visible emergency shower sign shall be provided for each shower; either a pictorial shower image or the words "EMERGENCY SAFETY SHOWER". For corridor locations provide a sign which visibly protrudes overhead to be identifiable in a corridor. The area around the unit must be well-lit.

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3. Emergency shower shall provide at a minimum 20 gallons (75 liters) per minute (gpm) of flushing fluid for a minimum of 15 minutes at a velocity low enough to be non-injurious to the user.
4. The emergency shower must have an on-off valve that activates in one second or less and remains on without user assistance until intentionally turned off.
5. Tempered shower units shall be provided when possible. Tempered shower units shall be preset to around 80 degrees F. At a minimum, temperature of the flushing fluid shall be tepid (60 to 100 degrees F) as recommended by ANSI.

#### **B. Emergency Eyewash:**

1. The eyewash units shall be wall or pedestal mount or "Swing Away" type as manufactured by Guardian, Lab Safety supply, HAWS Company, or Encon Safety meeting the American National Standards Institute standard for Emergency Eyewash and Shower Equipment per the most current and adopted version of ANSI Z358.1.
  - i. Hand held sprayers (drench hose) type eyewash units shall not be used unless they are ANSI certified and meet all other placement requirements.
  - ii. "Pull Down" style eyewashes built into a wall in a vertical position shall not be selected for installation except to meet emergency egress aisle width requirements. Splash of water when the unit begins its downward arc discourages weekly testing by the user.
2. A vertical, universal, highly visible emergency eyewash sign shall be provided for each eyewash; either a pictorial eyewash image or the words "EMERGENCY EYEWASH".
3. Emergency eyewash shall provide at a minimum 0.4 gallons (1.5 liters) per minute (gpm) of flushing fluid for a minimum of 15 minutes at a velocity low enough to be non-injurious to the user.
4. The emergency eyewash must irrigate and flush both eyes simultaneously while the user holds their eyes open with a flushing fluid pattern no less than 4 inches and no more than 8 inches above the nozzles.
5. The emergency eyewash must have an on-off valve that activates in one second or less and remains on without user assistance until intentionally turned off. Two-valve activation devices do not meet minimum requirement.

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6. Nozzles shall be protected from airborne contaminants; however, removal of a nozzle protective cover shall not require a separate motion by the operator when activating the unit.
7. Tempered eyewash units shall be provided when possible. Tempered eyewashes shall be preset to around 80 degrees F. At a minimum, temperature of the flushing fluid shall be tepid (60 to 100 degrees F) as recommended by ANSI.

#### **C. Emergency Shower/Eyewash/Facewash Combination:**

1. The combination stations shall use a single water source. The shower eyewash combination shall meet the requirements of the most current and adopted version of ANSI Z 358.1.
2. Provide a universal emergency shower and eyewash sign for each station; either a pictorial shower and eyewash image or the words "EMERGENCY SHOWER AND EYEWASH".
3. The emergency shower shall provide flushing fluid at 20 gpm for a minimum 15 minutes. An eye/face wash shall deliver 3.0 gpm for a minimum 15 minutes and an eyewash shall deliver 0.4 gpm for a minimum of 15 minutes.

#### **D. Drench Hose**

1. The drench hose shall have an on-off valve that activates in one second or less.
2. A vertical, universal, highly visible drench hose sign shall be provided for each unit; either a pictorial drench hose image or the words "EMERGENCY WASHING UNIT" or "DRENCH HOSE". The area around the unit must be well-lit.
3. Drench hoses shall provide at a minimum 3.0 gallons (11.4 liters) per minute (gpm) of flushing fluid for a minimum of 15 minutes at a velocity low enough to be non-injurious to the user.
4. Nozzles shall be protected from airborne contaminants; however, removal of nozzle protective cover shall not require a separate motion by the operator when activating the unit.

#### **2.02 MATERIALS**

- A. Emergency washing facilities shall be constructed of materials that will not corrode in the presence of the flushing fluid.

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- B. All piping material exposed at the shower shall be threaded galvanized unless the environment is corrosive or otherwise detrimental to galvanized pipe. Schedule 80 corrosion resistant, socket welded PVC may be substituted when the environment is potentially corrosive.
- C. Eyewash bowls: Stainless steel is preferred. ABS plastic may be accepted pending area use and durability requirements (with WSU Facilities Services Project Manager approval).
- D. Valves shall be chrome plated brass unless they will be installed in a potentially corrosive environment, in which case valves shall be stainless steel.

### **PART 3 - EXECUTION**

#### **3.01 EMERGENCY SHOWERS:**

- A. The emergency shower shall be positioned a minimum of 16 inches from any obstruction to the center of the spray pattern for an unobstructed area of 32 inches in diameter for the spray pattern and to accommodate the movement necessary to use shower in an emergency situation.
- B. The shower head shall be designed so that the flushing fluid column is between 82 and 96 inches above the surface on which the user stands.
- C. The spray pattern shall have a minimum diameter of 20 inches at a height of 60 inches above the surface on which the user stands.
- D. The activation handle shall be located at a maximum height of 69 inches above the floor. ADA requirements state that an activation handle shall be present at 48 inches above the floor (for forward reach situations) or 54 inches above the floor (for side reach situations).

#### **3.02 EMERGENCY EYEWASH AND EYE/FACE WASH**

- A. The flushing fluid nozzle of the unit shall be between 33 and 45 inches above the surface on which the user stands.
- B. The flushing fluid nozzle shall be located a minimum of 6 inches from any wall or obstruction.
- C. The flushing fluid nozzle shall be located no more than 15 inches from the front (user side) of any bench upon which it is mounted. The unit shall be mounted so that the nozzles are correctly oriented for the user so the user will have to make no adjustment for operation.

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- D. ADA requirements state that the eyewash or eye/face wash on a combination or pedestal unit must have knee clearance a minimum of 27 inches high, 30 inches wide, and 19 inches deep from a wall or obstruction with a max nozzle head height of 36 inches. A clear floor space 30 inches by 48 inches shall be available to allow forward approach.

**END OF SECTION**