State of Wisconsin’s

Eyewash/Shower

Installation & Hazard

Assessment Guidelines



**State of Wisconsin, Bureau of State Risk Management**

*Sources: ANSI 358.1 - 2014*

State of Wisconsin’s Eyewash/Shower Installation

and

Hazard Assessment Guidelines

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State of Wisconsin’s Eyewash/Shower Installation

and Hazard Assessment Guidelines

Introduction: Personnel in many state agencies/institutions routinely use corrosives and/or materials that can cause irreversible eye or bodily injury.

Goal: The goal of this document is to provide guidelines within the recommended practice for installing eyewashes/showers as defined by the American National Standards Institute (ANSI) Z 358.1-2014 standard, Emergency Eyewash and Shower Equipment. The ANSI standard must be followed for new construction, major remodeling projects and to ensure current compliance to minimize personnel exposure.

Purpose: This document is intended to:

1. Provide agencies/institutions with a mechanism to evaluate where eyewash/shower facilities are needed.
2. Serve as a requirements compliance guide designed for eyewash/shower installations.

* Consult with the Department of Administration, Department of Facilities Development (DFD), when requesting eyewash/shower facilities in state buildings.

Procedures: Where corrosive and/or materials that can cause irreversible eye or bodily injury are used, a job hazard assessment (JHA) shall be performed and documented by staff knowledgeable in this area. Note: An outline for conducting a JHA can be found in Appendix A. The JHA should include information such as the types and quantities of materials in use, frequency and duration of use, and the physical-working environment. A sample checklist for evaluating eyewash/shower installations is provided in Appendix B. An outline of an annual inspection form is located within Appendix C. (Please note equipment maintenance and personnel training shall be included where appropriate. Each plumbed device must be activated weekly to test equipment performance and to flush debris or bacterial sediment. Self-contained units do not require activation, but must be visually inspected each week to verify adequate flushing fluid is available. An annual inspection must be done to assure compliance of the equipment.) Additional resources can be found in Appendix D. If a hazard exists, the following hierarchy of controls shall be followed:

1. Substitute for less hazardous materials.
2. Modify equipment and work practices to minimize hazards.
3. If a hazardous exposure still exists, appropriate personal protective equipment shall also be provided and worn in the work area as well as providing “suitable facilities for quick drenching or flushing of the eyes and body”.
4. Develop a response plan to provide assistance to affected employees as soon as possible. (E.g. Alarm system to notify someone is using the emergency equipment, as well as it discourages false activations and saves the facility from water damage).

Drenching/Flushing Requirements

Where drenching/flushing facilities are to be installed, they shall at minimum meet the following ANSI standard criteria:

1. Emergency equipment must be constructed of materials that will not corrode. (E.g. epoxy coated galvanized steel, epoxy coated brass, stainless steel, PVC). Plumbed emergency equipment must be connected to potable water.
2. These facilities shall be immediately accessible within the area the hazard is present; this is defined as within 10 seconds, approximately 55 feet, with no obstructions to interfere with accessibility and as straight as possible. Workers that handle strong acids, caustics or other materials that would be very serious if a spill occurred, emergency equipment must be installed immediately adjacent. Note: A door is considered an obstruction and violates the standard.
3. The equipment must be installed on the same level as the hazard. (I.e. accessing the equipment should not require going up or down stairs or ramps).
4. In addition, these facilities must have the ability to flush both eyes simultaneously and be highly visible. There also shall be no sharp projections in the operating area of the unit and the spray heads must be protected from airborne contaminants.
5. Emergency devices must be protected against freezing. Examples include the following:

* Valve is mounted behind a wall or buried below the frost line and is remote-activated.
* Combination unit that is electrically heated and insulated.
* Heated enclosure to fully contain and protect both the equipment and user.
* Temperature activated bleed-valves. Note: Be sure to funnel this water away from the system to not present slipping hazards. Typically used where freezing potential is infrequent.

1. Water temperature must be “tepid”. Tepid water is between 60oF and 100oF.
2. A shutoff valve up stream is advised for performing maintenance and inspections. Note: Provisions must be made to prevent accidental shutoffs of the valve.
3. Waste water containing hazardous materials must not be introduced into the sanitary sewer; hazardous materials must be connected to the building’s waste collection system.
4. A highly visible sign must be in close proximity for quick identification.
5. All employees must be instructed of the location and proper use of emergency equipment.
6. .Work areas with plumbing shall have plumbed drenching/flushing facilities.

Safety Data Sheets can help determine what flushing system is appropriate for the relevant hazard. Many hazards can be managed and economically addressed by the installation of an eye/face or body shower.

Typical Scenarios:

1. Laboratories and studios using corrosive or harmful materials shall have plumbed drenching/flushing facilities. It’s recommended for laboratories to have recessed eyewash and shower cabinets, as well as dual purpose eyewash/drench hose units at lab sinks.
2. Where plumbing is not available or feasible, non-pressurized, self-contained eyewash units may be used, but they must provide 15 minutes of continuous flushing as indicated in ANSI Z358.1-2014. Maintenance of this equipment is very important.
3. Routine custodial or maintenance activities using corrosive or harmful materials shall be reviewed with the JHA. Emphasis should be placed on substitution and/or work practice modification to minimize these hazards.
4. Safety Data Sheets for specific chemicals shall be consulted during the JHA and implementing proper drenching/flushing facilities.

Key Points

Systems must be:

* Constructed to prevent corrosion and freezing.
* Accessible within 10 seconds (normal paced walk).
* Located on the same plane as the hazard or immediately adjacent to strong acids, caustics or other serious materials.
* Highly visible, accompanied by appropriate signage.
* Tepid (60-100oF) water temperature.
* Constructed to properly dispose of waste water.
* Documented ensuring training is provided.
* Protected against airborne contaminants.
* Flushed and documented weekly.
* Checked weekly and documented for adequate levels of fluid (Self-contained).
* Able to support 15 minutes of continual flushing.

**Dimension Requirements**

**Emergency Showers:**

* Heads
  + 82-96” in height from surface of user to the shower head.
  + 20” diameter spray pattern at 60” above surface.
  + 16” minimum distance from center of spray to any obstruction.
  + Tepid flushing fluid.
  + Plumbed Units: 20 gpm (gallons per minute) for 15 minutes at 30p.s.i.
  + Self-Contained: 20 gpm for 15 minutes.
* Valves
  + Single motion activation, in one second or less.
  + Remains open until manually closed.

**Eye Wash Stations:**

* Heads
  + 33-53” in height from surface to top of dispersed fluid.
  + 6” distance from dispersed fluid to any obstruction.
  + 0.4 gpm for 15 minutes.
* Valves
  + Single motion activation, in one second or less.
  + Remains open until user manually closes the valve.

**Eye/Facewash Combination Stations:**

* Heads
  + 33-53” from work surface to fluid flow pattern.
  + 6” distance from dispersed fluid to any obstruction.
  + Large heads to cover both eyes and face, or regular size eye wash heads plus a face spray ring.
  + 3 gpm tepid flushing fluid for 15 minutes.
* Valves
  + Single motion activation, in one second or less.
  + Remains open until user manually closes the valve.

**Note**: **Personal Eye Wash Bottles:** Personal eye wash units do not meet the requirement of plumbed or self-contained eye wash equipment. Personal eye wash units can support plumbed or gravity-fed units but cannot be substituted.

**Note**: **Drench Hose:** A drench hose is a supplemental device that cannot be substituted for a plumbed or gravity-fed fixture.

* Valve
  + Single motion activation, in one second or less.
* Installation
  + Assembled to the manufacturers’ recommendation.
  + Must deliver tepid flushing fluid.

Appendix A

Job Hazard Assessment Outline

1. Review Injury/Illness Records:

Worker’s Compensation reports as well as the OSHA 300 logs can provide valuable information as to where injuries may be occurring.

1. Hazard Exposure:

Analyze jobs, operations, etc. and identify the potential hazards associated with each job task. This is the first step in helping to categorize workplace risks.

1. Ask For Input:

Employees and supervisors are excellent resources when it comes to identifying workplace hazards, plus they can provide invaluable information on how to eliminate a hazard. Do not hesitate to take advantage of their expertise.

1. Review Safety Data Sheets (SDS’s):

SDS’s are a good place to start when you are looking to evaluate hazard exposure and the need for personal protective equipment. SDS’s should be used to complement your Job Hazard Assessment.

1. Review Loss Control/Industrial Hygiene Surveys:

Previous loss control and industrial hygiene surveys are other excellent sources to look for information on hazard identification. Outside resources can also provide credibility to your efforts and lend an extra set of eyes in helping to characterize hazards.

1. Consider Ways To Eliminate Hazards:

After the existence of hazards has been identified, evaluate ways to eliminate the hazard. Consider the possibility of substituting less hazardous materials, evaluate how equipment and work practices can be modified to eliminate or minimize the hazard. If personal protective equipment is still required, ensure that personnel are trained in proper use and maintenance and this training is documented

1. Document:

Throughout the JHA ensure accurate and detailed notes are maintained. Keep track of the hazards identified to document progress in hazard abatement.

Appendix B

Eyewash/Shower Installation Checklist

Agency: Location:

Building: Room(s):

Question Yes No

1. Are corrosive/harmful materials present in the area?
2. Has a review of Safety Data Sheets (SDS’s) documented eye hazards?
3. Has a job hazard assessment documented eye hazards?
4. Has a review of existing procedures concluded that the process cannot be changed to eliminate the hazard?
5. Has a review of the materials currently being used concluded that it is not feasible to substitute non-hazardous materials to eliminate the hazard?
6. Have inquiries been made to install eyewash/shower stations?
7. Are chemical splash goggles (and face shield if needed) available for employees/students in the area?
8. Do area supervisors or instructors enforce wearing splash goggles/face shield?
9. Have employees/students been informed of the hazards in the area?
10. Have employees/students been trained on how to protect themselves from the hazards in the area?
11. Have eye injuries been reported for this area in the past?
12. Is documentation available to support the above answers? \*

Notes:

“Yes” answers to questions 2 through 5 imply that eyewash/shower stations must be installed.

A “Yes” answer to questions 1 and 6 does not mandate that eyewash/shower stations be installed, but rather suggests that a review of procedures and processes such as those indicated in questions 2 through 5 must be initiated.

“No” answers to questions 7 through 12 imply that administrative and managerial improvements need to be initiated, possibly in addition to eyewash/shower installations.

Date: Assessed By:

\*This document should be provided to DFD upon request when applicable.

Appendix C

Shower and Eyewash Inspection Form

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Shower  (X) | Eyewash  (X) | Location | Identification Number | Code | Comments: |
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Appendix C Cont.

Code Descriptions

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| --- | --- |
| Code | Description |
| A1 | Required eyewash or eyewash/shower not currently in this location. |
| A2 | Safety shower is not within 10 seconds (at a normal pace) or 55 feet from the hazard. |
| A3 | Emergency equipment is not designated with highly visible sign. |
| A4/A5 | Safety station is either not located on the same level as the hazard (A4) or the path of travel is obstructed (A5). |
| B1 | Eyewash outlets are not protected from airborne contaminants. |
| B2 | Eye/face wash fluid flushing flow pattern is not at proper height of 33”-55” above surface floor of user. |
| B3 | There is a barrier within 6” of eye/face wash. |
| C1/2 | Valves do not activate the flow of water in one second or less (C1) and are not simple to operate in a single motion (C2). |
| C3 | Valve does not remain open without the use of the operator’s hands. |
| D1 | Unit does not deliver adequate flow – minimum 0.4 gpm for eyewash or minimum 3 gpm Eye/face wash. |
| D2 | Unit does not provide controlled flow to both eyes. |
| D3 | Flushing fluid does not line up with eye location at some point less than 8” above the eyewash nozzle(s). |
| E1 | Shower head is not at proper height of 82”-96” above surface floor of user. |
| E2 | There is a barrier within 16” radius of center point of shower head. |
| E3 | Shower flow pattern is not 20” wide at 60” above surface of the user. |
| E4 | Shower does not deliver the minimum flow of 20 gpm. |
| F1/F2 | Combination units are not capable of operating at the same time (F1) or it is not positioned so that a single person can use both features at the same time (F2). |
| G1 | Delivered flushing fluid is not tepid (60-100oF). |
| H1 | Broken/missing bowl cover. |
| H2 | Pull rod damaged. |
| H3 | Replace eye wash head(s). |
| H4 | Replace shower head. |
| H5 | Replace bowl. |
| H6 | Replace foot treadle. |
| H7 | Replace treadle chain. |
| H8 | Replace flow control valve. |
| H9 | Missing inspection tag. |
| H10 | Clearly mark floor area access. |
| H11 | Replace self-closing valve with stay-open valve. |
| H12 | Clean and fill self-contained unit. |
| H13 | Replace bottle of personal eye wash with primary eyewash. |

Appendix D

Additional Resources

ANSI / ISEA Z358.1-2014 Compliance Checklist. (n.d.). Retrieved January 30, 2017, from <http://www.gesafety.com/downloads/ANSIGuide.pdf?checkbox=ansi>

ANSI/ISEA Z358.1-2014 - bradleycorp.com. (2016, February 15). Retrieved January 30, 2017, from

https://www.bradleycorp.com/download/2081/4002.pdf