Purpose

This document describes the steps taken to maintain emergency showers and eyewash stations on the Washington State University Spokane Health Science Campus, in compliance with regulatory bodies.

Responsibility

The testing outlined in this document is coordinated by Environmental Health & Safety. Eyewash/drench hoses are checked weekly. Showers are checked monthly.

OSHA on Compliance

The General Requirements in Section 29 Code of Federal Regulations (CFR) 1910.151 states "…where the eyes or body of a person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use."

ANSI/ISEA Z358.1-2014 Standard

The ANSI/ISEA Z358.1 Standard sets the guidelines for safety equipment fixtures and installation practices. It also further clarifies the minimum requirements for "suitable facilities," in addition to the guidance provided in the CFR. Accordingly, emergency showers and eyewashes are required by the standard to be activated weekly with a more thorough evaluation on an annual basis (Sections 4.6.2, 4.6.5)

Performance Requirements

The standard itself has three minimum requirements for inspections:

- Emergency equipment shall be activated as scheduled.
- Activation shall ensure flow of water to the head(s) of the device.
- Duration of the activation shall be sufficient to ensure all stagnant water is flushed from the unit itself and all sections of piping that do not form part of a constant circulation system, also known as "dead-leg" portions. The duration is determined by the length of piping where stagnant water could be sitting before it reaches the head(s) of the unit.

In addition to the above minimum performance checklist required by ANSI/ISEA, it is recommended as a best practice to conduct additional routine functional checks. The purpose of these additional checks is to fully ensure the equipment is operating correctly and is capable of providing proper first aid in the event of an emergency.

- *Access* - Path of travel to the safety station shall be free of obstructions. This could include hoses, boxes, and doors. (Sections 4.5.2, 5.4.2, 6.4.2, 7.4.2).

- *Operation* – The valve must go from "off" to "on" in one second or less and remain on without the use of the operator's hands (Sections 4.2, 7.1).
- *Shower* - The flow of water must appear normal as determined during annual testing.
- *Eyewash/Eye/Face Wash* – Spray head protectors must be in place and removed when the water begins to flow (Sec. 5.1.3, 6.1.3, 7.1.) The water pressure must be at a velocity low enough to be non-injurious. (Sec. 5.1.1, 6.1.1, 7.1).
- *Combination Unit* - Combination unit components must be capable of operating simultaneously. (When the eyewash or eye/face wash is activated, and then the shower is activated, there should be no "starvation" occurring to either of the heads.) (Sec. 7.3, 7.4.4)
- *Temperature* – Showers and eyewashes must deliver tepid flushing fluid. The required temperature range is 60˚ F–100˚ F (16˚ C–38˚ C). (Sec. 4.5.6, 5.4.6, 6.4.6, 7.4.5)

Self-Contained Eyewash and Shower Equipment

Self-contained, also often referred to as "portable," emergency response equipment is typically used in locations where there is either no access to water or at highly mobile sites where hazards are mobile. The ANSI/ISEA requires self-contained units to be visually inspected weekly to determine whether the flushing fluid needs to be exchanged or supplemented. (Sections 4.6.3 and others).

The units should be maintained as per the manufacturer's specific model instructions. A majority of self-contained units that use potable water also offer a sterile bacteriostatic additive option to prevent the water from growing bacteria. An exchange of the water and refill of the additive is required every three months for most additive products, and units must be rinsed clean between the exchanges. If an additive is not being used, water should be exchanged at minimum on a weekly basis with a thorough tank cleaning performed monthly. On an annual basis, self-contained units are required to undergo the full test just as plumbed units are.

Annual Performance Requirements

In addition to the weekly/monthly requirements, additional requirements for annual inspection include:

Location:

- The safety station must be accessible within 10 seconds of the hazard, approximately 55 ft/16.8 m (Sections 4.5.2, 5.4.2, 6.4.2, 7.4.2)
- Emergency equipment location must be well lit and identified with a highly visible sign (Sections 4.5.3, 5.4.3, 6.4.3, 7.4.3)

Shower:

- Showerhead must be 82 to 96 inches above the surface floor of the user (Section 4.1.3, 7.1)
- Shower must deliver a minimum of 20 gallons (75.7L) per minute and provide a column of water 20 inches (50.8 cm) wide at 60 inches (152.4 cm) above the surface floor of the user (Sections 4.1.2, 4.1.4, 7.1)

Eyewash/Eye/Face Wash:

- Eye/face wash equipment must deliver a minimum of 3 gallons (11.4L) per minute of water for 15 minutes (Sections 6.1.6, 7.1). The eyewash must deliver a minimum of 0.4 gallons (1.5L) per minute of water for 15 minutes (Sections 5.1.6, 7.1)
- The flushing fluid of an eyewash/eye/face wash must cover the areas between the interior and exterior lines of a gauge at some point less that 8 inches (20.3 cm) above the eyewash nozzle (Sections 5.1.8, 6.1.8, 7.1)
- The flushing fluid flow pattern should be 33 to 53 inches (83.3 cm – 134.6 cm) from the surface floor of the user and a minimum of 6 inches (15.3 cm) from the wall (Sections 5.4.4, 6.4.4, 7.1).

Documentation

Weekly: Date and initial the designated tag to indicate the following:

- The pathway to the unit is free of obstructions.
- The unit can be activated with 1 hand and remains on hands-free.
- Water began to flow in one second or less; the flow appears to be adequate and was allowed to run for approximately 10 seconds.
- Spray head protectors were in place and were removed when the water began to flow.
- The water temperature is tepid.
- Self-contained equipment was checked to determine if the flushing fluid needs to be changed or supplemented.
- Equipment works properly and is free of broken or missing parts; a work request is to be submitted if problems are noted.

Annual: Prepare a comprehensive report that indicates how the units were tested and the results of the testing.

Retain the tag information and the annual reports. Once the tag is filled, the information (dates, initials) can be transferred to a spreadsheet and then the tag discarded.

Conclusion

Worker protection should be a priority in every safety plan and simply providing emergency showers and eyewashes is not sufficient. To achieve this goal, it is necessary to inspect, test, and monitor equipment readiness and performance.

References

Guardian Emergency Eyewash & Shower Technology, ANSI/ISEA Z358.1-2014 Compliance Checklist, www.gesafety.com/downloads/ANSIGuide.pdf

Bradley, A Guide to the ANSI/ISEA Z358.1-2014 Standard for Emergency Eyewash and Shower Equipment, https://www.bradleycorp.com/mediamanager/view/20293/Bradley_Safety_ANSIGuide.pdf

Haws ANSI Z358.1 Simplified, Your Checklist for Emergency Eyewash and Shower Compliance, http://www.sps-inc.net/data/ansicheck.pdf

ANSI/ISEA Z358.1-2014 SAFETY EQUIPMENT CHECKLIST

WEEKLY MINIMUM PERFORMANCE REQUIREMENTS

1. Emergency equipment shall be activated weekly.
2. Activation shall ensure flow of water to the head(s) of the device.
3. Duration of the activation shall be sufficient to ensure all stagnant water is flushed from the unit itself and all sections of piping that do not form part of a constant circulation system. *(also known as "dead leg" portions)*
4. Self-Contained/Portable Equipment shall be visually checked to determine if flushing fluid needs to be changed.

ANNUAL MINIMUM PERFORMANCE REQUIREMENTS

☐ All shower units shall be inspected ***annually*** to assure conformance with ANSI Z358.1. Recommended Testing Flow Pressure is 30 psi (+ .5 psi – .0 psi).

LOCATION

☐ Safety station shall be accessible within 10 seconds of hazard, approximately 55 ft./16.8 m. *(Sec. 4.5.2, 5.4.2, 6.4.2, 7.4.2)*

☐ Safety station shall be located on the same level as the hazard and the path of travel shall be free of obstructions. *(Sec. 4.5.2, 5.4.2, 6.4.2, 7.4.2)*

☐ Emergency equipment location shall be well lit and identified with a highly visible sign. *(Sec. 4.5.3, 5.4.3, 6.4.3, 7.4.3)*

☐ All employees subject to exposure to hazardous material should be instructed in the location and proper use of emergency equipment. *(Sec. 4.6.4, 5.5.4, 6.5.4, 7.5.4)*

☐ Where the possibility of freezing conditions exists, the unit shall be protected from freezing or freeze-protected equipment shall be installed. *(Sec. 4.5.5, 5.4.5, 6.4.5, 7.4.4)*

COMBINATION UNIT

☐ Combination unit components shall be capable of operating simultaneously and shall be positioned so that components may be used simultaneously by the same user. *(Sec. 7.3, 7.4.4)*

DRENCH HOSE

☐ Drench hose must deliver a controlled flow of flushing fluid at a velocity low enough to be non-injurious. *(Sec. 8.2.1)*

☐ A drench hose can only be considered an eyewash – eye/face wash if it meets performance requirements in Sec. 5 and/or 6. *(See Eyewash / Eye/Face Wash section)*

TEMPERATURE

☐ Deliver tepid flushing fluid. Temperature range – above 60°F (16°C) and below 100°F (38°C). *(Sec. 4.5.6, 5.4.6, 6.4.6, 7.4.5)*

SHOWER

☐ Showerhead must be 82 to 96 inches (208.3 cm - 243.8 cm) above the surface floor of user. *(Sec. 4.1.3, 7.1)*

☐ Shower must deliver minimum of 20 gallons (75.7L) for 15 minutes and provide a column of water 20 inches (50.8 cm) wide at 60 inches (152.4 cm) above the surface floor of user and be 16" from any obstruction. *(Sec. 4.1.2, 4.1.4, 7.1)*

☐ Shall be designed so that the flushing flow remains on without the use of the operator's hands. The valve shall be simple to operate and go from "off" to "on" in one second or less and actuator can not be more than 69 inches (173.3 cm) from the surface floor of user. *(Sec. 4.2, 7.2)*

EYEWASH / EYE/FACE WASH

☐ Must provide a means of controlled flow to both eyes simultaneously at a velocity low enough to be non-injurious. *(Sec. 5.1.1, 6.1.1, 7.1)*

☐ Eye/face wash equipment must deliver minimum of 3 gallons (11.4 L) per minute of water for 15 minutes. (Sec. 6.1.6, 7.1) Eyewash only must deliver minimum of .4 gallon (1.5 L) per minute of water for 15 minutes. *(Sec 5.1.6, 7.1)*

☐ Outlets shall be protected from airborne contaminants. *(Sec. 5.1.3, 6.1.3, 7.1)*

☐ The flushing fluid of an eyewash – eye/face wash shall cover the areas between the interior and exterior lines of a gauge at some point less than 8 inches (20.3 cm) above the eyewash nozzle. *(Sec. 5.1.8, 6.1.8, 7.1)*

☐ Flushing fluid flow pattern should be 33 to 53 inches (83.8 cm – 134.6 cm) from the surface floor of user and minimum of 6 inches (15.3 cm) from any obstruction. *(Sec. 5.4.4, 6.4.4, 7.1)*

☐ Shall be designed so that the flushing flow remains on without the use of the operator's hands. The valve shall be simple to operate and go from "off" to "on" in one second or less. *(Sec. 5.2, 6.2, 7.2)*