

Health & Safety



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Eyewash Stations

By Katherine McEnroe and Anita Dey for Health & Safety Committee

Have you checked your eyewash station recently? Eyewash stations are a common safety staple in any laboratory, yet their maintenance may be overlooked. In the case of an emergency, it is crucial the eyewash station works properly and is easily accessible. Below is a list of the basic properties that eyewash stations should meet, as well as a review of their safe use.

The mandatory requirements according to the Occupational Safety and Health Administration (OSHA) standard 1910.151(c) are that an employer is required to “provide suitable facilities for quick drenching or flushing of the eyes and body when employees may be exposed to injurious corrosive materials.” However, OSHA supports and references as a source of guidance the more comprehensive standards established by the American National Standards Institute (ANSI) in ANSI Z358.1-2014. As of January 2015, these include the following:

1. **Tepid Water:** American National Standards Institute (ANSI) and the International Plumbing Code both require eyewashes to be connected to both hot and cold water lines through a mixing valve that will keep the water tepid (60-to-100° F) during the entire time it is used. The reason this is crucial is that warmer temperatures can accelerate chemical reactions and cooler temperatures can cause hypothermic shock.
2. **Quick Access:** Eyewash stations should be placed in a well-lit area with an unobstructed pathway and signs. Employees should be trained on their location and how to use them. According to ANSI, an employee should be able to reach the eyewash station in 10 seconds or within 55 feet of where chemicals are being used.
3. **Appropriate Height:** Make sure the eyewash station is easily accessible to every employee, ensuring employees get the proper leverage to stand directly over the eyewash station for optimal flush angle. The best solution is to physically adjust the height of the eyewash to accommodate employees of smaller stature. If this is not possible, you may consider alternatives, such as designating a stool. You may wish to consult with your health and safety professional because this may be considered an additional hazard.
4. **Water Pressure and Flow:** The minimum flow requirement for eyewash stations is 30 psi and the maximum flow is 90 psi; they should be able to deliver at least 15 minutes of flushing fluid.
5. **Maintenance:** Eyewash stations also should be tested weekly. While this may initially seem excessive, sediment and bacteria build up in stagnant water. Regarding run time, the ANSI standard states weekly eye wash station flushing should be “long enough to verify operation and ensure that flushing fluid is available;” exact time will be dependent on your system. After consulting several health and safety professionals, the committee recommends flushing your eyewash station weekly for 3 to 5 minutes. A 15-minute flush should occur at least annually, which can be recorded on an inspection tag and associated with the unit; this will also help ensure proper functioning of the mixing valve.
6. **Hands-Free:** Eyewash stations must be able to be activated within 1 second or less and should have stay-open ball valves that allow for hands-free rinsing. According to OSHA, properly installed eyewashes are “immediately available and easily self-administered.”
7. **Dual Eye:** Eyewash stations need to supply flushing fluid to both eyes simultaneously.
8. **Dust Caps:** Dust caps or covers must be installed to prevent the accumulation of contaminants.

When installing new units, eyewash spray heads must be at least 6 inches from the wall or nearest obstruction and positioned between 33 and 34 inches from the floor. As these ANSI standards may not be possible to achieve in an existing lab setting, accommodations ensuring obstruction-free access as mentioned above should be permanently available.

For conservators working away from laboratory settings or in private practice, portable eyewash stations or eyewash bottles may be the only option. Portable stations and bottles are not considered replacements for a full eye flushing, but rather offer an immediate flush that must be followed by 15 minutes of rinsing at a plumbed eyewash station.

To understand the recommended specifications and maintenance schedule of eyewash equipment, it is also worth reviewing best practice for using eyewash stations:

1. **PPE:** Eyewash stations are not a replacement for protective eyewear, which should be used to prevent chemical contact with the eyes.
2. **Contact Lenses:** Avoid wearing contact lenses in a lab environment. If you do, consider wearing safety glasses or goggles during a wider range of activities than a non-contact lens-wearing conservator.
3. **Flush Time:** Some guidelines for flush time provided by the Canadian Centre for Occupational Health and Safety are:
 - 5 minutes for non-irritants or mild irritants
 - 15-20 minutes for moderate to severe irritants and chemicals that cause acute toxicity if absorbed through the skin
 - 30 minutes for most corrosives
 - 60 minutes for strong alkalis (such as sodium hydroxide, potassium hydroxide, and calcium hydroxide)
4. **Medical Assistance:** After adequate flushing, seek medical attention.

For more information on the above, see the complete ANSI eyewash standards and additional helpful resources, which are referenced below. ANSI Z358.1-2014 also applies to drench showers. If your lab is equipped with one, you should consider the same principles and maintain both systems concurrently.

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New Publications

Barnes, Nigel. *Clock cases: A practical guide to their construction, restoration and conservation*. Marlborough, Wiltshire: Crowood Press, 2015. ISBN: 9781785000232. The authors examine in detail the processes used to restore longcase clocks and provide detailed descriptions, as well as numerous photographs and diagrams.

Dekker, Annet. *Collecting and conserving net art: Moving beyond conventional methods*. Abingdon, Oxon: Routledge, 2018. ISBN: 9780815382416. This book addresses the challenges posed to conventional preservation practices by an art form prone to change and offers guidance to professionals making decisions regarding its care and curation.