

Personal protection equipment (PPE) is the first line of defense for protecting workers. But PPE is not fail safe, nor are all workers using it consistently. A comprehensive safety plan must also include emergency eyewash or drench showers wherever there is a potential hazard for employees. OSHA requires suitable drenching facilities anywhere the eyes or body may be exposed to injurious corrosive materials.

What constitutes a hazard? A worker exposed to corrosives, toxic chemicals or flying debris is exposed to hazards. But what about someone pouring bleach in a janitorial closet? This is the type of concern that causes confusion about whether an emergency fixture is needed and where it should be located.

Three Methods for Identifying Hazards

Before specifying and installing equipment, the first step should be to conduct a thorough jobsite evaluation to determine emergency needs. A walk-through of each workstation will identify potential hazards. Keep in mind that jobsite evaluations are not a one-time event. They should be done on a regular basis to ensure the right type of equipment is present and that it operates properly.

During a walk-through, it is essential to reference the ANSI Z358.1-2004 standard, which outlines the specific requirements for emergency eyewash and drench shower equipment installation, testing, performance, maintenance, training and use. Here are three easy ways to identify common hazards that can put employees in harm's way.

1. Dangerous liquids. It goes without saying that the face and eyes are sensitive. Even liquids that may seem innocuous can cause serious injuries. When conducting an analysis, we use the acronym **STUD** for the situations in which liquids can potentially be dangerous:

- Storing
- Transferring
- Using
- Disposing

Going back to the earlier question about pouring bleach, this activity does put a worker at risk. If the bleach splashes into a worker's eyes and there is not a source of flushing fluid nearby, the worker's vision is in jeopardy. Acids, boiler chemicals, pesticides and solvents are other liquids commonly handled and

stored. All of these require emergency washing equipment as part of a facility's emergency preparedness plan.

2. Actions ending in "ing." Many of the hazards on worksites are related to actions. If employees are do-"ing" physical activities, the result is usually debris, sparks or other matter sent flying into the air. Look for all of the different action verbs that end in "ing" to identify potential hazards, such as welding, painting, chipping, blowing or sanding.



Emergency fixtures, such as this shower and eyewash unit, should be accessible within 10 seconds of hazardous workstations.

3. Using PPE. As mentioned earlier, the use of PPE signifies there is a hazard to workers that may require an emergency fixture within easy access. Employees in hazardous situations are required to wear ANSI-approved eye protection and clothing, but many times a worker removes his or her protective gear for various reasons including inspecting equipment and an injury occurs. Emergency fix-

tures can help treat and minimize injury when PPE fails or when people fail to use it.

Assess Emergency Needs

After identifying potential hazards, the next step is to determine if existing emergency equipment meets the facility's needs or, if none are present, what type and how many emergency fixtures are needed. Workstations may be relocated or applications can change, which is why it is important to routinely evaluate the situation.

Proper equipment should be selected based on the level of exposure to workers and how many will be affected. For example, the chemical itself and the process of using the chemical should be evaluated to determine whether an eyewash, eye/facewash, drench shower or a combination drench shower/eyewash is most appropriate. The following are the general guidelines:

- **Eyewash:** Effective for spills or splashes likely to affect only the eyes.
- **Eye/facewash:** Designed to be used when the entire face is at risk.
- **Drench shower:** Quickly flushes a larger portion of the body but is not appropriate for the eyes.
- **Combination eyewash and drench shower:** Flushes the eyes and rinses larger areas of the body.

Workers sanding surfaces and not wearing eye protection could easily get contaminants lodged in their eyes. In this situation, plumbed or portable eyewash units are needed. Individuals splashed with a corrosive chemical or exposed to an airborne toxic gas would need access to a drench shower to rinse their entire body. If both the eyes and body are at risk, a combination drench shower and eyewash should be available to workers. Keep in mind that drench showers are not suited for flushing the eyes.

On a related note, injuries to the eye are the most common preventable cause of blindness. Eyes are extremely sensitive: Even household chemicals can cause damage. The first few seconds of an emergency are critical because after the first 10 seconds of contact, the chances for a full eye recovery are slim. Therefore, immediate flushing at an ANSI-approved eyewash station is critical.

Consider Environmental Factors-

When specifying an emergency fixture, an

important consideration is the environment or application in which it will be used. A range of material options from galvanized steel to PVC works well in corrosive elements, either in the air or during flushing or a cleaning-wash down process.

Extreme temperatures, particularly in frigid outdoor locations, pose another challenge for traditional emergency fixtures. Outdoor applications require emergency fixtures that are specifically designed to function through a range of temperatures. The ANSI Z358.1-2004 standard requires that emergency fixtures installed where the potential for freezing exists should be protected from freezing, or freeze-protected equipment should be installed. There are a number of different solutions available, including frost-proof units, heat-traced fixtures and through-wall options, all of which comply with this standard.

In remote locations, a potable water supply may not be available. In this situation, a portable eyewash unit can be used to provide protection. Look for portable products that comply with all requirements of the ANSI Z358.1-2004 standard when used to replace a plumbed fixture.

Properly Locate Fixtures

Once the appropriate equipment is chosen, logistics surrounding where to place the fixture come into play. ANSI requires that emergency fixtures be placed in well-lit areas and that each fixture has a highly visible sign for quick identification.

Emergency equipment also must be within a 10-second reach of a hazard. The general guideline is a 55-foot distance because that is

how far the average person can cover in 10 seconds. There is one caveat: If highly corrosive chemicals are used, the equipment should be placed immediately adjacent to where exposure could occur because of the increased risk of immediate harm.

Another key factor to consider when selecting proper emergency equipment for each area is the number of workers that could be affected by a particular hazard. If many workers are engaging in an activity at the same time, more than one emergency fixture may be needed so that in an emergency they are not waiting to use a shower or eyewash unit.

Eliminate Obstacles And Obstructions

In general, emergency equipment is used infrequently, so the area in front of a drench shower or eyewash often becomes a storage area for boxes and equipment. Sometimes items are even hung from or piled onto the fixture. These obstructions prohibit workers from reaching equipment quickly. Some workers may not even know the fixture exists. For safety equipment to be effective, users must be able to quickly access it without having to squeeze between boxes or go up a flight of stairs.

Selecting fixtures with a safety-yellow coating is an effective way to ensure that equipment will be easy to locate in an emergency. Yellow is used rather than other bright colors, because it is the most visible color and the first color the human eye notices.

To eliminate any obstacles that stand in the way of a solid safety plan, consult with a third-party safety consultant and/or an

emergency equipment product manufacturer. Some manufacturers will conduct free jobsite evaluations to assist facilities with ANSI compliance issues. Meeting with one of these experts and implementing a strategy for installing, maintaining, testing and training employees on using the equipment can provide peace of mind. **CM**

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Guidelines for Testing and Maintenance

ANSI requires weekly testing of emergency fixtures to be sure water is flowing to the unit and to flush any sediment or rust buildup. To conduct the test simply turn on the water, let it run for a few minutes and then close the valves. Check for any water leaks around the unit. Next, reopen the valve; it should remain open without holding. Finally, log testing and inspection information, noting any areas to monitor in the future.

In addition to weekly testing, ANSI also requires that plumbed showers and eyewashes be given a comprehensive testing each year. Someone not involved in weekly testing should be appointed to do this task so there is a fresh perspective. Refer to the ANSI Z358.1-2004 standard to monitor key functions, including the following:

- Proper flow rates and velocity.
 - Activation in one second or less.
 - Tepid water temperature.
 - Fixture height
 - Integrity of components and plumbing connections.
- CM**

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