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Eyewashes & showers: Options for construction emergencies

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To help regulate the construction industry, OSHA has developed a special set of rules, the safety and health regulations for construction, which include detailed instructions for the type of personal protective and life-saving equipment that must be provided on job sites.

OSHA indicates that general industry standards for emergency safety equipment should be applied to construction sites, meaning that OSHA standard 29 CFR 1910.151 (c) would apply. There must be an eyewash station on jobs where materials that could damage the eyes are present, and there must be suitable drenching facilities wherever workers may be exposed to injurious corrosive materials.

OSHA has not officially adopted the American National Standard for Emergency Eyewash and Shower Equipment Z358.1-2004, but the agency does encourage compliance with the ANSI standard to provide the suitable drenching facilities required by OSHA.

The ANSI standard requires that emergency fixtures be within 10 sec-

onds, or about 55 feet, of a hazard. On a construction site, it's particularly important for everyone to know where the nearest

emergency station is located. Drench showers and eyewashes should be identified with highly visible signage and be in a well-lighted area.

Eyewashes and drench showers help dilute chemicals on the skin or in the eyes, cool or warm the skin's surface, flush chemicals and debris from the eyes or skin and can also extinguish fires on clothing. Check chemical data sheets for specific chemicals used on your job site to be sure flushing is at the correct temperature and will not react with the chemicals.

Portable emergency fixtures

Personal bottle eyewashes provide a quick flush and can be used as a first response. Bottle eyewashes allow the user to immediately flush the eyes before moving to a full 15-minute flush station. Newer designs feature a one-step design that opens the cap on removal from the station, providing relief in a single, quick action. There is no turning, twisting or unscrewing required to open the bottle.

Portable eyewash stations are another option in remote locations. Generally these units provide a longer eye flush. In fact, portable

gravity-fed units are designed to provide a full 15 minutes of flushing fluid at a minimum rate of 0.4 gallons per minute (GPM). When choosing a portable eyewash unit, be sure the product has been third-party tested and complies with the ANSI standard.

There are many different models of gravity-fed portable eyewashes and some are actually much more portable than others. Units with bracket clamps that hold the tank securely to the pedestal and have a fully-sealed connection between the tank and pedestal are easiest to transport. Some are also lighter and easier to fill. A tank made from a transparent polycarbonate material makes it easier to inspect the unit and ensure fluid in the tank is clean and ready for use. Heated units are offered by some manufacturers, which are designed to be used in cold climates. For versatility, consider specifying eyewashes that can be mounted on a wall, flat workspace or a cart that collects waste.

The latest version of the ANSI standard also allows drench hoses to be qualified as eye and face washes if installed correctly. These can be an option for unplumbed work sites. ANSI mandates that units must be: 1) installed in a fixed location allowing hands-free use once activated; 2) capable of being activated with one step; and 3) remain flowing until shut off.

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Portable pressurized tanks are another ANSI-approved option. These units are filled with flushing fluid and are pressurized to provide the required volume and flow duration.

Plumbed emergency solutions

Larger or longer-term construction sites may have an accessible plumbed water supply. Here plumbed eyewash or drench shower fixtures can be installed. With any outdoor application, it's important to evaluate the anticipated temperature range and select the appropriate equipment.

Plumbed fixtures can be installed either as freestanding units or mounted on the outside of the building with piping protected on the interior of the wall. Fixtures mounted outside must be capable of working properly in a range of temperatures — these units should be carefully selected as there are a number of options to control temperature extremes.

Drench showers required for hazards that pose a risk to the body must provide a minimum of 20 GPM at a pressure of 30 pounds per square inch. Although some manufacturers offer portable drench showers, these fixtures may not provide enough volume to fulfill the 15-minute flush requirement or have the appropriate

spray pattern. A plumbed drench shower is usually the best solution.

Evaluate all site hazards before determining the appropriate fixture. A combination drench shower and eyewash unit, for example, may be a better solution than a stand-alone shower. No matter which type of fixture is selected, it's important during installation to refer to the ANSI standard for height and clearance restrictions, along with minimum flushing flow and pressure.

Weathering the conditions

Heat can pose a challenge for plumbed fixtures with piping exposed to the elements outdoors, but cold temperatures are a greater threat. ANSI Z358.1 requires freeze-protected equipment be installed in any location where there is a potential for freezing. Several different types of frost-proof units are available and tend to fall into two main categories — through-wall fixtures and units with buried incoming supply lines.

Frost-proof designs will protect against freezing water in exposed piping but will not heat the water as it runs through the unit during use. For any of the options mentioned below, it is important to make sure that a tempered water supply be provided.

A through-wall drench shower and eyewash unit is a cost-effective solution for areas that have outdoor hazards located near a plumbed and temperature-controlled building. The water and supply lines are located on the inside of the building, while the shower and/or eyewash are mounted on the outside wall. Keeping the ball valves inside

protects water in the pipes against freezing or extreme heating.

In situations where there is not a suitable inside wall, other types of products may be needed. One of the more basic solutions is a frost-proof unit with pipes feeding to the unit buried below the frost line.

More sophisticated products may be required for certain situations. Heat-traced (cable heated) fixtures are designed specifically for cold weather applications. A heat-traced cable is wrapped around the piping on these fixtures to regulate the temperature of the water inside the fixture to avoid freezing or overheating. Pipes are insulated with polyethylene foam and the entire fixture is encased in plastic for added protection.

Another more comprehensive option is a polar shower. These units usually have a heated, insulated enclosure paired with a local tempered water supply. The emergency fixture is located inside the enclosure and users are protected from the outside elements when entering to activate the unit.

Finding the right fit

It's not a matter of whether emergency equipment is needed on construction sites. The question is what kind of equipment will be most effective. Safety consultants, as well as emergency equipment manufacturers, can provide information and insight to help you evaluate hazards and specify the right fixtures for your light- or heavy-construction application.

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