

# Eye Wash Station Safety Information

The first 10 to 15 seconds after exposure to a hazardous substance, especially a corrosive substance, are critical. Delaying treatment, even for a few seconds, may cause serious injury. Emergency showers and eyewash stations provide on-the-spot decontamination. They allow workers to flush away hazardous substances that can cause injury. Accidental chemical exposures can still occur even with good engineering controls and safety precautions. As a result, it is essential to look beyond the use of goggles, face shields, and procedures for using personal protective equipment. Emergency showers and eyewash stations are a necessary backup to minimize the effects of accident exposure to chemicals. Emergency showers can also be used effectively in extinguishing clothing fires or for flushing contaminants off clothing.

Currently there is no standard for the design or placement of eyewash stations or emergency showers. As a result, the American National Standards Institute (ANSI) Standard Z358.1-2009 "Emergency Eyewash and Shower Equipment" is generally used as a guide.

For emergency showers and eyewash stations to be effective, the American National Standards Institute (ANSI) Standard for Emergency Eyewash and Shower Equipment (ANSI Z358.1-2009) recommends that the affected body part must be flushed immediately and thoroughly for at least 15 minutes using a large supply of clean fluid under low pressure. Water does not neutralize contaminants -- it only dilutes and washes them away. This fact is why large amounts of water are needed. However, other references recommend a minimum 20-minute flushing period if the nature of the contaminant is not known. The flushing or rinsing time can be modified if the identity and properties of the chemical are known. For example:

- a minimum 5-minute flushing time is recommended for mildly irritating chemicals,
- at least 20 minutes for moderate-to-severe irritants,
- 20 minutes for non-penetrating corrosives, and
- at least 60 minutes for penetrating corrosives.

Non-penetrating corrosives are chemicals which react with human tissue to form a protective layer which limits the extent of damage. Most acids are non-penetrating corrosives. Penetrating corrosives, such as most alkalies, hydrofluoric acid and phenol, enter the skin or eyes deeply. Penetrating corrosives require longer water flushing (a minimum of 60 minutes) than non-penetrating corrosives (a minimum of 20 minutes). In all cases, if irritation persists, repeat the flushing procedure. It is important to get medical attention as soon as possible after first aid has been given. A physician familiar with procedures for treating chemical contamination of the eyes and body should be consulted.

To be effective, the equipment has to be accessible. ANSI recommends that a person be able to reach the equipment in no more than 10 seconds. Other recommendations include that the emergency shower or eyewash station should:

- be located as close to the hazard as possible
- not be separated by a partition from the hazardous work area.
- be on an unobstructed path between the workstation and the hazard. (Workers should not have to pass through doorways or weave through machinery or other obstacles to reach them.)
- be located where workers can easily see them - preferably in a normal traffic pattern.
- be on the same floor as the hazard (no stairs to travel between the workstation and the emergency equipment)
- be located near an emergency exit where possible so that any responding emergency response personnel can reach the victim easily.
- be located in an area where further contamination will not occur
- provide a drainage system for the excess water (remember that the water may be considered a hazardous waste and special regulations may apply).
- not come into contact with any electrical equipment that may become a hazard when wet, and
- be protected from freezing when installing emergency equipment outdoors.

Work areas and operations that may require these devices include:

- battery charging areas,
- laboratories,
- spraying operations,
- high dust areas,
- dipping operations, and
- hazardous substances dispensing areas.

One person in the work area should be designated responsible for inspecting and operating (activating) the emergency shower, eyewash station, combination units, and drench hoses weekly. A weekly check will make sure that there is flushing fluid available as well as clear the supply line of sediments and minimize microbial contamination caused by 'still' or sitting water. This person should keep a signed, dated record. The ANSI standard also recommends a complete inspection on an annual (yearly) basis.

Preventive maintenance inspections should be done every six months to check for such problems as valve leakage, clogged openings and lines, and adequacy of the fluid volume. A work record of these inspections should be kept. Replacement parts should be kept on hand to prevent the system from becoming non-functional. If the system breaks down for any reason, the workers in the area should be properly warned and protected.

Personal eyewash equipment should be inspected and maintained according to the manufacturer's instructions and at least annually for overall operation.