IT ALL COMES OUT IN THE WASH

In New Zealand there is no minimum standard for the performance and use requirements for first aid eye/face wash and drench showers. The Australia and New Zealand Standards provide some guidance, but is it truly comprehensive? In this article, NZ Safety product manager Dean Pritchard compares how the United States and Europe regulate eyewash units and safety showers with the approach taken in Australasia. So when you’re next purchasing equipment for an emergency such as a chemical splash, you know what to look for to give you the right water for the job.

As early as 1970 the United States made it mandatory to have safety showers and eyewash units wherever there is a danger of exposure to hazardous materials. Under their regulations, emergency showers have to deliver not only adequate water, but disperse it so that the entire body can be purged simultaneously. Eyewash units are required to deliver an adequate amount of water for rinsing, but water flow has to be softened so the force does not drive the contaminants into the optic system.

The United States ANSI Z358.1 standard states that emergency eyewash equipment must deliver tepid (lukewarm) water/solution for at least fifteen minutes at a minimum flow rate of 0.4 gallons (approximately 1.5 litres) per minute. To avoid any further injury, flow regulators must be installed to control water speed and temperature.

The design of the eye/face wash facility must be such that no matter what height a staff member is they will be able to use the facility unaided. The ANSI standard says that eyewash devices must be positioned so that the nozzles are no less than 33 inches from the floor but no more than 45 inches.

Also in the United States, OSHA has a regulation, 1910.151(c) that 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 within the work area for immediate emergency use." While in principal this statement is better than no direction at all, the use of words like 'suitable facility' fail to provide authoritative direction.

Locally, Australia and New Zealand Standard, ASNZS 2243.1:1997, Safety in Laboratories Part1: General is more directive in its approach. Section 2.6 (c) of the Australian and New Zealand standard states that there is to be "An eyewash facility of appropriate type in each room where chemicals are used, e.g. where corrosive substances are handled. A permanently-fixed aerated eyewash facility which can be operated without using hands if necessary." In Section (d) it says "At least one safety shower, installed where hazardous substances are used. The safety shower shall be capable of operation in 'hands-free' mode (see also AS 2982)."

While this is a start, even this standard is not as definitive as the ANSI standard where these general requirements are stated:
• Ability to flush both eyes simultaneously.
• Freeze protection when the possibility of freezing temperatures exists.
• No sharp projections in the operating area of the unit.
• Nozzles protected from airborne contaminants.
• A self-contained unit shall be constructed of materials that will not corrode in the presence of flushing fluid.
• The unit shall deliver no less than 0.4 gpm (1.5 litres) for minutes.

Valves
• Must have "stay open" feature allowing both hands free to open eyelids.
• Must be capable of being turned on in one second or less.
• The valve activator shall be large enough to be easily located and operated by the user.

In addition, the standard recommends that eyes be flushed for 15 minutes and that employers should make sure these devices are highly visible and well marked. On sites where more than one unit is installed the standard recommends that uniformity is maintained to prevent confusion among workers when circumstances demand their use.

Similarly with showers, ANSI specifies the height of the showerhead to be no less than 82 inches (2.08 metres) and no more than 96 inches (2.44 metres) from the floor. The showerhead is required to deliver more than 20 gallons of water per minute. Water temperature and pressure fluctuations must be accounted for in the design along with "stay open" and "instant on" valves.

As you can see, the United States regulations are far more detailed than those in Australasia. With so few specifics stating precisely the features these safety devices must contain, many products will gain approval here, when other countries they never would be approved for sale.

It is also interesting to note that a significant problem observed in New Zealand by OSH is lack of maintenance. Should we be surprised? Without any authoritative guidance on what maintenance is expected, people are left to their own devices. Manufacturer’s specifications and guidelines are available but whether they are implemented is anyone’s guess. Here again we can turn to the ANSI standard, which provides sound advice.

ANSI states that each plumbed device should be checked weekly to test equipment performance and to flush debris or bacterial sediment. There is also a requirement for them to be checked against the standard on an annual basis and reference is made to insure that the flushing fluid’s temperature is checked also. Of equal importance is the training of staff. They should be instructed in the location, proper use and application of personal eyewash equipment. It is imperative that they know to begin first aid treatment by washing the eyes of the injured party before washing the body with a shower and removing clothing where required.
Both ASNZS 2243 and the ANSI standard specify where eye/face wash systems should be installed. Although ASNZS 2243 doesn’t specify the distance an eye/face wash should be from a potential hazard in as much as it pertains to laboratories the statement “each room” should be sufficient for the majority of laboratory applications. However, the ANSI standard stipulates that no matter what device is selected it should be situated no more than 10 seconds away from the potential hazard. The path leading to the emergency station should be clear of all obstacles.

When purchasing equipment such as eyewash units and emergency showers, it is strongly advised that you do make sure the one you buy has been approved by a third party authority. While it may be less expensive to get your local plumber to knock one up, buying an approved product (and maintaining it regularly) means you know that in an emergency it will do its job. In the absence of truly effective New Zealand and Australian Standards, it is much safer to consider only products that meet United States or European Standards. This makes it simple to ensure you are always providing the right water for the job.