

Eye Safety in the Workplace

Eye to Eye

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Each year, there are over 20,000 cases of work-related eye injuries in the United States alone as reported by the U.S. Bureau of Labor Statistics. These cases of ocular trauma comprise an estimated 10-20% of all occupational injuries. By utilizing proper safety precautions, it is estimated that nearly 90% of these incidents could have been avoided. In instances of accidental trauma, one study found that 78% of these individuals neglected to wear proper eyewear protection. Therefore, it is imperative that both businesses and their employees are well versed in the guidelines and requirements for workplace safety.

OSHA stands for Occupational Safety and Health Administration. This federal agency is charged with enforcing proper safety protocols throughout all workplace settings. In regards to safety eyewear, OSHA has adopted the guidelines of the American National Standards Institute (ANSI) as a federal requirement. Safety frames, lenses, side shields, goggles, and face devices must comply with the ANSI Z87.1 standards. Welders may also see the ANSI Z49.1 standards for additional welding requirements. If you are unsure of your employer's requirement regarding eye protection it is best to consult with your supervisor or HR department. Further resources are also available at <https://www.osha.gov>.

In order to comply with ANSI standard requirements, eyewear safety devices should be marked with "Z87", or in cases of high impact environments, it should display the marking "Z87+." All devices bearing these marks undergo rigorous testing to ensure proper eyewear safety. These frames and lenses are tested as a unit for proper impact resistance. This determines the type of materials used and the minimum thicknesses of each lens mounted within the safety frames. In some instances, such as welding and X-ray exposure, lens filters and wavelength transmission are also tested. ANSI and the American Welding Society (AWS) have collaborated with OSHA to form shade number requirements for the shields of welding helmets and other eyewear lenses across various settings.

Know your workplace

To determine the type of safety eyewear indicated for your environment it is important to know the risks associated with

your surroundings. Common dangers include, but are not limited to:

- Chemical splashes or vapor burns
- Projectile objects (metal, glass, plastic, etc.)
- Radiation exposure (ultra-violet, infrared, X-ray)
- Particulate debris that may become airborne
- Mishaps from machinery or hand-held tools/instruments
- Blunt or penetrating eye trauma
- Laser beam exposure

Know the signs of possible eye injury

In addition to knowing the specific dangers in your work environment, it is also imperative to know the signs of plausible or subsequent trauma such as:

- Tearing or sensitivity to light
- Blurred vision
- Ocular redness and/or eyelid swelling
- Eye pain
- Unusual pupil shape or size
- Obvious trauma such as cuts, lacerations or bleeding
- Double vision, or being unable to move the eye in all directions

How can you, as a healthcare provider, manage these injuries?

In the event of eye trauma, encourage patients to seek immediate medical attention from an eye care professional or visit the emergency room (after hours) for assessment. No matter how minor the injury may appear, permanent damage or irreversible vision loss could result if left untreated. Instruct patients to never rub, touch, or apply pressure to the eye. For small particulate debris the patient may attempt to flush the eye with eyewash or artificial tears but should never attempt to remove a lodged foreign object out of their own eye. If the injury is a result of a chemical splash, instruct the patient to immediately rinse the eye thoroughly using an eye wash station, eye wash bottle, or clean water for at least 10-15 minutes. Whenever possible, take note of the chemical name and OSHA chemical label to further assist in the treatment of the chemical burn.

What are some common conditions seen with ocular trauma?

- Ocular abrasions or lacerations
- Retinal detachments
- Traumatic glaucoma
- Penetrating eye injury
- Infection
- Corneal scarring or opacification
- Traumatic cataracts
- Solar maculopathy and/or photokeratitis (Welder's Flash)



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Eye protection is not only important in the workplace setting but should also be extended to many other scenarios such as yardwork, sports activities, and home improvement projects. Always err on the side of caution as unexpected injury can occur in the blink of an eye!

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