



■ Eye Safety At-a-Glance

Protecting Your Vision at Work





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INTRODUCTION

Each day nearly 2,000 American workers suffer the pain of avoidable workplace eye injuries that require medical treatment.¹ Despite the elevated risk of eye injury in some industries, many workers skip the precautions that could protect their eyes. In fact, in 2007, nearly three out of every five workers that experienced eye injury were wearing either the wrong kind of eye protection or no protection at all at the time of the accident.²



In addition to the physical toll exacted by these injuries, they also come at great cost to businesses, amounting to an estimated \$300 million annually in medical bills, compensation and downtime.³ Lost productivity is another significant consequence: Among private industry employees in 2008, there were more than 27,000 reported days away from work due to eye injuries.⁴

Perhaps most devastating is the fact that while vision loss is among the top 10 disabilities among American adults aged 18 years and older, 90 percent of eye injuries are preventable. This issue brief, published by The Vision Council in conjunction with the American Society of Safety Engineers (ASSE), offers information on workplace eye injuries in many work settings, as well as tips and products designed for their prevention.

The Vision Council and ASSE have collaborated to release this brief to provide workers with the knowledge and tools necessary to protect their eyes. The Vision Council is committed to education, advocacy and consumer outreach and ASSE and its members have spent the last century working to protect people, property and the environment while contributing to many vision safety research and regulatory projects.



INCIDENCE

Men between the ages of 25-44 comprise 80 percent of all workplace eye injury victims.⁵ Eye injuries account for nearly 45 percent of all head injuries that lead to missed work days.⁶ And surface wounds to the eye involving foreign bodies such as splinters or debris occur in 38 percent of eye injuries.⁷

Potential eye hazards can be found in nearly every industry. While 61 percent of eye injuries occur in manufacturing, construction or trade jobs, eye injuries also happen in offices, hospitals, laboratories and many other types of workplaces. For example, health care and other workers are at risk of acquiring infectious diseases via ocular exposure from touching their eyes with contaminated fingers.



JOBS AND ACTIVITIES THAT POSE A DANGER TO YOUR EYES

Many job activities have the potential to cause eye injury; some are more obvious than others. Common causes of eye injuries include:

- ▶ Projectiles (dust, concrete, metal, wood and other particles)
- ▶ Chemicals (splashes and fumes)
- ▶ Radiation (especially visible light, ultraviolet radiation, heat or infrared radiation and lasers)
- ▶ Bloodborne pathogens (hepatitis or HIV) from bodily fluids including blood

JOBS WITH ELEVATED EYE INJURY RISK AND RECOMMENDED PROTECTIVE EYEWEAR TO COUNTER RISKS

JOB	HAZARDS	PROTECTIVE EYEWEAR
AUTO REPAIR	Mechanics are more likely than the average worker to be injured on the job; contact with objects and equipment, such as parts and materials, represent a significant hazard. Eye injuries can occur as a result of sparks from cutting torches and airborne pieces of metal launched from bench grinders.	<ul style="list-style-type: none"> - Goggles - Safety glasses with side shields
CARPENTRY	Carpentry and general repairs pose the threat of eye injury from flying wood, metal and concrete chips. Other risks include hammering, chiseling, drilling, stripping paint, splitting tiles or concrete slabs, painting ceilings and laying insulation.	<ul style="list-style-type: none"> - Goggles - Safety glasses with side shields to protect against impact of flying particles
CONSTRUCTION	Construction has a much higher rate of eye injuries than any other industry. In construction, more than 10,000 eye injuries occur each year forcing employees to miss work. Nails, tiny pieces of metal, splinters and cut wire ends can land in the eyes and cement mixing, sawing, grinding and chipping produce dust and grit that can cause eye injuries and irritation.	<ul style="list-style-type: none"> - Goggles - Safety glasses with side shields
DRIVING	For 1st class license holder's good vision is a necessity both for the safety of drivers as well as others on the road. It is also important for drivers to protect themselves against harmful UV rays, glare and airbag injuries to the eye.	<ul style="list-style-type: none"> - Polycarbonate lenses with UV protection and anti-reflective coating



JOB	HAZARDS	PROTECTIVE EYEWEAR
ELECTRICAL WORK	Due to the nature of their overhead work, electrical workers are at increased risk for eye injuries from flying particles such as nails, small pieces of metal and cut wire ends, as well as falling objects or sparks striking the eye. Electricians also face a higher threat of burns, which can lead to blindness.	<ul style="list-style-type: none"> - Safety glasses with side shields for impact protection - Arc rated face shield to protect against arc flash.
HEALTH CARE, LABORATORY AND JANITORIAL WORK	Infectious diseases can be transmitted through the mucous membranes of the eye as a result of direct exposure (e.g., blood splashes and respiratory droplets generated during coughing or suctioning) or from touching the eyes with contaminated fingers or other objects. The infections can range from relatively minor, such as conjunctivitis or reddening/soreness of the eye, to more serious diseases such as HIV, B virus (HBV) or possibly influenza.	<ul style="list-style-type: none"> - Goggles - Face shields
MANUFACTURING	Manufacturing eye injuries are most likely to result from work that generates flying particles, fragments, sparks, dust, hazardous substances or radiation. Tasks with the highest risk of eye injuries are grinding, welding and hammering. Other high-risk activities include cutting, drilling, spraying, smelting, sanding, chipping and chiseling.	<ul style="list-style-type: none"> - Spectacles - Goggles - Safety glasses with side shields
PLUMBING	Chemical and material exposure is a common source of eye injury for plumbers. Plumbers also may receive burns from hot equipment parts, steam lines and the release of hot water or steam. Cutting or grinding can also cause eye injuries from flying particles.	<ul style="list-style-type: none"> - Spectacles - Goggles - Safety glasses with side shields
WELDING	Chemical burns to one or both eyes from splashes of industrial chemicals or cleaning products are common. Thermal burns to the eye occur as well. Among welders, their assistants and nearby workers, UV radiation burns (welder's flash) routinely damage workers' eyes and surrounding tissue.	<ul style="list-style-type: none"> - Welding goggles - Welding helmets



PREVENTION

The use of proper eye protection, such as safety glasses, goggles, face shields and helmets can prevent countless eye injuries. The Occupational Safety and Health Administration requires the use of eye and face protection whenever there is a chance of injury that could be prevented by such equipment. The right eye protection for each work situation depends upon the type of hazard, the circumstances of exposure, other protective equipment used and individual vision needs.

Safety eyewear protection includes:

- ▶ Non-prescription (plano) and prescription (nonplano) safety glasses
- ▶ Goggles
- ▶ Face shields
- ▶ Welding helmets
- ▶ Full-face respirators

TYPES OF SAFETY LENSES

- ▶ Glass lenses
 - ▷ Scratch Resistant
 - ▷ Can be made with a corrective prescription
 - ▷ If the lens is scratched, it should be replaced immediately.
- ▶ Plastic lenses
 - ▷ Are lightweight
 - ▷ Protect against welding splatter
 - ▷ Are not likely to fog
- ▶ Polycarbonate lenses
 - ▷ Are lightweight
 - ▷ Protect against welding splatter
 - ▷ Are not likely to fog
 - ▷ Can be stronger, more impact-resistant and less scratch-resistant than glass depending on the situation and the lens itself

Employers are required to assess eye safety hazards in the workplace and take measures to ensure employee safety through compliance with government regulations for eyewear and emergency eyewash stations.



In research with manufacturing, construction, service and retail workers, 100 percent of participants cited fogging as a factor for not wearing personal protective eyewear, and over 55 percent suggested an antifogging solution to increase usage of personal protective eyewear.⁸ By taking the necessary measures to reduce the fogging of protective eyewear, employers will likely see an increase in compliance with eye protection recommendations, and increased worker safety.



DO'S AND DON'TS OF EMERGENCY EYE CARE

If an eye accident occurs, see a medical doctor or eye care professional as soon as possible since an injury may not be immediately obvious. Until a medical professional can be seen, heed the advice below.

DO:

- ▶ Protect the eye from further damage by holding a folded cloth over the eye, having it act as a shield.
- ▶ Seek eye care immediately.
- ▶ Bandage any cuts around the eye to prevent contamination or infection.
- ▶ Flush the eye with water in the case of a chemical burn or if there is small debris in the eye.
- ▶ Use a cold compress to treat a blunt trauma injury such as a black eye, but be careful not to apply additional pressure.



DON'T:

- ▶ Do not remove any objects that are stuck in the eye as this could worsen the injury.
- ▶ Do not wash out the eye when dealing with cuts or punctures to the eye.
- ▶ Do not attempt to self-medicate, apply ointments or take any medications, including over-the-counter drugs.
- ▶ Do not rub the eye or apply pressure. Doing so may cause more damage.



ENSURING PROPER EYE PROTECTION IS CRITICAL TO PREVENTING INJURIES

According to the Centers for Disease Control and Prevention (CDC), more than 100 of the 2,000 workplace eye injuries that occur each day result in one or more days of lost work time. The CDC also reports that in addition to more common eye injuries caused by projectiles or burns, workers are at risk of acquiring infections and diseases through touching the eyes with contaminated hands or other objects. It is critical that workers protect their eyes on-the-job and recognize hazards so that necessary precautions can be taken to reduce the risk of injury.

In a 2009 article from ASSE's Professional Safety Journal, titled, "Safety Eyewear: How much coverage does it provide?" authors James R. Harris, Richard Whisler, Douglas E. Ammons, Jim Spahr and Larry L. Jackson note that not only is eye protection important, but ensuring that eye protection is the correct type for the job being performed and fits properly is critical to preventing injuries. Worker testimony, emergency department charts and injury investigations have shown that while wearing eye protection is good practice, if the eye protection is ill-fitting or incorrect for the job it does not effectively prevent eye injuries. It is important that workers understand what eye protection equipment is necessary for they job they perform to reduce the risk of injury or permanent impairment.

ASSE serves as secretariat for a number of American National Standard Institute (ANSI) standard projects and was previously the secretariat for the Z87.1, a standard that guides the design and performance of safety eyewear to help employers and employees determine the appropriate eye protection for the job. The standard also provides guidelines for high-velocity impact testing of safety lenses to ensure adequate protection against hazards. For more information about ASSE's many standards that provide guidelines for protecting worker safety and health, please visit www.asse.org/standards.

The 100-year-old American Society of Safety Engineers (ASSE) has more than 32,000 occupational safety and health professional members who work daily to protect people, property and the environment. It is important that employees return home safely, injury and illness free each day and protecting the eyes from vision hazards is one of the many ways workers can protect their health and safety. For more information about ASSE, please visit www.asse.org.



EYE DR.'s PERSPECTIVE

The statistics on workplace eye injuries do not lie. As an eye care professional, I am always disheartened when a patient comes in with a work related eye injury that could have been avoided with the use of proper protective eyewear.

Despite the statistics, employees and workers often skip using the appropriate protective eyewear. Choosing and utilizing the proper protective eyewear and educating employees on their correct use should be a part of all workplace safety programs in industries in which there is the potential for eye injuries.

The specific hazards that exist in a particular job should always be a factor in determining what type of protective eyewear is needed. This includes not only protective eyewear for industrial jobs but also UV protection with polycarbonate lenses for jobs that require driving. It is a little known fact that the impact of an air bag explosion in the face can be devastating to the eyes, causing rupture of the globe.

The greater the danger, the greater the level of eye protection that is recommended. Workplaces should always use protective eyewear that meets OSHA standards and:

- ▶ is comfortable to wear;
- ▶ does not impair the wearers' peripheral vision or use of other faculties; and
- ▶ is adjustable to easily accommodate multiple wearers or size changes of a particular wearer.

As an eye care professional, my hope is that both employers and workers will prioritize the protection of vision, the most important of the body's senses, both on the job and off.

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