

## A Visionary Plan for Eye Protection

***This WorkCare Fact Sheet features recommendations to help prevent and manage work-related eye injuries. Prevention strategies rely on common sense and consistent use of personal protective equipment appropriate for the job.***

Hundreds of thousands of preventable eye injuries occur annually in the U.S. It is estimated that more than 2,000 people injure their eyes at work on a daily basis. In 2017, work-related eye injuries resulted in nearly 19,400 lost work days, according to the Bureau of Labor Statistics.

### Eye Protection Regulations

U.S. employers in regulated industries are required to provide personal protective equipment (PPE) at no cost to employees who are exposed to workplace environmental, chemical, radiological or mechanical irritant hazards.

Specific federal Occupational Safety and Health Administration (OSHA) [eye and face protection standards](#) apply to general industry, shipyards, longshoring and construction. For example, under general industry standards, covered employees are required to use:

- Appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
- Eye protection that provides side protection when there is a hazard from flying objects; detachable side protectors (e.g. clip-on or slide-on side shields) are acceptable.

Chemicals or foreign objects in the eye and cuts or scrapes on the cornea are commonly occurring work-related eye injuries.

People in certain occupations, such as health care, emergency response, laboratory, cleanup/janitorial and animal handling, are at risk of exposure to contagious diseases due to exposure to blood and other potentially infectious materials (OPIM) that can enter the body through mucous membranes of the eye. This can occur through direct exposure to blood or respiratory droplets, or from touching the eyes with contaminated fingers or other objects.

Protective eye and face devices must comply with one of the following consensus standards in order to meet OSHA requirements:

- ANSI/ISEA Z87.1-2010, Occupational and Educational Personal Eye and Face Protection Devices, incorporated by reference in §1926.6
- ANSI Z87.1-2003, Occupational and Educational Personal Eye and Face Protection Devices, incorporated by reference in §1926.6
- ANSI Z87.1-1989 (R-1998), Practice for Occupational and Educational Eye and Face Protection, incorporated by reference in §1926.6



In addition, covered employees who wear prescription lenses must use eye protection that incorporates the prescription in its design, or wear eye protection that can be worn over prescription lenses without interference. Filter lenses for protection against light radiation are also required.

## Selecting PPE

OSHA requires covered employers to complete a hazard assessment verified through a written certification process. The assessment provides information needed to select appropriate PPE that will help protect employees from workplace-specific eye hazards.

Employers may need to provide a combination of protective devices. Eye and face protection is meant to be used in conjunction with other protective clothing, headwear and footwear; respirators; engineering controls (e.g., machine guarding, screens); and administrative or production practices based on sound occupational health and safety principles.

Protective eyewear may be made of glass, plastic or polycarbonate. Glass is scratch-resistant, suitable for prescriptions and may be used around harsh chemicals. However, it can fog, and be heavy and uncomfortable. Plastic lenses are lighter weight, protect against splatter and are less likely to fog, but they are more prone to scratches. Polycarbonate lenses are often preferred because they are more impact-resistant than glass or plastic, although not as scratch-resistant as glass.

## Impact Hazards

Flying particles are a hazard typical of grinding, sawing or etching in manufacturing environments and work with equipment outdoors. The following eye protection is recommended for impact hazards:

- **Safety glasses:** May look similar to “dress” eyewear, but have special impact-resistant frames and lenses that may or may not have transparent side shields blocking access to the outer perimeter of the eye.
- **Goggles:** Provide eye protection from hazards coming from above, below and the sides.
- **Face Shields:** Offer frontal protection, but should only be used in conjunction with safety glasses because they don't sit close enough to the eyes to act as an adequate safeguard on their own.



## Heat

Heat hazards occur in environments with high temperatures or where there is possible exposure to splashes of molten metal or hot sparks:

- **Safety Glasses:** Primary protectors intended to shield the eyes from a variety of heat hazards.
- **Goggles:** Primary protectors intended to fit the face immediately surrounding the eye.
- **Face Shields:** Secondary protectors intended to protect the entire face, in addition to the eyes, from certain heat hazards.

## Chemicals

Serious and irreversible damage can occur when chemical substances contact the eyes in the form of splash, mists, vapors or fumes. Practicing good personal hygiene helps limit chemical exposure and its adverse effects. The employee should understand emergency procedures, containment systems, safe removal and disposal of PPE, and other means of reducing contact with the chemical.

The following types of PPE are suitable to protect the face/eyes from chemical exposures:

- **Goggles:** Primary protectors intended to shield the eyes against liquid or chemical splash, irritating mists, vapors and fumes.
- **Face Shields:** Secondary protectors intended to protect the entire face against exposure to chemical hazards.

## Dust

Dust is present in the workplace during operations such as woodworking, buffing, excavating, landscaping and farming. Extra precautions are needed for contact-lens wearers:

- **Goggles:** Primary protectors intended to protect the eyes against a variety of airborne particles and harmful dust.

## Optical Radiation

Radiant energy from lasers and other sources of radiant energy can cause retinal burns and other serious eye injuries, even if exposure occurs for a short period of time. [Optical radiation](#) may be in the form of ultraviolet, visible or infrared light. Prolonged exposure to sun glare, another form of optical radiation, can cause eyestrain and damage vision.

Wearing protection with the correct filter shade number helps protect workers' eyes from optical radiation. When selecting PPE, it's important to consider the type and degree of radiant energy to which employees are exposed.



## Training

Following selection of appropriate eye and face protection, employees must be trained on proper use, including correct fit, the importance of consistent wear and when to replace PPE. Every user must at least demonstrate an understanding of:

- What type of PPE is necessary and when to use it
- How to properly don, doff, adjust and wear PPE
- Limitations of equipment design
- Proper care, maintenance, useful life and disposal recommendations

In addition to OSHA guidelines, thorough training should cover the following:

- General background on eye anatomy and function
- Potential effects of eye injuries (blurred vision, corneal burn, permanent loss of sight)
- Common types and causes of eye injuries

Trainers are advised to consider using motivational techniques. For example, when affected employees are invited to give input on PPE fit, comfort, functionality and personal style, they are more likely to use it. Incentives, recognition or small awards may be an effective strategy to encourage compliance.

## Retraining

OSHA requires retraining in cases where the employer has a reason to believe that an employee does not understand the eye protection requirements or lacks skills for proper use. Changes in the workplace or the types of PPE to use that render previous training obsolete also require retraining.

## Written Certification

The employer must verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training and the subject of the certification.

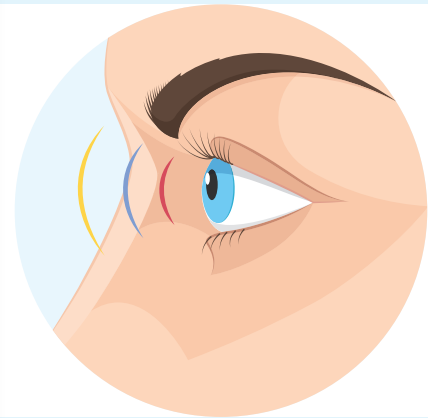
## Voluntary Eye Protection

Employers who encourage employees to wear eye and face protection on a voluntary basis when not required by OSHA must implement limited provisions of a PPE program.

While protective eyewear is not required for employees who spend most of their workday using computers and other electronic devices, they should be encouraged to make ergonomic and personal adjustments to reduce the likelihood of vision-related complaints such as headaches, tired eyes and difficulty focusing.

## Take Care of Your Eyes

- ***Eat nutritious foods, get plenty of rest and stay well-hydrated.***
- ***Get an annual eye exam to assess your vision and check for early signs of disease.***
- ***Wear sunglasses with UV protection. Get corrective lenses, as recommended.***
- ***Select face and eye protection that is durable, cleanable, comfortable, and does not restrict your vision, movement or use of other equipment.***
- ***Use eye protection, as recommended, for sports and other recreational activities, and jobs around the house or in your community.***



*"Personal protective equipment is designed to prevent or lessen the severity of injuries when engineering or administrative controls are not feasible or effective in reducing exposure risk."*

Simple fixes include taking frequent, short rest breaks; wearing glasses prescribed for computer use; adjusting the computer monitor height and distance; reducing glare and drinking plenty of water. The American Optometric Association encourages use of the 20-20-20 rule: take a 20-second break to view something 20 feet away every 20 minutes.

## Injury Management

Injuries to the eyes and face typically occur when people neglect to wear protective gear or it is not properly fitted. If an eye injury occurs, quick action can help prevent permanent disability. Emergency eyewash stations should be placed in all hazardous areas along with first-aid instructions. Employees must know where the closest eyewash station is and how to get there with restricted vision.

For all types of eye injuries, do not touch, rub or apply pressure to the eye.

1. For a particle in your eye, lift the upper eyelid over the lash of your lower lid. Blink and allow tears to flush out the particle.
2. For a particle, grit or liquid, flush with clean water or saline solution. Remove contact lenses before rinsing.
3. For a chemical splash, immediately flush the eye with water for at least 15 minutes. Place the eye under a faucet or shower, use a garden hose, or pour water into the eye from a clean container. Do not try to neutralize the chemical with other substances and do not bandage the eye. Seek immediate medical attention after flushing.
4. If you can see a foreign body in the white part of your eye, you may be able to remove it with the tip of a tissue or moist cotton swab. Do not brush over your cornea.
5. For a minor blow to the face or eye, gently apply a cold compress or ice.
6. Get immediate medical attention for:
  - A floating or embedded foreign body that you cannot remove yourself
  - Larger foreign bodies, metal fragments or feeling something in your eye after flushing
  - Bleeding, cuts or swelling around the eyes, mouth or other parts of the face
  - Pain, oozing, tearing, blurred vision or blind spots
  - Suspected concussion from a blow to the face and head

Consistent compliance with personal protective measures is essential. By assessing current practices and providing as-needed refresher courses, employers can reduce eye injury incidence rates and improve quality of life for employees.

## 10 Ways to Help Prevent Eye Injuries at Work

**Prevent Blindness recommends the following:**

- 1. Assess:** *Inspect all work areas, access routes and equipment for eye hazards. Study eye accident and injury reports.*
- 2. Test:** *Uncorrected vision problems can cause accidents. Include vision testing in routine employee physical exams.*
- 3. Protect:** *Select protective eyewear that is designed for the specific duty or hazard. Protective eyewear must comply with OSHA standards.*
- 4. Participate:** *Create a 100 percent mandatory program for eye protection. A broad program is more effective than one that limits eye protection to certain departments, areas or jobs.*
- 5. Fit:** *Have protective eyewear fitted by an eye care professional or someone trained to do this. Provide repairs for eyewear. Require employees to be responsible for their own gear.*
- 6. Prepare:** *Have an emergency response plan, including eyewash stations, and provide training in basic and advanced first aid.*
- 7. Educate:** *Conduct ongoing eye safety awareness programs and include related information in employee orientation programs.*
- 8. Support:** *Management support is key to having a successful eye safety program. For example, executives should always comply with eye safety rules during onsite visits.*
- 9. Review:** *Regularly review and update accident and injury prevention policies.*
- 10. Publish:** *Display copies of the company's eye safety policy in visible areas. Include a review of the policy in new employee orientation.*

To learn more, refer to: [Preventing Eye Injuries](#) and [What to Do for an Eye Injury](#), American Academy of Ophthalmology

[Protecting Your Vision](#), American Optometric Association