

Help workers stay safe with correct eye protection



According to the National Federation of the Blind, an estimated 7.2 million people in the United States between the ages of 16 to 75 are living with some form of visual disability. No one wants to damage or lose their sight, yet each day many workers are exposed to hazards that put them at risk for eye injuries. In fact, according to the Bureau of Labor Statistics (BLS), over 19,000 eye injuries occur annually in U.S. workplaces, which the Occupational Safety and Health Administration (OSHA) estimates create \$300 million in lost time and medical expenses.

Identifying Common Causes of Eye Injuries

The direct causes of eye injuries are generally classified into four broad categories:

- **Flying objects.** Wood chips, metal shavings and other foreign objects can be generated when working with tools and equipment. Common activities producing flying objects include chipping, grinding, sawing, drilling, and similar tasks. Working outdoors, especially in windy conditions, can also lead to an object entering the eye.
- **Dust.** Woodworking, buffing, outdoor activities, and working in generally dusty conditions expose workers to harmful or irritating dusts, which can remain airborne for considerable lengths of time.

Tools for selecting eye protection in your workplace.

Nationwide Loss Control Services offers other documents that can aid in your PPE hazard assessment. Our [PPE Hazard Assessment technical brochure](#) and [PPE Hazard Assessment Checklist](#) each provide additional assistance on the topic.



- **Chemicals and liquids.** Splashes, mists, fumes, and vapors from various solutions, solvents, caustic or acidic liquids, and paints can enter the eyes during work operations. Additionally, liquids such as blood, tar, molten metal and other hot liquids, or even hot air can lead to a serious eye injury.
- **Infrared and ultraviolet light.** Welding, metal cutting, and laser operations can generate dangerous light and optical radiation emissions to the eyes that can cause damage or blindness. An underlying issue with these types of injuries is that they might not be felt for several hours.

Completing a Formal Hazard Assessment

Identifying eye hazards in the workplace can be completed in a few different ways:

- Perform a walkaround observational inspection. Watch work being performed and note any eye hazards that are present.
- Interview supervisors and employees regarding hazards in their work areas. Ask about any irregular and non-routine tasks that you may not have observed during the walkaround observations.
- Review safety data sheets (SDS) of chemical products to identify associated eye hazards.
- Read manufacturer's instructions for eye protection associated with equipment in use.
- Check OSHA 300 logs or accident reports for previous instances of eye injuries or near miss incidents.
- Review or perform job hazard analyses, which document all hazards of a job and often identify eye hazards as part of the analysis.

After eye hazards have been identified using the methods above, they should be documented (along with other workplace hazards requiring personal protective equipment) in a formal personal protective equipment (PPE) hazard assessment. Repeat this assessment when workplace hazards change, to ensure they are identified and properly controlled.

Controlling the Causes of Eye Injuries

After potential causes of eye injuries have been identified and documented in the hazard assessment, the next step is to determine the most efficient means of controlling these causes. While PPE such as safety glasses and face shields is often thought of as the first solution to eye hazards, it should be one of the last.

There are four steps to controlling eye hazards, consistent with the hierarchy of hazard control (see Figure 1):

1. **Elimination and substitution:** eliminate the exposure before it can occur. This can be difficult with eye hazards, because process changes often have downstream effects on product quality or productivity. For instance, mechanical fastening could be used in place of welding (eliminating the risk of optical radiation) but would result in reduced structural integrity of the product.
2. **Engineering controls** are the second level of protection and are used when elimination is not a feasible option (e.g., in a wood shop where wood cutting and drilling are required). For example, an engineering control could be as simple as installing additional shields or guards around equipment to prevent flying objects from striking employees.

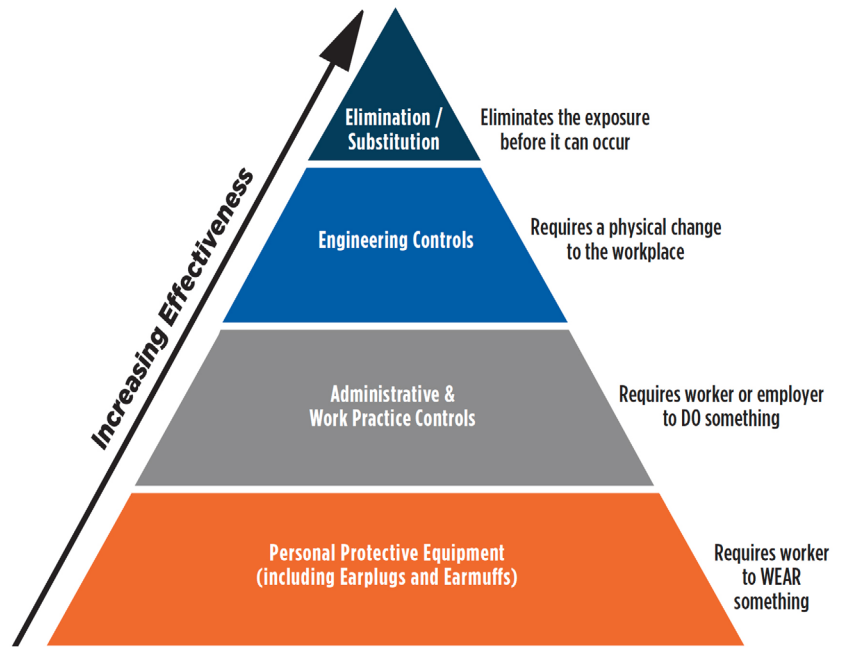


Figure 1: Hierarchy of Hazard Control

3. **Administrative and work practice controls** involve policies and procedures designs to reduce the chances of an eye injury. Employee training programs about eye safety and signs indicating the need for PPE are examples of administrative controls.
4. **Personal protective equipment.** After the first three options have been thoroughly explored and exhausted, if no control can be implemented, then the final option is to use personal protective equipment.

Who should pay for personal protective equipment?

In most cases, all required PPE must be provided by your business at no cost to your employees. There are exceptions, however, so visit [osha.gov](https://www.osha.gov) and consult *Employers Must Provide and Pay for PPE, Handout #2* to see if any of those apply to your business and its employees.

Select Proper PPE to Match Identified Eye Hazards

The most appropriate type of eye protection should be determined following a review of the hazard assessment. Although the specifics of each assessment will dictate the proper eye PPE to protect workers, below are some general recommendations.

- **Flying objects.** Typically, safety glasses with side protection are adequate to reduce injury from flying objects. However, depending on the severity of the objects, goggles or even a face shield might be needed in conjunction with safety glasses for adequate protection against eye injury.

- **Dust.** Goggles with a tight seal around the eyes are typically effective against dust hazards. The tight fit against the face prevents particles from coming into contact with the eye.
- **Chemicals and liquids.** Goggles may be adequate for this exposure, however, depending on the type of chemicals or liquids, the addition of a face shield over the goggles might be required. Goggles should fit tightly, but comfortably, to reduce leakage if a splash occurs.
- **Infrared and ultraviolet light.** A welder's face shield or other adequately rated protection devices should be used when working with dangerous light emissions. Reference the specific equipment manual to verify that the adequate tint is chosen to reduce eye injury. OSHA also provides a chart to aid in tint selection in Publication 3151, Personal Protective Equipment.

Prior to purchasing eye protection ensure that the product meets American National Standards Institute (ANSI) Z87.1. A reference number is typically stamped on the PPE to confirm it meets the standard.

Train your employees on the use of eye protection.

With the hazard assessment complete and the necessary eye protection available, provide training to each employee required to use eye protection on the job. Although your training program will depend on the identified hazards and PPE selected, each employee needs to know at least the following:

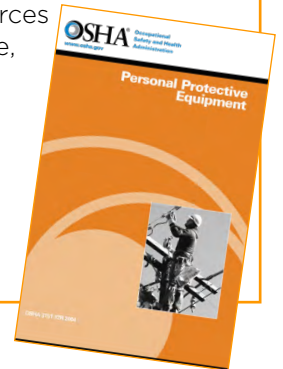
- Eye protection required in work areas and when it must be worn.
- Correct procedures to put on, remove, adjust and wear eye protection.
- Limitations of eye PPE, such that safety glasses often will not protect against liquid or chemical splashes.
- Proper care, maintenance, useful life and disposal of the PPE.
- Locations of emergency eyewash facilities, if present, and how to use eyewash stations to provide first aid to the eyes.
- Whom to contact with questions.

Despite the best intentions of businesses to provide and train employees on the importance of PPE, at some point an employee may be seen, for example, without safety glasses in an "eye protection required" area. If this occurs, the employee should be retrained on the proper use and importance of the PPE. You'll also need to retrain employees if changes in workplace hazards render previous training obsolete or different PPE is being introduced into the work area.



Look to OSHA for additional resources.

To review OSHA guidelines and access additional helpful materials on personal protective equipment, visit [osha.gov/SLTC/personalprotectiveequipment](https://www.osha.gov/SLTC/personalprotectiveequipment), where a variety of fact sheets, training materials and other resources are available, including OSHA's Personal Protective Equipment booklet.



Providing solutions to help our members manage risk.®

For your risk management and safety needs, contact Nationwide Loss Control Services: 1-866-808-2101 or LCS@nationwide.com.