Eye protection

by Robert A. Fioritto

Before you begin

- O Get a copy of your company's current personal protective equipment (PPE) assessment and related policies.
- O Gather samples of typical eye protection used in your operations for demonstration purposes.
- O Be ready to explain which types of eye/face protection must be used in which operations and why.
- O Examine your Occupational Safety and Health Administration (OSHA) 300 log or other injury records to indentify and discuss any eye-related injuries that occurred at your company in the past.

Introduction

Our sense of sight may be one of our most treasured senses. Every year too many workers throughout the United States will suffer eye injuries eliminating their precious gift of sight. The sad reality is more than 90 percent of all eye injuries are preventable by eliminating hazards and wearing appropriate eye protection.

The National Institute for Occupational Safety and Health (NIOSH) reports that approximately 2,000 workers nationwide experience a job-related eye injury requiring medical treatment every day. One-third of these injuries are serious enough for treatment in hospital emergency rooms. More than 100 result in one or more lost work days.

In addition, the Bureau of Labor Statistics (BLS) reports that:

- o Nearly three of every five workers sustaining an eye injury were not wearing eye protection at the time of the accident or were wearing the wrong kind of eye protection for the job;
- o Of the injuries to workers who were wearing eye protection, 94 percent resulted from objects or chemicals going around or under the protector.

Causes of eye injuries

Most eye-injury accidents result from flying or falling objects or sparks striking the eye. They can cause serious injuries such as punctures, abrasions and contusions. The flying or falling objects or sparks that cause most of these injuries are a result of objects smaller than a pin's head. A hidden danger these small specks (smaller than a pin's head) can cause is they can enter and lodge deep within the eye.

Doctors have a hard time removing the foreign object and the infection that can set in. However, all too often, employees do not protect their eyes in the workplace. Much of this is because workers feel something big has to go flying and strike their eyes to cause damage. They feel they can turn or duck to avoid the impact at the last minute.

But, they do not realize the threat these tiny particles are to the eyes — until it's too late. The eyes are highly sensitive organs that are vulnerable to injury.

Avoiding eye injuries

When working in shop conditions where the worker is exposed to flying particles and fragments, workers must wear primary protective devices such as safety glasses with side shields. Employees can wear stylish wrap-around safety glasses to meet the side-shield requirement. When needed for chemical-splash hazards, workers can wear protective goggles in place of safety glasses.

Secondary protective devices such as face shields are required in conjunction with primary protective devices. They are needed during severe exposure to impact and/or liquid-chemical splash hazards to protect the face.

Eye hazards

Eye hazards are present in many industrial-shop operations. Some of these operations include punch pressing, grinding, sawing, chipping, machining, polishing, cutting, sanding, drilling, chiseling, hammering, riveting, chemical handling, degreasing, plating, spraying, sweeping, woodworking, concrete cutting, buffing, welding, torch-cutting, brazing, soldering, blowing using compressed air and laser work.

Employees that wear prescription lenses must have safety lenses that meet ANSI Z87.1 or wear extra protective devices over their prescription glasses.

Contact lenses can create additional hazards to employees wearing them in an industrial environment. Dust and particles can get underneath the contact lens and scratch the eye. Corrosive liquids can also stay trapped under a lens and using an eyewash facility is more difficult. Eye tissue can become permanently damaged by the time an employee can remove the contact lens and flush his or her eyes.

To allow the employee to see his or her work and perform his job safely, proper lighting is important. Employees should get an eye exam periodically, especially older employees, to see if they need prescription lenses to see their work clearly. Clear vision can avoid hazards and prevent accidents.

Requirements and responsibilities

To identify potential hazards and determine what eye and other PPE workers need to protect themselves, management must conduct a hazard assessment. They must train employees on selecting, using, inspecting, storing, cleaning and limiting each type of PPE. Supervisors should oversee their employees, and make sure they are wearing the appropriate PPE and enforce the policy.

Employees should:

- Wear required PPE:
- Inspect the PPE for damage;
- Keep it clean and in a sanitary condition;
- Store it properly.

OSHA and ANSI standards for eye and face protection

OSHA 29CFR 1910.133(a) states: The employer shall ensure that each affected employee uses 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.

In addition, OSHA requires that eye and face protection must clearly identify the manufacturer and be marked and comply with ANSI Z87.1 (or be at least as effective as this standard requires).

Eyewash - OSHA 29CFR 1910.151(c) – Requires an employer provide a facility for quick flushing of the eyes where an employee can be exposed to injurious corrosive materials. Plumbed and self-contained units must be capable of delivering no less than 1.5 liters of water per minute (0.4 gallons per minute) for a minimum of a 15-minute continuous flush. Make sure all eyewash stations are labeled and readily assessible in the immediate work area where workers use chemicals. In the event of an eye injury, get medical attention immediately.

OSHA standard OSHA 29CFR 1910.132(d) requires employers to assess the jobs being performed out in their workshops to determine the hazard type and appropriate personal protective equipment (PPE) necessary to protect the employee performing the task. It is required to be done in writing with a date and signature (Certification) of the person responsible for performing the assessment. Eye protection is a required part of the written assessment.

Group activity

Following this discussion, you will find the written assessment form that OSHA requires. The next page has a selection chart for eye and face protection with examples of:

- The type of job/the task being performed;
- Hazards;
- The appropriate protection to be worn that protects the workers' eyes and face.

References

Websites

NIOSH
www.cdc.gov/niosh

OSHA
www.osha.gov

The Bureau of Labor Statistics (BLS)
www.bls.gov

American National Standard Institute
www.ansi.org

BWC is not associated with any of the websites, and we do not endorse them.

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Personal Protective Equipment (PPE) Assessment

Company name: _____ Address _____

Department — job/task	Hazard type	Body parts at risk	PPE required

Certification of Assessment

Assessment conducted by: _____

Title: _____

Date(s) of assessment _____ Page no. _____

Selection chart for eye and face protection

Hazard type	Examples of jobs and tasks	Examples of hazards	Protection required
Impact	Chipping, grinding, machining, polishing, cutting, sawing, sanding, drilling, chiseling, hammering and riveting	Flying objects such as large chips, fragments, particles, sand, dirt and small particles (as big as a pin's head) that can become embedded deep in the eye.	**Safety glasses** - Impact-resistant lenses with side shield (or wrap-around type) Use safety glasses and face shield to protect the eyes and face area.
Chemicals	Chemical handling, degreasing, plating, spraying and working with acids, caustics and blood	Splash, vapors, and mists	**Goggles** - Protect from impact, dust and splashes. Use indirect vented or non-vented type for chemical splash hazards. Use **splash-proof goggles and face shield** to protect the eyes and face area.
Dust	Sweeping, sanding, woodworking, concrete cutting, buffing, blowing or any other dusty condition	Harmful dust	Use **goggles** in high dust areas.
Optical radiation	Welding, torch-cutting, brazing, soldering and laser work Note: Ultraviolet light from welding operations can cause radiation burns to the eyes and surrounding tissue. Employees at risk: Welders, helpers and bystanders	High intensity light from welding, brazing and lasers	**Welding helmets** - Fitted with filtered lenses. Protect face and eyes from burns when welding, brazing, soldering and cutting. **Tinted welding glasses** - Never look at welding operations without proper eye protection. Select the highest tint possible for high-intensity light from welding, brazing and lasers.
Heat	Ovens, furnaces, smelting, pouring, casting, hot dipping and welding	High temperature operations	Safety glasses Goggles Tinted welding glasses Face shield

Safety glasses

Face-shield splash guard

Safety goggles

Welders' mask with filtered lens