

Before you begin

Obtain the following:

- An example of the personal protective equipment (PPE) hazard assessment and selection form.;
- A copy of your safety rules on the use of PPE.



Introduction

Eliminating hazards is important for a safe work site. However, it may not be possible to eliminate all hazards through engineering design, guarding, or administrative controls. In these cases, the use of PPE is necessary. According to the Occupational Safety and Health Administration (OSHA), employers are responsible for providing a workplace free of recognized hazards that can seriously harm employees. To determine potential workplace hazards, the standard requires a written hazard assessment of each job function. If the assessment determines a hazard exists, then you must use the appropriate PPE.

Definitions

Personal Protective Equipment (PPE): Equipment designed to be worn for the safety of the worker that can protect different areas of the body from injury or illness.

Hazards: Agents that can cause harm via injury or illness to a person, especially if left unfixed or unmitigated.

Discussion

Eye and face protection

Based on an assessment, affected employees should use appropriate eye or face protection when exposed to hazards. These hazards may include flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. Examples of eye and face PPE are safety glasses, goggles, and face shields. It is important for users to understand the proper fit, maintenance, and storage of this PPE to best protect the worker and extend the life of the PPE.

Certain PPE will have more specific requirements you may need to reference when working with them. You may select welding, cutting, and brazing eye protection from information available in OSHA standard 1910.133 (a)(5) "Filter Lenses for Protection Against Radiant Energy" table. All protective eye and face devices should meet the requirements of American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) Z87.1, "American National Standard for Occupational And Educational Personal Eye And Face Protection Devices".

Foot protection

Employees may work in an area that could be dangerous for foot injuries. For example, an area may have falling or rolling objects, objects that could pierce a shoe's sole, and/or electrical hazard exposure. Based on the specific dangers within your facility, employees may need to wear protective footwear that meets the requirements of the American Society for Testing and Materials F2412 "Standard Test Methods for Foot Protection" and F2413 "Standard Specification for Performance Requirements for Protective (Safety) Toe Cap Footwear". Some examples of foot PPE are safety shoes, rubber boots, and metatarsal guards. Like with all other PPE, employees should be trained in how to use and care for their PPE and when it is required to be used.

Hand protection

Appropriate gloves should be worn when employees' hands are exposed to potential hazards. These hazards may include skin absorption of harmful substances, lacerations, abrasions, punctures, chemical and thermal burns, and harmful temperature extremes. Selecting a glove is based on the glove's performance characteristics, the job tasks to be performed, and the conditions and duration of the glove's use. Another important aspect to consider when selecting gloves is comfort and appropriate fit. Employees have different size hands and proper fit is needed to ensure you maximize the protection from the PPE.

Head protection

In areas where there is a potential for head injuries from falling objects, bumping into fixed objects, or electrical contact, ensure employees wear protective helmets or hard hats.

There are three types of hard hats:

- Class G – (General) are for general use like construction and manufacturing and have a voltage protection up to 2,200 volts.
- Class E – (Electrical) are intended for utility and electrical work and provide voltage protection up to 20,000 volts.
- Class C – (Conductive) are intended for protection against bumping into fixed objects. They have limited protection from falling objects and zero protection for electrical contact.

Hard hats should meet the requirements of ANSI/ISEA Z89.1 “American National Standard for Industrial Head Protection.” Review the general requirements for OSHA standard 1910.135 “Head protection.”

Protective clothing

Select protective clothing based on the potential or anticipated hazards that you might encounter (i.e., heat, chemicals, or infection). Examples of PPE are protective coveralls, aprons, arm gauntlets, full body suits, surgical gowns, and laboratory coats.

It is important to select clothing based upon its ability to resist degradation and permeation caused by different agents. OSHA says that the protective clothing shall be of safe design and construction for the work to be performed. The clothing selected should be able to protect the body by preventing injury or impairment through absorption or physical contact.

The protective clothing should be inspected and kept free of damage and defects. The manufacturer limits of the product should also be followed. Review the requirements for general industry in OSHA standard 1910.132 “General requirements” and construction in OSHA standard 1926.28 “Personal protective equipment.”

Electrical protective devices

Insulating blankets, matting, covers, line hose, gloves, and sleeves made of rubber should meet the requirements contained in OSHA standard 1910.137 “Electrical protective equipment.” Refer to the National Fire Protection Association 70E: Standard for Electrical Safety in the Workplace® for additional information.

Any electrical PPE should fit the user. PPE that is too loose could fall off at a crucial moment and PPE that is too tight can restrict the user’s movements. Equipment shall be free of physical irregularities that can adversely affect the insulating properties of the equipment.

Hearing protection

Hearing protection is essential for ensuring that workers minimize hearing loss. There are several types of hearing protection including earmuffs, disposable ear plugs, and custom fit earplugs. It is important to identify which types are most beneficial for your workers. The National Institute for Occupational Safety and Health (NIOSH) recommends that hearing protection be mandated for anyone working in an area with an average decibel level over an eight-hour shift, i.e. a time weighted average (TWA), of 85 decibels. In addition, OSHA requires a worker to be enrolled in a hearing conservation program once they reach this TWA. Review OSHA standard 1910.95 “Occupational noise exposure” for additional hearing protection guidelines.

Respiratory protection

Inhalation is one of the primary ways occupational contaminants enter our bodies. Employees can use respirators while other preventive measures are implemented or if preventive measures are not feasible. Employers must choose the correct respirator and cartridges to protect against specific contaminants. Like hearing protection, the benefits of respirator use may not be immediately clear as the negative effects of inhalation hazards can take years or decades to develop. However, consistent respirator usage when needed can prevent a variety of inhalation-related effects over the course of a worker’s life. OSHA standard 1910.134 “Respiratory protection” should be reviewed for program guidance when dealing with respirators.

Conclusion

While there are many different types of PPE, they all have their purpose. It is important to understand which PPE is suitable for your company's tasks. Furthermore, employees must know when PPE is in good condition and when it should be replaced.

Group Activity

Use this opportunity to review your company's PPE policy and hazard assessment and selection form. Go around the room and have each employee list the PPE they wear for each job they perform. Have them describe how it protects their body and how it may differ from other similar types of the same PPE (e.g. they wear a Class E hard hat and understand how it differs from Class G and Class C hard hats).

Resources

[OSHA, Personal Protective Equipment](#)

[NIOSH, Directory of Personal Protective Equipment](#)

[Ohio Bureau of Workers' Compensation, PPE Hazard Assessment](#)