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# PERSONAL PROTECTIVE EQUIPMENT

## MODULE DESCRIPTION

This module will cover how to be as safe as possible when working in an area where you may need personal protective equipment (PPE).

## OBJECTIVES

After completing this module, students will be able to:

- Explain why PPE is important
- List the different types of PPE
- Recognize the situations in which different types of PPE should be used
- Describe how to use the different types of PPE
- List employer responsibilities toward affected employees

## MODULE OUTLINE

### 1. Why PPE Matters

- PPE is designed to protect you from injuries to your head, face, eyes, ears, hands, feet, respiratory tract, and body.
- Millions of people are injured at work each year
  - Many of these injuries could be prevented if only the proper PPE was used

### 2. Employer Responsibility

- OSHA requires employers to:
  - Perform a hazard assessment
  - Select the appropriate PPE for the job, have the employee use the selected PPE that will protect them from the hazard, and communicate the selection decisions to the employee
  - Provide employees with training on the hazards
  - Provide the required PPE that properly fits the employee, to give them the best protection.
- The employer must provide training that includes:
  - When using the selected PPE is necessary
  - What PPE is necessary

- How to properly put on, take off, adjust, and wear the PPE
- The limitations of the PPE
- Proper care, maintenance, useful life, and disposal of the PPE
- Employees are then required to demonstrate an understanding of the training and their ability to use the PPE properly before being allowed to perform work requiring the use of PPE.

### 3. Eye and Face Protection

- PPE for the eyes and face is designed to prevent or reduce your chances of being injured by flying objects, sparks, or other particles.
- Safety Glasses
  - Stronger and more resistant to impact and heat than regular glasses
  - Many have side shields to protect you from peripheral hazards
  - Used to help protect you from moderate impact from particles produced by such jobs as carpentry, woodworking, grinding, and scaling
  - Safety glasses come in prescription and nonprescription versions, and, depending on your work situation, there are different lens coatings available
- Goggles
  - Can give more protection than safety glasses
  - Fit closer to the face which help to protect your eyes, eye sockets, and the facial area immediately surrounding the eyes from impact, dust, fumes, vapors, powders, sparks, mists, and splashes from harmful liquids
- Face Shields
  - Protect the entire face
  - Used for jobs that expose you to molten metal, chemical splashes, or flying particles
  - These transparent sheets of plastic extend from the eyebrows to below the chin and across the entire width of the employee's head
  - Some are polarized for glare protection
  - Protect against nuisance dusts and potential splashes or sprays of hazardous liquids but will not provide adequate protection against impact hazards
  - Should always be worn with safety glasses or goggles for added protection, as face shields alone are not enough protection for your eyes.
- Welding Helmets or Hand Shields
  - Provide both the face and eye protection
  - Use special absorptive lenses that filter the intense light and radiant energy produced during welding operations
  - OSHA requires that the filter lenses have a shade number appropriate to protect against the specific hazards of the work being performed in order to protect against harmful light radiation
  - Should always be worn with safety glasses or goggles for added protection, as face shields alone are not enough protection for your eyes

#### 4. PPE Protection

- Hard Hats – designed to protect your head from injury
  - Have rigid shells that resist and deflect blows to the head
  - Contain suspension system that act as shock absorber
  - Always adjust the suspension inside your hard hat so that it sits comfortable, but securely, on your head
  - The three types and ways they protect:
    - § Class G hard hats protect you from:
      - Falling objects
      - Electrical shocks up to 2,200 volts
    - § Class E hard hats protect you from:
      - Falling objects
      - Electrical shocks up to 20,000 volts
    - § Class C hard hats protect you from:
      - Bumping your head against fixed objects, but do not protect against falling objects
      - Unlike class G and E, class C hard hats **do not** protect you from electrical shocks
      - Class C hard hats are designed for comfort and offer limited protection

#### 5. PPE Hearing Protection-Noise Levels

- OSHA requires your employer to provide hearing protection when you are exposed to loud noises for an extended period of time
- Losing your hearing can be a slow process and failure to protect your hearing can result in permanent disability
  - Three most common types of hearing protection devices
    - § Foam Earplugs
      - Provide the most hearing protection, make sure you are inserting properly to receive full benefit
      - Insert foam earplugs properly
        - Reach around the back of your head and gently pull your ear back and up
        - Roll the plug into a small diameter
        - Insert the plug well into the ear canal
        - Hold the plug in place for a few seconds while it expands and forms a good seal
    - § PVC Earplugs
      - Are the most comfortable in hot environments
      - Insert foam earplugs properly
        - Reach around the back of your head and gently pull your ear back and up
        - Roll the plug into a small diameter

- Insert the plug well into the ear canal
- Hold the plug in place for a few seconds while it expands and forms a good seal

#### § Earmuffs

- Fit over the outside of the ears. When you use earmuffs, make sure you have a good fit around your ears
- Earmuffs should be cleaned regularly and, like all PPE, they should be inspected before use and discarded if damaged or defective

### 6. PPE Hand Protection

- Almost 20% of all disabling accidents on the job involve the hands
- Coming into contact with hazardous chemicals, toxic or biological substances, electrical sources, or extremely cold or hot objects can irritate or burn your hands
- Without proper protection, hazardous substances can be absorbed through your skin and enter your body.
- The most common way to protect your hands is to wear gloves.
  - It is important to use the right gloves for the job and the gloves fit properly.
  - Inspect your gloves by looking for holes and cracks that might allow leaks.
  - Replace gloves that are worn or torn
  - Avoid borrowing gloves from other people (gloves are personal protective equipment)
  - Never wear gloves around powered, rotating equipment.
- Glove types
  - Padded cloth gloves – Protect your hands from sharp edges, slivers, and dirt
  - Heat resistant gloves – Protect your hands from heat and flames
  - Latex gloves – Protect from germs and bacteria
  - Anti-vibration gloves – Protect from vibration
  - Vinyl or neoprene gloves – Protect your hands from hazardous chemicals

### 7. PPE Foot Protection

- Protect your feet from objects that you may step on or drop on your feet, including hazards such as heavy equipment and large objects that could roll over your feet
- You may also need to protect your feet from hazardous liquids such as acids, caustics, and molten metals that can spill into your shoes or boots. These hazardous materials can cause painful burns.
- Types of foot protection:
  - Reinforced sole - Footwear that has metal reinforcement to protect the bottom of your foot from penetration
  - Metatarsal shoe - Footwear that protects your entire foot
  - Steel toe shoe - Footwear that protects your toes from falling objects and from being crushed
  - Rubber boot - Footwear that protects you from chemicals and provides extra traction on slippery floors

- It is important to:
  - Select the right footwear for the job
  - Be sure the footwear fits properly
  - Inspect your footwear for damage or excessive wear
  - Replace footwear that would not provide adequate protection for your feet

## 8. PPE Respiratory Protection

- The most common way for hazardous materials to enter your body is by inhalation.
- Inhaling hazardous materials can cause serious damage to your lungs and air passages.
- Respirators are used to protect the lungs from the deadly effects of inhaling hazardous materials
- Types of respirators:
  - Supplied-air respirator (SAR) - Clean air is supplied to the user of the respirator (Example: Self-Contained Breathing Apparatus (SCBA))
  - Air-purifying respirator (APR) - A system of chemical filters remove specific gases and vapors before they are inhaled by the user of the respirator (Example: Filtering face piece or gas mask)
- If the use of a respirator is required to do a job, OSHA requires that a written respiratory protection program be established and implemented by your employer. OSHA requirement for a written respiratory protection program include:
  - Procedures for selection, use, and maintenance of the equipment
  - Medical evaluations for the user of the respirator
  - Fit testing and training for the user of the respirator
- Full Body Protection
  - There are training, fitting, and age requirements that must be met before work in full body protective equipment can begin.
  - There are four levels of full body protective clothing to consider:
    - § Level A – Gas tight, chemical-resistant coveralls used with a supplied-air respirator or SCBA.
    - § Level B - Chemical-resistant coveralls used with a supplied-air respirator or SCBA
    - § Level C - Normal work clothes or Tyvek® coveralls used with an air-purifying respirator
    - § Level D - Normal work clothes

## 9. StartSafe. StaySafe.

- Learn the job requirements, and if there is anything you don't understand, ask questions
- Think about the work you are about to do and ask yourself, 'Is there a possibility for something to hurt my eyes, face, head, hearing, hands, feet, lungs, or body?'
- Understand the hazards you may encounter and eliminate them if possible.
- Choose the appropriate PPE for the job and be sure it fits you properly.
- Inspect your PPE to ensure it is in good condition before use and discard PPE that is not safe.

