

Personal Protective Equipment



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Protecting Employees from Workplace Hazards

- Employers must protect employees from workplace hazards such as machines, hazardous substances, and dangerous work procedures that can cause injury
- Employers must:
 - Use all feasible engineering and work practice controls to eliminate and reduce hazards
 - Then use appropriate personal protective equipment (PPE) if these controls do not eliminate the hazards.
- Remember, PPE is the last level of control!

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Engineering Controls (cont'd)

Examples . . .

- Initial design specifications
- Substitute less harmful material
- Change process
- Enclose process
- Isolate process
- Ventilation

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Work Practice Controls

If . . .

Employees can be removed from exposure to the potential hazard by changing the way they do their jobs,

Then . . .

The hazard can be eliminated with a work practice control.

Work Practice Controls (cont'd)

Examples . . .

- Use of wet methods to suppress dust
- Personal hygiene
- Housekeeping and maintenance
- Job rotation of workers

Examples of PPE

- Eye - safety glasses, goggles
- Face - face shields
- Head - hard hats
- Feet - safety shoes
- Hands and arms - gloves
- Bodies - vests
- Hearing - earplugs, earmuffs

Establishing a PPE Program

- Sets out procedures for selecting, providing and using PPE as part of an employer's routine operation
- First -- assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE
- Once the proper PPE has been selected, the employer must provide training to each employee who is required to use PPE

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Training

Employees required to use PPE must be trained to know at least the following:

- When PPE is necessary
- What type of PPE is necessary
- How to properly put on, take off, adjust, and wear
- Limitations of the PPE
- Proper care, maintenance, useful life and disposal

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Eye Protection



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What are some of the causes of eye injuries?

- Dust and other flying particles, such as metal shavings or sawdust
- Molten metal that might splash
- Acids and other caustic liquid chemicals that might splash
- Blood and other potentially infectious body fluids that might splash, spray, or splatter
- Intense light such as that created by welding and lasers

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Safety Spectacles

- Made with metal/plastic safety frames
- Most operations require side shields
- Used for moderate impact from particles produced by such jobs as carpentry, woodworking, grinding, and scaling



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Goggles

- Protect eyes, eye sockets, and the facial area immediately surrounding the eyes from impact, dust, and splashes
- Some goggles fit over corrective lenses



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Face Shields

- Protect the face from nuisance dusts and potential splashes or sprays of hazardous liquids
- Do not protect employees from impact hazards



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Head Protection



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What are some of the causes of head injuries?

- Falling objects
- Bumping head against fixed objects, such as exposed pipes or beams
- Contact with exposed electrical conductors

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Hearing Protection



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Examples of Hearing Protectors

Earmuffs



Earplugs



Canal Caps



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Foot Protection



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What are some of the causes of foot injuries?

- Heavy objects such as barrels or tools that might roll onto or fall on employees' feet
- Sharp objects such as nails or spikes that might pierce the soles or uppers of ordinary shoes
- Molten metal that might splash on feet
- Hot or wet surfaces
- Slippery surfaces

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Safety Shoes

- Have impact-resistant toes and heat-resistant soles that protect against hot surfaces common in roofing, paving, and hot metal industries
- Some have metal insoles to protect against puncture wounds
- May be designed to be electrically conductive for use in explosive atmospheres, or nonconductive to protect from workplace electrical hazards



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Metatarsal Guards

A part of the shoes or strapped to the outside of shoes to protect the instep from impact and compression.



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Hand Protection



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What are some of the hand injuries you need to guard against?

- Burns
- Bruises
- Abrasions
- Cuts
- Punctures
- Fractures
- Amputations
- Chemical Exposures

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Types of Gloves

Norfoil laminate resists permeation and breakthrough by an array of toxic/hazardous chemicals.



Butyl provides the highest permeation resistance to gas or water vapors; frequently used for ketones (M.E.K., Acetone) and esters (Amyl Acetate, Ethyl Acetate).



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Types of Gloves (cont'd)

Viton is highly resistant to permeation by chlorinated and aromatic solvents.



Nitrile provides protection against a wide variety of solvents, harsh chemicals, fats and petroleum products and also provides excellent resistance to cuts, snags, punctures and abrasions.



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Types of Gloves (cont'd)

Kevlar protects against cuts, slashes, and abrasion.



Stainless steel mesh protects against cuts and lacerations.



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Body Protection



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What are some of the causes of body injuries?

- Intense heat
- Splashes of hot metals and other hot liquids
- Impacts from tools, machinery, and materials
- Cuts
- Hazardous chemicals
- Contact with potentially infectious materials, like blood
- Radiation

Body Protection

Cooling Vest



Sleeves and Apron



Summary

Employers must implement a PPE program where they:

- Assess the workplace for hazards
- Use engineering and work practice controls to eliminate or reduce hazards before using PPE
- Select appropriate PPE to protect employees from hazards that cannot be eliminated
- Inform employees why the PPE is necessary and when it must be worn
- Train employees how to use and care for their PPE and how to recognize deterioration and failure
- Require employees to wear selected PPE in the workplace
