



1926 Construction Personal Protective Equipment

Personal Protective Equipment

Personal Protective Equipment



Source of photos: Mount Sinai/CHEP/elcosh.org

Personal Protective Equipment

Lesson Overview

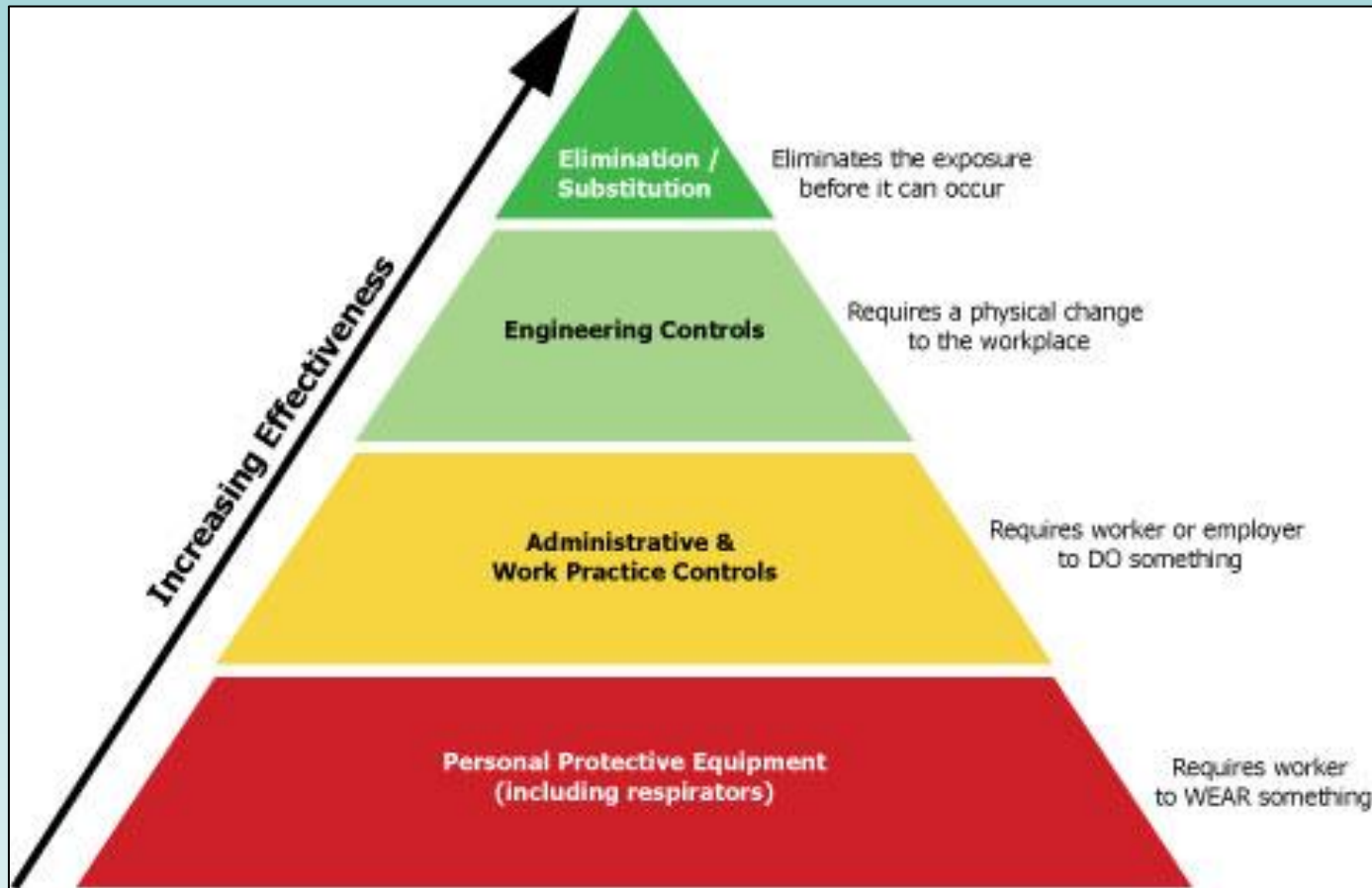
- Hierarchy of controls
- Types of PPE
- PPE training requirements
- Employer and employee responsibilities
- Hazard recognition activity

Protecting Employees

Employers must protect employees:

- **Assess** workplace
- **Eliminate** and **reduce** hazards using engineering and administrative controls
- Then **use** appropriate personal protective equipment (PPE)
- Remember, PPE is the last level of control!

Protecting Employees



Engineering Controls

Physical changes to workplace

- Isolation
- Ventilation
- Equipment modification
- Others



Administrative Controls

Requires worker to do something

- Proper procedures
- Inspection and maintenance
- Housekeeping
- Supervision
- Regulated areas
- Limit exposure by time or distance

Administrative Controls

Example: Noise Exposure

- Operate noisy machines during shifts when fewer people are exposed
- Limit the amount of time a person spends at a noise source
- Provide quiet areas where workers can gain relief from hazardous noise sources
- Control noise exposure through distance

Personal Protective Equipment

Types of PPE

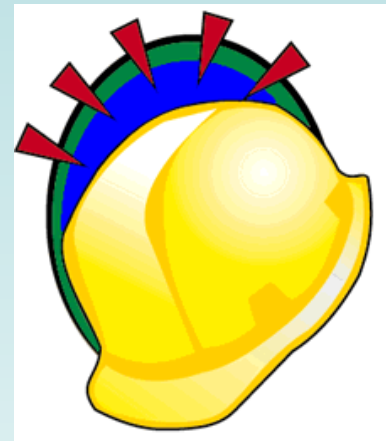


Source of photos: OSHA

Head Protection

Frequent Causes of Head Injuries:

- Object striking head
- Head striking object
- Contact with exposed, energized electrical conductors



Source: OSHA

Classes of Hard Hats

Class G (General)

- General service (e.g., building construction, shipbuilding, lumbering, and manufacturing)
- Good impact protection
- Limited voltage protection (proof-tested at 2,200 volts)



Source: OSHA

Classes of Hard Hats

Class E (Electrical)

- Electrical work
- Protect against falling objects
- Protect against high-voltage shock/burns (proof-tested at 20,000 volts)

Classes of Hard Hats

Class C (Conductive)

- Designed for comfort, offers limited protection
- Protects heads that may bump against fixed objects
- Does not protect against falling objects or electrical hazards

Eye and Face Protection

Common Causes of Eye Injuries

- Dust
- Flying particles
- Harmful chemicals
- Intense light
 - Welding
 - Lasers



Source: OSHA

Safety Glasses

Selecting eye and face protection:

- Meet requirements of ANSI Z87
- Elements to consider
 - Ability to protect
 - Fit and comfort
 - Vision and movement not restricted
 - Durable and cleanable
 - Other PPE not restricted

Safety Glasses

Protect against:

- Flying particles from wood, metal, cement, plastics, or other materials
- Airborne particulates such as ashes, dust, embers, sand blast, grit, paint, or other materials



Goggles

Protect eyes, eye sockets and facial area around eyes from impact, dust, & splashes

Goggles or other eye protection

- May fit over corrective lenses
- May not interfere with the function of the glasses



Welding Shields

Protect eyes from burns

- Infrared light
- Intense radiant light

Protect face and eyes from

- Flying sparks
- Metal spatter slag



Face Shields

- Protect face from nuisance dusts and potential splashes or sprays of hazardous liquids
- Shields do not protect from impact hazards unless so rated
- Shields are for face protection, not eye protection. To protect the eyes, wear safety glasses with side shields under the face shield.



Source: OSHA

Warning: Employees Who Wear Corrective Lenses

Workers who wear prescription glasses must also wear required eye protection.



Respiratory Protection



Source: OSHA



Protect Yourself Respirators

Respiratory protection must be worn whenever you are working in a hazardous atmosphere. The appropriate respirator will depend on the contaminant(s) to which you are exposed and the protection factor (PF) required. Required respirators must be NIOSH-approved and medical evaluation and training must be provided before use.

Single-strap dust masks are usually not NIOSH-approved. They must not be used to protect from hazardous atmospheres. However, they may be useful in providing comfort from pollen or other allergens.



Approved filtering facepieces (dust masks) can be used for dust, mists, welding fumes, etc. They do not provide protection from gases or vapors. **DO NOT USE FOR ASBESTOS OR LEAD**; instead, select from the respirators below.



Half-face respirators can be used for protection against most vapors, acid gases, dust or welding fumes. Cartridges/filters must match contaminant(s) and be changed periodically.



Full-face respirators are more protective than half-face respirators. They can also be used for protection against most vapors, acid gases, dust or welding fumes. The face-shield protects face and eyes from irritants and contaminants. Cartridges/filters must match contaminant(s) and be changed periodically.



Loose-fitting powered-air-purifying respirators (PAPR) offer breathing comfort from a battery-powered fan which pulls air through filters and circulates air throughout helmet/hood. They can be worn by most workers who have beards. Cartridges/filters must match contaminant(s) and be changed periodically.



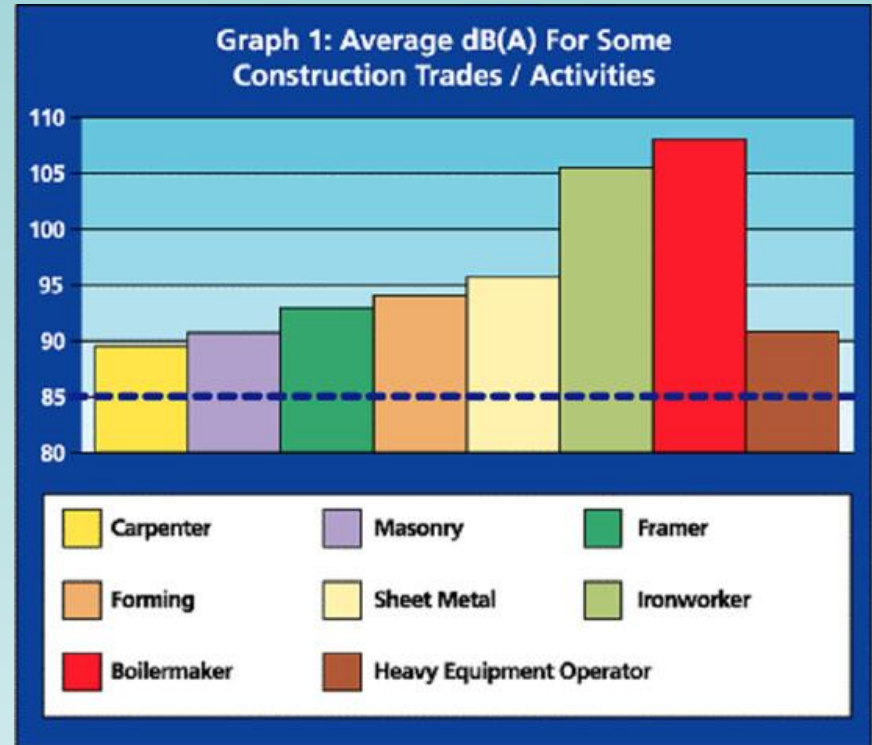
A Self-Contained Breathing Apparatus (SCBA) is used for entry and escape from atmospheres that are considered immediately dangerous to life and health (IDLH) or oxygen deficient. They use their own air tank.



Personal Protective Equipment

Hearing Protection

- Exposure to over 85 dB can cause hearing loss
- Hearing protection required at 90 dB
- Effective Hearing Conservation Program



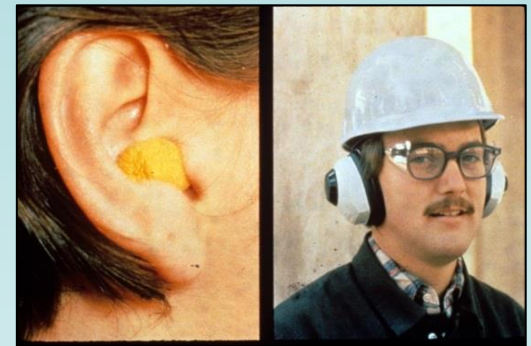
Source: Construction Safety Association of Ontario

Hearing Protection

- Examples
 - Disposable foam plugs
 - Molded ear plugs
 - Noise cancelling ear plugs
 - Ear muffs
- Consider Noise Reduction Rating (NRR) of devices



NIOSH/John Rekus/elcosh.org



NIOSH/John Rekus/elcosh.org

Hand and Arm Protection

- Employers must provide hand protection when employees are exposed to hazards
 - Skin absorption of harmful substances
 - Severe cuts or lacerations
 - Severe abrasions
 - Punctures
 - Chemical and thermal burns
 - Harmful temperature extremes

Personal Protective Equipment

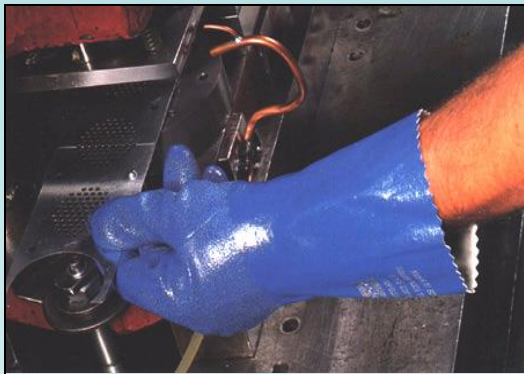
Types of Gloves



Anti-vibration



Leather Palm



Permeation Resistant



Heat Resistant



Cut Resistant

Source of photos:
OSHA

Foot and Leg Protection

- Causes of Foot Injuries
 - Heavy objects
 - Sharp objects
 - Molten metal
 - Hot surfaces
 - Slippery or wet surfaces
 - Electrical hazards

Foot and Leg Protection

- Examples
 - Impact-resistant toe and/or instep
 - Steel
 - Composite
 - Heat-resistant soles
 - Metal shanks
 - Specialty footwear may be needed
 - Metatarsal guards
 - Liquid or chemical resistant
 - Conductive or nonconductive



Source: OSHA



Steve Clark/Laborers/elcosh.org

Body Protection

- Causes of bodily injuries
 - Intense heat
 - Splashes of hot metals or hot liquids
 - Impacts from tools, machinery, or materials
 - Sharp objects
 - Hazardous chemicals
 - Contact with potentially infectious materials
 - Radiation

Personal Protective Equipment

Body Protection



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NIOSH/John Rekus/elcosh.org

Training

- Why PPE is necessary
- How PPE will protect the employee
- What PPE can and cannot do
- When and how to wear PPE
- How to identify signs of wear and tear
- How to clean and disinfect PPE
- When PPE is worn out and how to properly dispose of PPE

Responsibilities

- Employers must:
 - Assess hazards
 - Select appropriate PPE and determine when to use
 - Provide some PPE at no cost to employee
 - Make sure that employee-owned PPE is adequate, properly maintained and sanitary
 - Train employees and enforce use of PPE

Responsibilities

- Employees must:
 - Actively participate in training
 - Consistently use PPE as prescribed
 - Properly maintain, inspect, clean, and store PPE
 - Immediately replace damaged PPE

Hazard Recognition

- Identify hazards and PPE needed

Sharp edges
on sheet
metal

Head bump
hazard



Floor opening
with fall
hazard

Personal Protective Equipment

Hazard Recognition

- Identify hazards and PPE needed

Traffic hazard



Personal Protective Equipment

Hazard Recognition

- Identify hazards and PPE needed

Silica dust
hazard

Flying
particles

Noise



Worker is
wearing
proper PPE

Source: OSHA

Hazard Recognition

- Identify hazards and PPE needed

Noise hazard

Struck-by
hazard

Air
contaminant
hazard



Always Remember

- Employers must:
 - Assess the workplace for hazards
 - Use engineering and work practice controls to eliminate or reduce hazards
 - Select and provide appropriate PPE at no cost to employees to protect them

Knowledge Check

1. Who is responsible for providing PPE?
 - a. The employer
 - b. The employee
 - c. OSHA
 - d. Workers' Compensation

a. The employer

Knowledge Check

2. Common causes of foot injuries include: crushing, penetration, molten metal, chemicals, slippery surfaces, and sharp objects.
 - a. True
 - b. False

a. True

Knowledge Check

3. Safety controls must meet the following order of priority:
 - a. Substitution, PPE, workaround, and administrative
 - b. Workaround, stop work, PPE, and engineering
 - c. Stop work, PPE, engineering, and substitution
 - d. Substitution, engineering, administrative, and PPE

**d. Substitution, engineering,
administrative, and PPE**

Knowledge Check

4. Which type of hard hat would provide the most protection from electrical hazards?
- a. Class A
 - b. Class C
 - c. Class E
 - d. Class G

c. Class E

Knowledge Check

5. The need for hearing protection is triggered at which decibel level?
- a. When it exceeds 80 decibels
 - b. When it exceeds 90 decibels
 - c. When it exceeds 100 decibels
 - d. When it exceeds 110 decibels

b. When it exceeds 90 decibels

Knowledge Check

6. Who is responsible for providing specialized work footwear?
- a. The employer
 - b. The employee
 - c. OSHA
 - d. Insurance companies

a. The employer

Knowledge Check

7. Which of the following is considered approved eye protection?
- a. Sunglasses
 - b. Prescription glasses
 - c. Reading glasses
 - d. Glasses meeting ANSI standard Z87

d. Glasses meeting ANSI standard Z87

Knowledge Check

8. Which of the following is not considered PPE?
- a. Rubber gloves
 - b. Glasses meeting ANSI Z87
 - c. Sports shoes
 - d. Hearing muffs

c. Sports shoes

Personal Protective Equipment

Through the Alliance between OSHA's 10 Regional Offices and the Elevator Contractors of America (ECA), Elevator Industry Work Preservation Fund (EIWPF), International Union of Elevator Constructors (IUEC), National Association of Elevator Contractors (NAEC), National Elevator Industry Educational Program (NEIEP), and National Elevator Industry Inc. (NEII), collectively known as The Elevator Industry Safety Partners, developed this Personal Protective Equipment Industry Specific Training for informational purposes only. It does not necessarily reflect the official views of OSHA or the U.S. Department of Labor. May 2021

Under the Occupational Safety and Health Act, employers are responsible (<http://www.osha.gov/as/opa/worker/employer-responsibility.html>) for providing a safe and healthy workplace and workers have rights (<https://www.osha.gov/workers>). OSHA can help answer questions or concerns from employers and workers. OSHA's On-Site Consultation Program (<https://www.osha.gov/consultation>) offers free and confidential advice to small and medium-sized businesses, with priority given to high-hazard worksites. For more information, contact your regional or area OSHA office (<https://www.osha.gov/contactus/bystate>), call 1-800-321-OSHA (6742), or visit <https://www.osha.gov/>.

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Any Questions