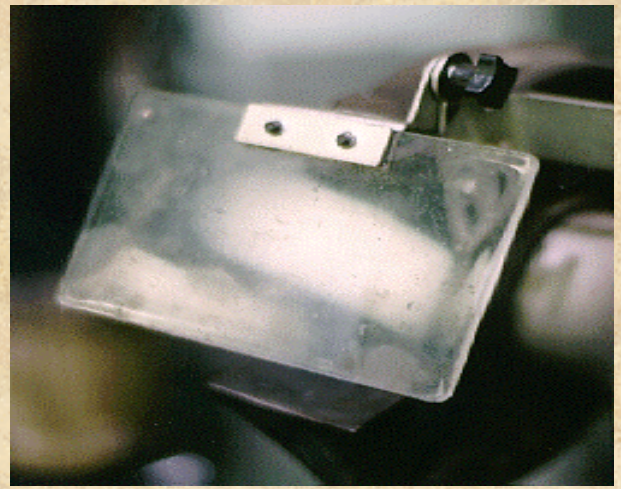
Personal Protective Equipment

What is PPE?

Equipment worn by a person that is designed to prevent injury or illness from a specific hazard.

Before PPE

- Engineering Controls
  - Sound insulation
  - Guards
  - Ventilation
- Work practice Controls
  - Wet methods to suppress dust
  - Personal hygiene
  - Housekeeping
  - Job rotation
- PPE is the last level of control!



Controlling Hazards

PPE should not be relied on to provide protection against hazards, but should be used in conjunction with engineering controls and sound work practices.

Examples of PPE

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

Hazard Assessment

First Step-- assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE

Hazard Assessment

- Identify a Specific Activity.
- What is the Hazard?
- What is the Source of the Hazard?
- Identify Engineering/Work practice Controls.
- Identify PPE Controls.
- Specify PPE to be used.

Hazards

Impact

Penetration

Compression

Chemical

Heat/Cold

Harmful Dust

Light Radiation

Other

Hazard Sources

What is causing the Hazard?

Identify as Objects: table saw, chemical applicator, tree branches lawn mower

Identify as Operations: jacking up a car, spray painting, trimming branches

MHC Activities

- Tree Trimming
- Chain Sawing
- Leaf Blowing
- String Trimming
- Lawn Mowing
- Chemical Application

Eye Protection

What are some of the causes of eye injuries?

- Flying objects striking the eye
- Contact with hazardous materials
- Struck by swinging objects (e.g., chains, ropes
- Viewing radiant energy sources (e.g., welding, lasers)

ANSI Standard

ANSI Z87.1

Occupational and Educational Eye and Face Protection

1. Safety Spectacles (Glasses)
2. Goggles, flexible fit, regular ventilation
3. Goggles, flexible fit, hooded ventilation
4. Goggles, rigid body, cushioned fit
5. Face Shield, plastic window
6. Chipping Goggles, eyecup type

Safety Glasses

- Made with metal/plastic safety frames
- Side shields
- Used for moderate impact from particles produced by such jobs as carpentry, woodworking, and grinding.

Goggles

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

Welding Shields

Protect eyes from burns caused by infrared or intense radiant light, and protect face and eyes from flying sparks, metal spatter, and slag chips produced during welding, brazing, soldering, and cutting.

Laser Safety Goggles

Protect eyes from intense concentrations of light produced by lasers.

Face Shields

- Protect the face from nuisance dusts, flying objects, and potential splashes or sprays of hazardous liquids
- Do not protect eyes from splash hazards

Care of Eye Protection

- do not share glasses or goggles
- clean with mild soap and water, do not use abrasives
- store in clean, dry, cool area
- replace if vision impaired or if damaged

Head Protection

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

Types of Hard Hats

ANSI Z89.1 – 1997

TYPE 1 – provides protection from blows to the top of the head

TYPE 2 – provided protection from blows to both the top and sides of the head

Types of Hard Hats

ANSI Z89.1 - 1997

CLASS G (General)

- Falling objects
- Electrical shock up to 2,200 volts

Types of Hardhats

Z89.1 - 1997

CLASS E (Electrical)

Falling objects

Electrical shocks up to 20,000 volts

Types of Hardhats

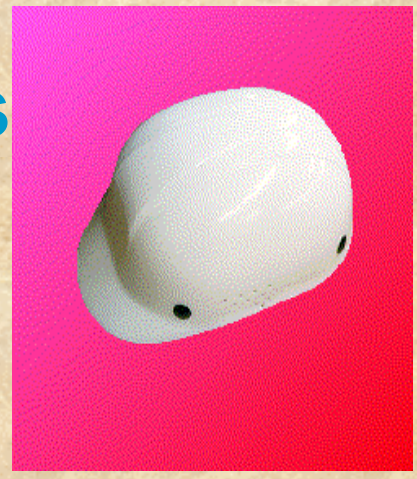
Z89.1 - 1997

CLASS C (Conductive)

- Falling objects
- No Shock protection

BUMP CAPS

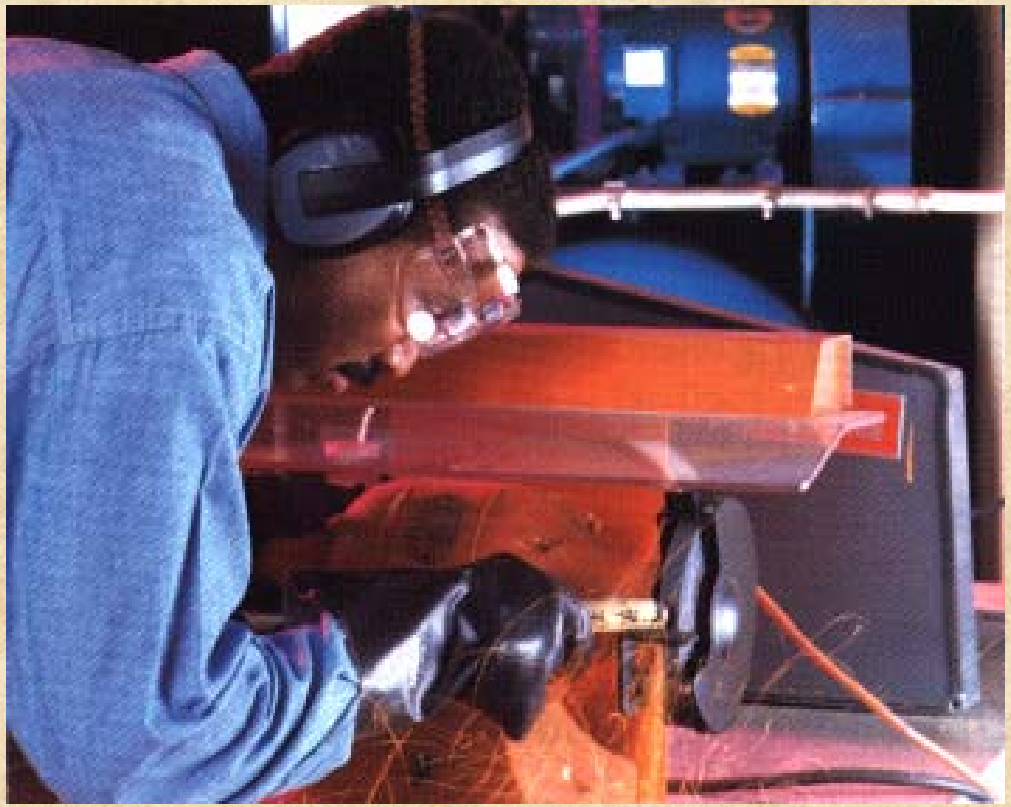
- For Bumps against fixed objects
- No falling object or shock
- protection



Fit and Care of Hard Hats

- Adjust suspension to fit comfortably
- but securely
- Wear parallel to head
- Wear with visor forward
- Inspect for damage daily
- Clean regularly with mild soap and water
- After significant impact, replace hard hat
- Never drill holes
- Store in cool, dry, clean location

Hearing Protection



Hearing Protection

Should be worn when noise is 85 dBA or greater for 8 - hours

MHC Equipment

Toro Grounds Master 87 – 97 dBA

Lawn Boy Push Mower 80 – 87 dBA

Backpack Leaf Blower 85 - 87 dBA

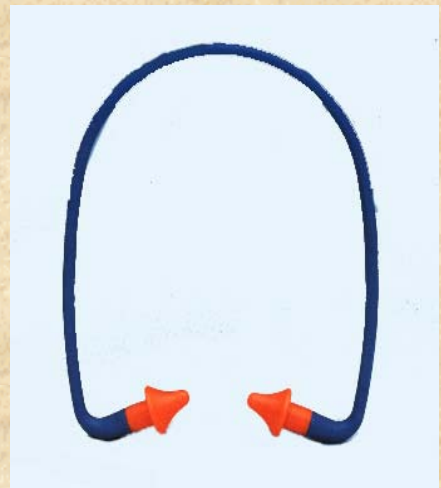
Weedwacker 55 – 87 dBA

Examples of Hearing Protectors

Earmuffs

Earplugs

Canal Caps



Earplugs

Advantages

- Small and lightweight
- Easily used with other PPE
- Comfortable in the heat

Disadvantages

- May work loose and require refitting
- Easily soiled
- Specific fitting requirements

Earmuffs

Advantages

Fits better for long periods

Easy to supervise

Disadvantages

Effectiveness limited by seal

Uncomfortable in heat

May not fit correctly with glasses

Purchasing Ear Protection

Noise Reduction Rating (NRR)

The number of decibels by which a device will reduce noise exposure

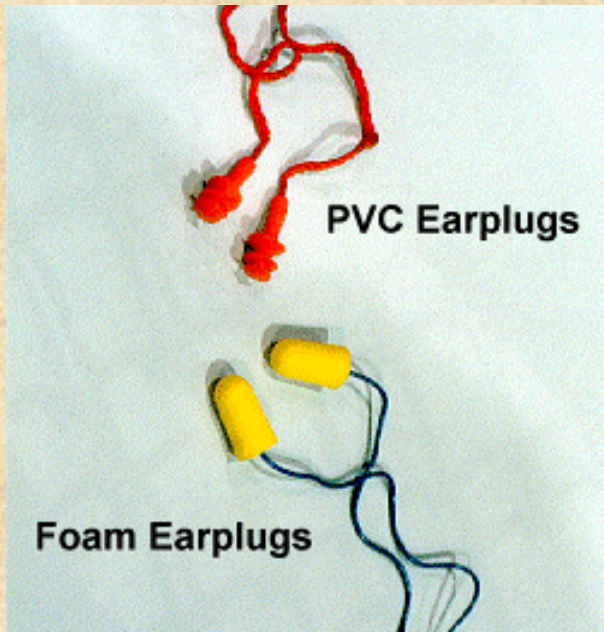
Fitting Foam Earplugs

- Roll plug into small diameter
- Reach around back of head and pull ear back and up
- Insert the plug well into the ear canal
- Hold in place for a few seconds while it expands

Fitting PVC Earplugs

- Reach around back of head and pull ear back and up
- Work plug into ear canal using a circular motion
- Wait a few seconds

to make sure it is secure



Fitting Earmuffs

- Make sure they fit snugly around the ear
- Adjust headband to fit securely

Caring for Ear Protection

- Store all types in clean, dry, cool location
- Replace foam earplugs when they become soiled or stiff
- Clean PVC ear plugs with mild soap and water
- Replace earmuffs if cracks occur around the foam cups

Foot Protection

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

Safety Shoes

ANSI Z41-1991

- 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

Hand Protection

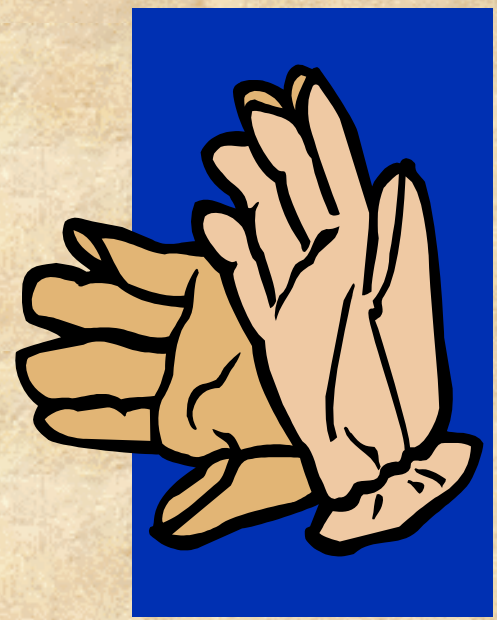
What are some of the hand injuries you need to guard against?

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

Types of Gloves

Utility Gloves

- Made of canvas, cotton, jersey
- Liners absorb moisture and provide insulation
- Protection from burns, bruises, abrasions and cuts
- Use care around equipment with moving parts



Types of Gloves

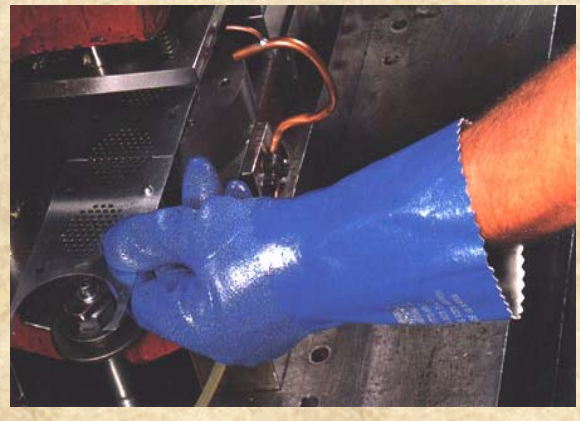
Norfoil **laminate resists permeation and breakthrough by an array of toxic/hazardous chemicals.**

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).**

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.



Types of Gloves (cont'd)

Kevlar **protects against cuts, slashes, and abrasion.**

Stainless steel mesh **protects against cuts and lacerations.**

Glove Use

- Wear the proper size, large gloves are clumsy and can cause accidents
- Inspect each time you put on for tears, punctures, degradation
- For chemical use check manufacturer for proper glove

Body Protection

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

Body Protection

Cooling

Sleeves and Apron

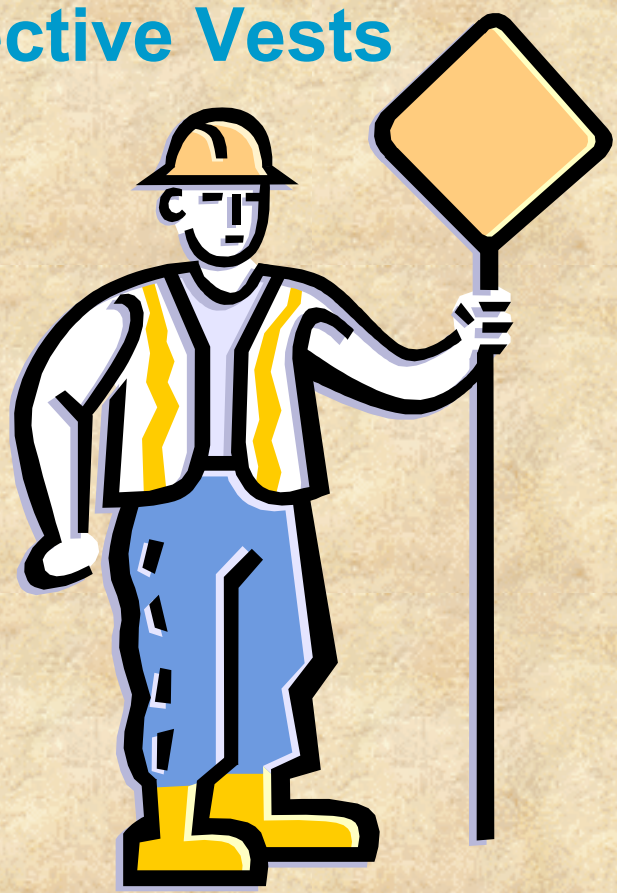
Body Protection

Coveralls

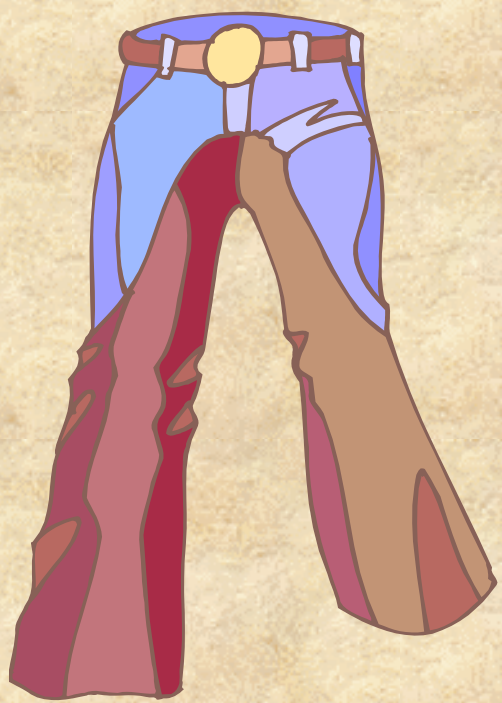
Full Body Suit

Body Protection

Reflective Vests



Chaps



MHC Activities

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Summary

PPE is an important
Layer of protection
Between your body
And the hazard.

Wear it for Good Health!