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Safety in the Workplace

Personal protective equipment

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What is Personal Protective Equipment?

- Referred to as PPE

- Any garment or item that protects its wearer from severe injury or infection

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Types of PPE

- Eye and Face protection
  - Safety glasses, face shields
- Hand Protection
  - Gloves
- Body Protection
  - Aprons, body suits, rubberized equipment, hard hats
- Respiratory Protection
  - Respirators, masks, negative pressure systems
- Hearing Protection
  - In ear and on ear protection

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Eye and Face Protection

- OSHA 1910.133 General Requirements for Eye and Face Protection

- Eye and/or Face Protection must be worn when exposed to
  - Flying Particles
  - Molten Metal
  - Liquid Chemicals
  - Acids or Caustic Liquids
  - Chemical gasses or vapor
  - Injurious Light Radiation (such as lasers or while welding)

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Eye and Face Protection

- It is important to wear your PPE when doing operations that may cause material to fly
  - This includes grinders, drills and saws

- Face shields are considered secondary protection to safety glasses!

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Hand Protection

- OSHA 1910.138 General Requirements for Hand Protection

- Hand Protection must be worn when exposed to
  - Harmful substances that can be absorbed through the skin
  - The potential for severe cuts or lacerations
  - The potential for severe abrasions or punctures
  - The potential for thermal burns
  - Temperature extremes
  - Chemicals that could cause burns

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Different gloves for different jobs

Make sure you are using the correct glove for the hazard associated. Your gloves should be close fitting to ensure they do not get snagged into rotating machinery.

- Use cut resistant gloves for jobs that could cause cut or puncture damage
- If you are handling extreme temperatures, make sure your gloves are rated for that temp
  - Liquid nitrogen (-196 °C) rated gloves are fine to use with dry ice (-78 °C) but dry ice gloves are not ok to use with liquid nitrogen
- Make sure you are using correct disposable gloves for the chemical hazard
  - Nitrile should not be used for every chemical (poor for alcohols, hydrocarbon substances, strong acids)
  - Latex can be used for strong acids but not silicones and some people are allergic

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Body Protection

- OSHA 1910.157 General Requirements for Body and Hand Protection

- Body Protection must be worn when exposed to
  - Harmful substances that can be absorbed through the skin
  - The potential for severe cuts or lacerations
  - The potential for severe abrasions or punctures
  - The potential for thermal burns
  - Temperature extremes
  - Chemicals that could cause burns
  - Potential impacts from tools, machinery or materials
  - Potential for electrical hazards

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Hard Hats

- Hard hats should have the following to meet ANSI requirements
  - Manufactures Name
  - ANSI Standard that it conforms with
  - ANSI type and class designation
  - Size and range for fitting
  - Date of manufacture

Hard Hats should be inspected regularly and thrown away if they have any damage or fatigue. They also expire.

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Hard Hat Expiration Dates

- Hard hats should be replaced if they become damaged or if they are more than 3 years past first use or 5 years past their manufacture (if not used)

- The dial on the right indicates when the hat was produced
  - The number in the middle indicates year (2016)
  - The dial points to the 3rd month (March)
  - The hard hat was manufactured March of 2016

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Steel or Composite Toed Shoes/ Electrically Insulated Shoes

- According to the Bureau of Labor Statistics, there were 52,070 non fatal foot related injuries that had days away from work in 2014

- Will conform to an ANSI or ASTM standard
- Shoes can either be steel tipped or composite tipped to prevent damage to toes if something is dropped on them
- Shoes will have a compression rating as well
- Can be rated for electrical safety and insulation as well. It can usually be found on the tongue of your boot or shoe what the ANSI rating is.

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Boots and Shoes

Example

- **ASTM Z41 PT 99** - The standard it conforms with, the numbers are the year of compliance
- **F I/75 C/75** - Indicates impact resistance (75 ftlbs) and compression resistance (2500 lbs)
- **Mt/75 EH and PR** – Lines 3 and 4 are used to indicate conductive properties (CD), electrical hazard rating (EH), puncture resistance (PR) and static dissipative properties (SD).
  - EH indicates that these shoes are manufactured with non conductive properties. It must be able to withstand 14,000 V at 60 Hz for one minute with no more than 3.00 mA current leakage to ground under dry conditions

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Knowledge Check 1:

- True or False: a face shield is considered “good enough” for protecting the eyes

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Knowledge Check 1

- False: Face shields are considered a secondary protection for eyes and must always be accompanied by safety glasses

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Respiratory Protection

- OSHA 1910.134 General Requirements for Respiratory Protection
- Most of the time, you will receive additional training on how to use a respirator and how to fit them.
- People with facial hair are usually asked to be clean shaven and people who wear makeup are usually asked to remove makeup before donning a respirator.
- Wear a respirator when exposed to harmful:
  - dusts (silicates and asbestos)
  - Fumes, mists, smokes, sprays, vapors
  - Airborne pathogens
  - Gasses

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Respirators

- Lots of different kinds that do different things:
  - SCBA (self contained breathing apparatus)
  - Air purifying
  - Canister
  - Atmosphere supplying
  - Negative pressure

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You should receive specific training

- If your workplace is supplying respirators, it is important to receive specific training on that type and for that specific work scenario

- Your employer should have a written reparatory protection program with required worksite-specific procedures and elements for required respirator use. It should be updated anytime the worksite or working conditions have changed. It should include
  - Procedures for selecting respirators
  - Medical evaluations
  - Fit testing
  - Proper use for routine and emergency situations
  - Training of employees in the hazards they may encounter
  - Training of employees in proper use and how to properly put on and take off
  - See OSHA guidelines for 1910.134 for additional information

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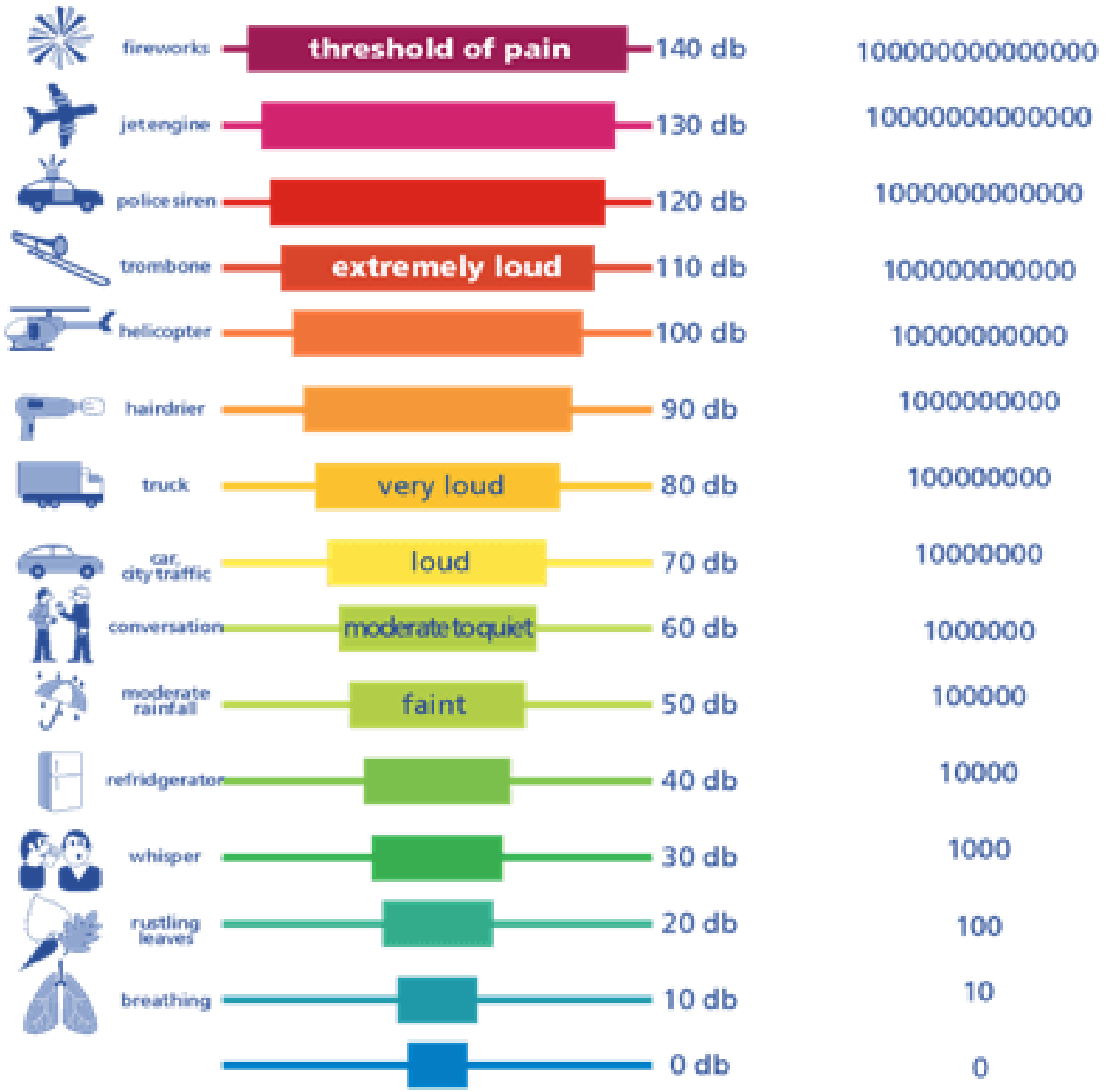
Hearing Protection

- OSHA 1910.95 General Requirements for Hearing Protection

Table G-16 - Permissible Noise Exposures[1]

Duration per day, hours	Sound level dBA slow response
8	85
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115


fireworks
threshold of pain
140 db
100000000000000
jetengine
130 db
10000000000000
policesiren
120 db
1000000000000
trombone
extremely loud
110 db
100000000000
helicopter
100 db
10000000000
hairdrier
90 db
1000000000
truck
very loud
80 db
100000000
car, city traffic
loud
70 db
10000000
conversation
moderate to quiet
60 db
1000000
moderate rainfall
faint
50 db
100000
refridgerator
40 db
10000
whisper
30 db
1000
rustling leaves
20 db
100
breathing
10 db
10
0 db
0

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Hearing Protection

- If you are working around 85 dB of sound for 8 hours a day that is the maximum allowable limit for sound exposure.
- Hearing protection can be in ear and over ear
- Double hearing protection is when you use both in ear and over ear and should be used at continuous exposure limits of 100 dB or greater (not OSHA specified)
- Your employer should have a hearing conservation program when employees are exposed to continuous noise at 85 dB or higher for 8 hours a day

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Proper Use of Soft Foam In-Ear Hearing Protection

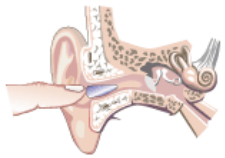
1. Roll

1. Roll the earplug into a more condensed, conical shape

2. Pull

2. With your other hand, lift gently on the top of your ear to straighten your ear canal and insert the earplug (if rolled properly, it should insert easily)

3. Hold



3. Hold the earplug in place and let it expand. You will know when it is expanded because your voice will sound muffled

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Knowledge Check 2

- What is the maximum allowable noise exposure limit for 8 hours before hearing protection is required?

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Knowledge Check 2

- 85 dB is the maximum allowable noise exposure limit for 8 hours

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Key Take Away

- Understand your company's policy on PPE
- If you feel like you need PPE for a job, talk to your supervisor or safety representative
- PPE might be cumbersome, but it is <u>really important</u>

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End of Show

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