ST MARY'S
COLLEGE of MARYLAND

29 CFR 1910.95 Occupational Noise Exposure

Developed by Environmental Health and Safety

Class Objectives

- Determine when a program is required
- Discuss how noise exposure is calculated
- Procedures for Audiometric testing

Class Objectives

- Hearing Protectors
  - Advantages
  - Disadvantages
  - Attenuation of various types
  - Instructions on selection
    - Fitting
    - Use
    - Care

Hearing Conservation Program Action Level

- Monitoring of Exposures
  - 8-hour TWA: Time Weighted Average
    - The highest level of exposure that an employee may be exposed to without risk of hearing loss
    - 85 decibels
      - What does 85 decibels sound like?
        - Hair dryer, blender, lawn mower, forklift

Hearing Conservation Program Action Level

- When an employee's exposure is at or above 85 decibels, the employee must be included in the hearing Conservation Program

What's the Scale?

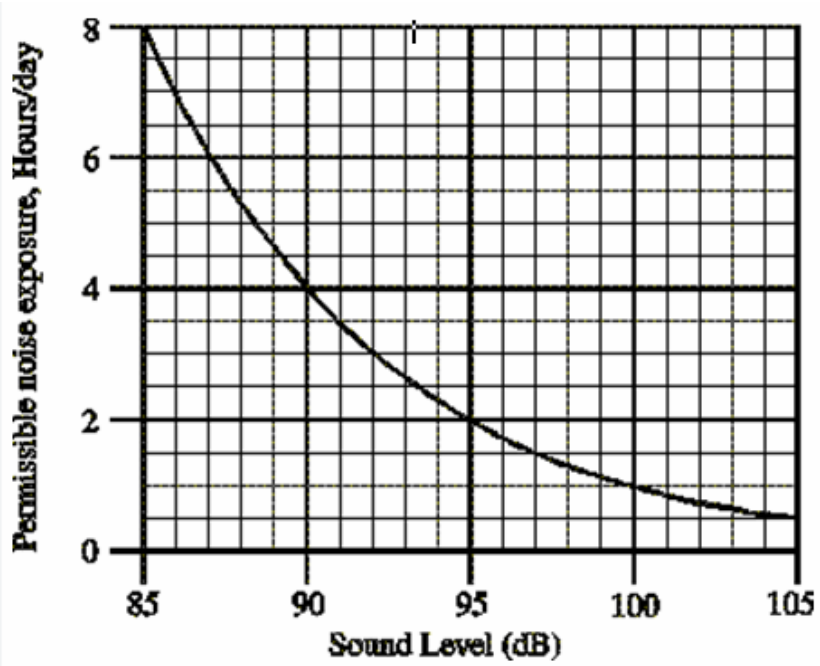
- Sounds measured in decibels dB
- Logarithmic Scale
  - An increase in 10 dB represents a doubling in loudness

Preventative Measures

- Audiometric Testing Program Required when:
  - Employee is exposed to noise above 85 dBa
  - Or above dose of 50%
  - Requires a “baseline” Audiogram
- Hearing Protection available

Occupational Noise Exposure

- Exposure based on
  - Duration (Time)
  - Level (dBa)



29 CFR 1910.95 Permissible Noise Exposure

- PPE Required
  - 8hrs at 90 dBA
  - 6hrs at 92 dBA
  - 4hrs at 95 dB
  - 3hrs at 100 dBA
  - 2hrs at 102 dBA
  - 1hr at 110 dBA
  - 1/2hr at 110 dBA
  - ¼hr or less at 115 dBA

dBA of Common Equipment

- Leaf blower 99 dBA
- Chain Saw 110 dBA
- Weedeater 96 dBA
- Lawn Mower 95 dBA
- Tractor 95 dBA
- Vacuum 87 dBA

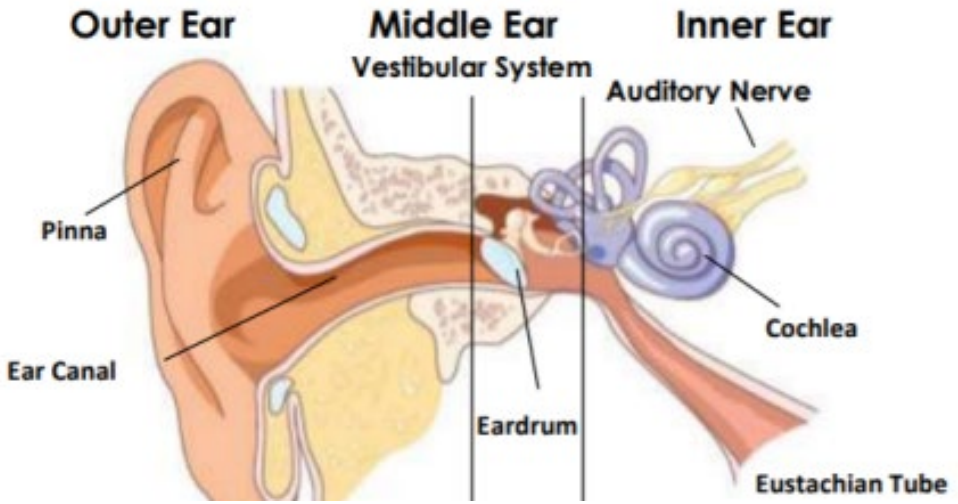
Preventative Measures

- Hearing Protection is required if exposed at or above 85 dBA or permanent significant hearing loss can occur

The only heavy equipment that doesn't require hearing protection!

How does the ear work?

- Three main parts
  - Outer
  - Middle
  - Inner



Sound Travel

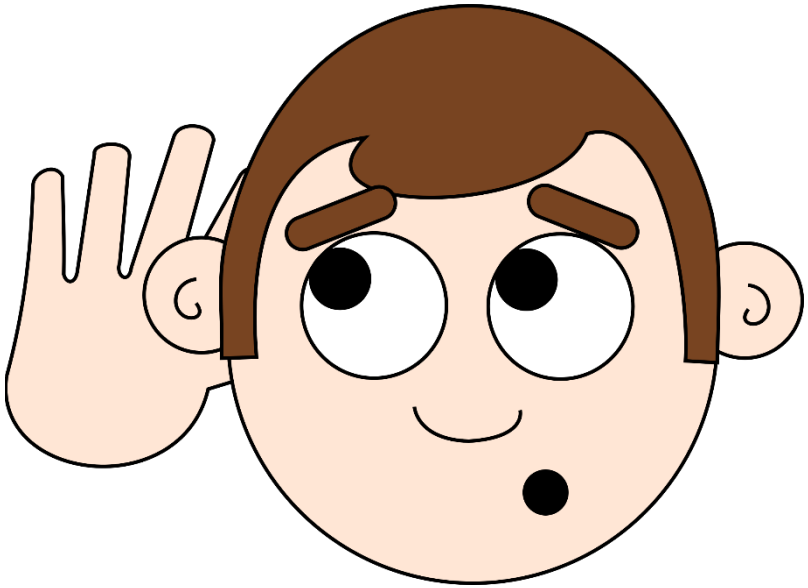
Sound waves funnel through the outer ear

Vibration is received in the middle ear

Vibrations become nerve impulses in the inner ear and go directly to the brain

Nerve Damage

- Loud noise kills the nerve endings in the inner ear
- As the number of nerve endings decrease, so does your hearing
- These nerves cannot be restored!!



Hearing Myths and Misconceptions

Can Noise Hurt My Ears?

Yes! If it is loud enough and lasts long enough, you may suffer sensorineural hearing loss or nerve damage

Can I Toughen Up My Ears?

- NO! If you think you've grown used to a loud noise, it probably has damaged your ears.

How Can I Tell if a Noise is Dangerous?

- People differ in sensitivity to noise. Be suspicious if you:
  - Have to shout over background noise
  - Your ears hurt or ring

Decibel Readings

Decibel Level	Examples
30	Whisper in a Library
60	Normal Conversation
90	Lawnmower, Truck Traffic, Shop Tools
100	Chainsaw, Snowmobile, Pneumatic Drills
115	Auto Horn, Sandblasting, Rock Concert
140	Gun Muzzle Blast, Jet Engine

Can Noise Effect More Than My Hearing?

- Loud noise may cause
  - Anxiety
  - Irritability
  - Increase in Pulse Rate
  - Increase in Stomach Acid
  - Decreased Attention

Hearing Protection

- Earplugs: Fits in the outer ear canal
  - Must totally block the ear canal with an airtight seal
  - Available in a variety of sizes and shapes

Hearing Protection

- Ear Muffs: Fit over entire ear
  - Held in place by a headband
  - Will not seal over long hair or glasses

Hearing Protection

- Ear Plugs and Muffs are about equal in noise reduction
  - 15-30 dB reduction when properly worn
  - Simultaneous use offers an additional 10-15 dB reduction

Common Hearing Protector Problems

- Studies show half of workers wearing hearing protectors receive ½ or less of the noise reduction potential
- Poor performance is due to improper fit and because the device is not worn continuously

- For Example….

I'm only taking it off for an hour!

- A hearing protector provides a noise reduction of 30 dB in a 90 dB environment
- If taken off for one hour during an 8 hour day, noise reduction is reduced to only **9 dB** of protection!

During that hour…

- You are exposed to 1,000 times more sound energy than if earplugs or muffs had been worn

The Proper Fit

- You should hear your own voice as deeper and louder
- It should be easier not harder to hear in the environment

Throw It Out!

- Old and Dirty Hearing Protection will not offer appropriate noise reduction

- Worn out hearing protection may cause irritation and infection

Prevention

- No cure for most effects of noise
- High-Pitched sounds are more damaging than low pitched ones

Hearing Loss

- High Frequency detection is often loss first
  - People suffering hearing loss often have difficulty hearing women and children

Audiometric Testing

- Available to all employees exposed to 85 dB or greater
- Baseline Audiograms
  - Used for Comparison
- Annual Audiograms

Don't Forget!

- Avoid any high levels of noise 14 hours before the audiometric examination
- This includes non-occupational noise such as lawnmowers or loud music

Evaluation of Audiograms

- Used to determine if a standard threshold shift has occurred (STS)
  - STS is a change in either ear of 10 dB or more

Standard Threshold Shift

- If an STS is observed, you will be notified
- The possibility of referrals or re-testing will be discussed
- Proper protection will be issued

Keeping Records

- Most Recent Noise Exposure Assessment
- Name and Job Classification of Employee
- Date of Audiogram
- Examiner's Name
- Date of Last Calibration of Audiometer
- Background sound pressure levels in audiometric test rooms
- Record Retention min. 2 years
- Audiometric Test Records
- Duration of Employment