“Noise & Hearing Conservation”

- How to develop a quality hearing conservation program
- Learn how the ear works and how noise levels effect it
- Noise levels in your industry – take the quiz!

Hearing Conservation

29 CFR 1910.95

Hearing Loss

- Can you imagine not being able to:
  - Hear music?
  - Listen to the sounds of nature?
  - Socialize with your family?
- Can you imagine being afflicted with uncomfortable ringing or abnormal sounds that interfere with sleep?

Signs of Hearing Loss

- Difficulty hearing people speak
- Inability to hear certain high-pitched or soft sounds
- Noise or ringing in ears
- Getting complaints that the radio or TV volume is too high

Why have a hearing conservation program?

- Putting it simply – It is the right thing to do
- If employees are exposed to noise over 85 decibels for any length of time then you need to have a program in place.
- It is an OSHA regulation
- Of course we all want to protect our employees hearing so if there are exposures at your location establish a plan.

Hearing conservation procedure

- As with any other OSHA regulated program it is required that you have a written procedure
- Your procedure should cover the following
  - The policy
  - Monitoring plan
  - Audiometric testing
  - Noise reduction efforts
  - Training
  - Record keeping
- Remember that you need to be able to do what you have written in your procedure.

Noise Monitoring

- Monitoring program and strategy (when and where)
- Sound level meters
- Noise dosimeters – measuring noise exposure over time
- Repeat monitoring

Program Elements: *Audiometric Testing*

An audiometric testing program must be available to all employees exposed to high noise levels.

A program should include:

- **Baseline audiograms**
- **Annual audiograms**
- **Audiogram evaluation**

Record Keeping

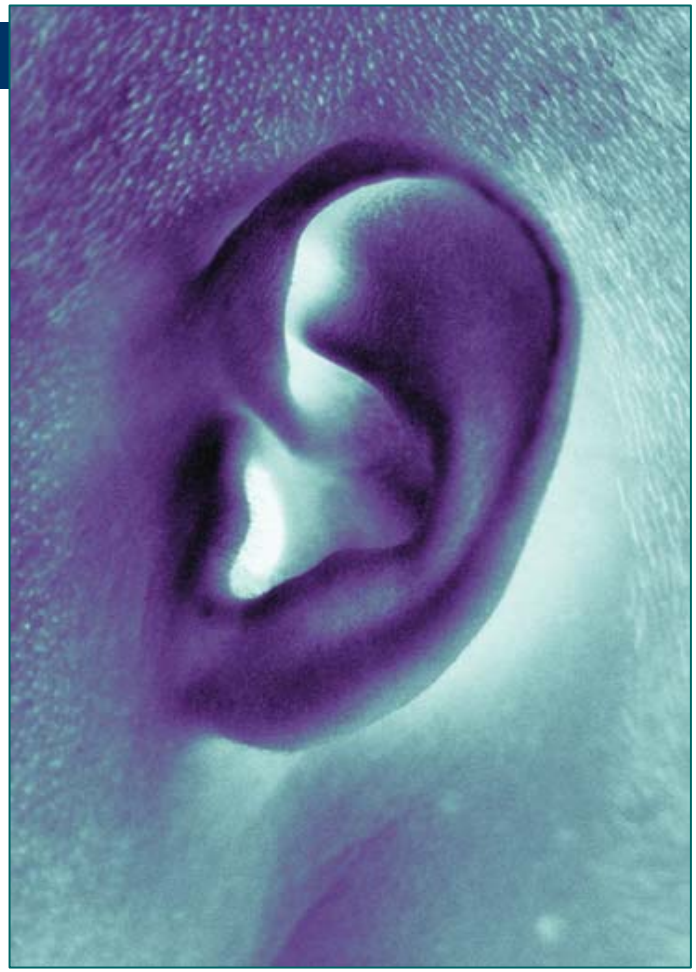
- Keeping records on noise testing and audiometric testing is an essential part of the program.

Noise Reduction Efforts

- Engineering Controls
  - Reduce noise at the source
  - Interrupt the noise path
  - Reduce reverberation and structural vibration

How We Hear Sounds

- Sound waves enter the ear canal
- Eardrum vibrations pass along tiny bones
- Tiny hairlike cells flow back and forth
- The auditory nerve sends signals that are registered as sound to the brain



Noise induced hearing loss

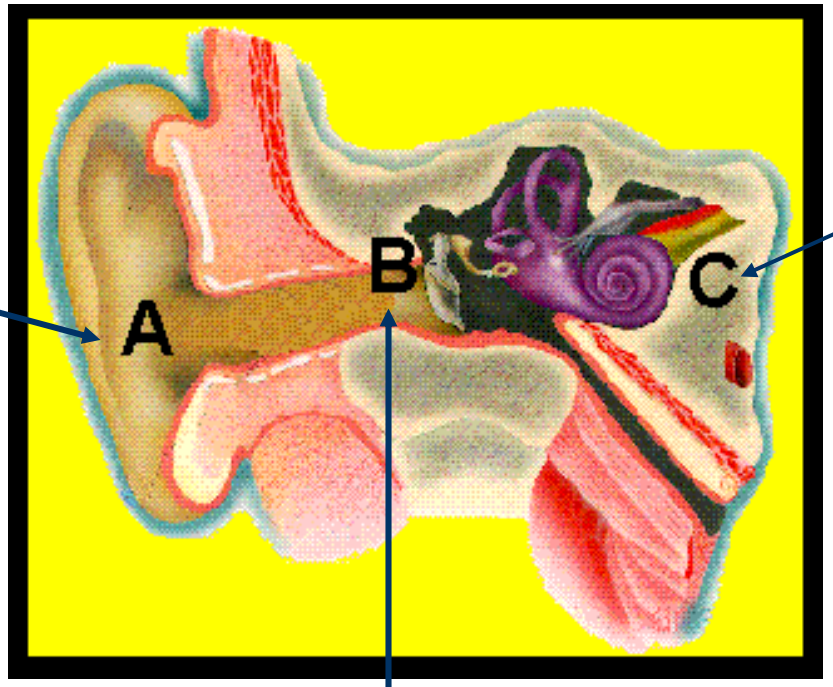
- Of the roughly 40 million Americans suffering from hearing loss, 10 million can be attributed to noise-induced hearing loss (NIHL).
- NIHL can be caused by a one-time exposure to loud sound as well as by repeated exposure to sounds at various loudness levels over an extended period of time.
- Damage happens to the microscopic hair cells found inside the cochlea. These cells respond to mechanical sound vibrations by sending an electrical signal to the auditory nerve. Different groups of hair cells are responsible for different frequencies (rate of vibrations). Over time, the hair cell's hair-like stereocilia may get damaged or broken. If enough of them are damaged, hearing loss results.

Hearing Damage

- You do not get used to noise; you gradually lose your hearing
- Once hearing is damaged, it cannot be repaired or replaced

Health Effects of Noise: *The Human Ear*

The human ear is divided into three parts, each of which has a specific function.

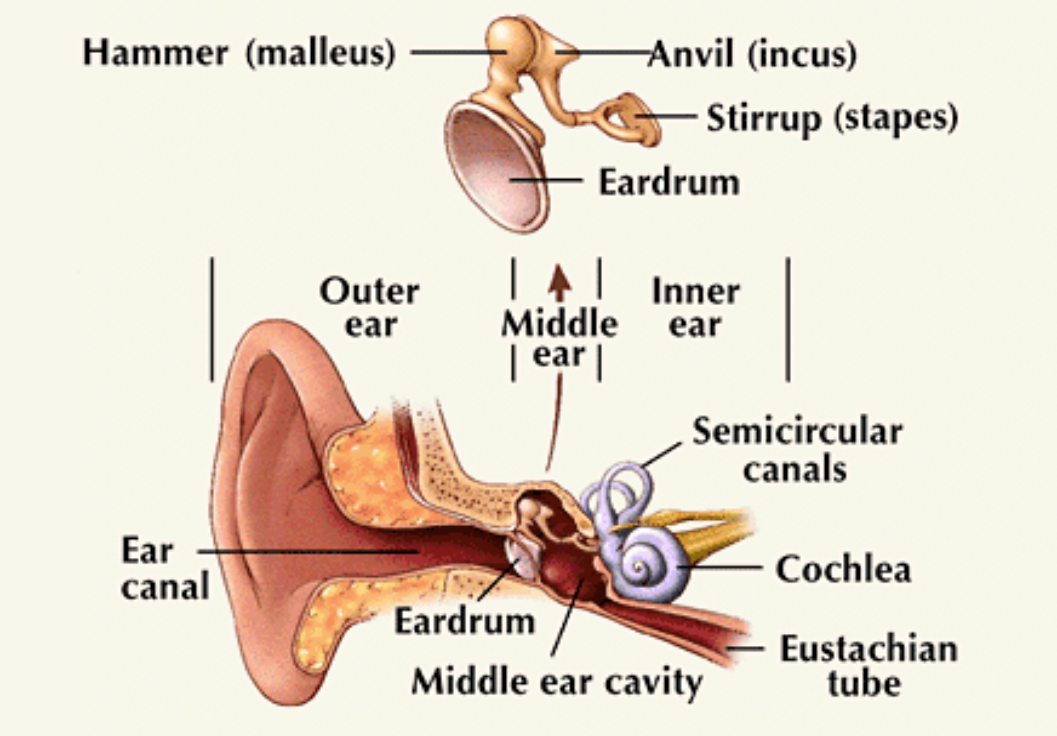


A. External Ear

C. Inner Ear

B. Middle Ear

The Ear


Hammer (malleus)
Anvil (incus)
Stirrup (stapes)
Eardrum
Outer ear
Middle ear
Inner ear
Semicircular canals
Ear canal
Cochlea
Eardrum
Eustachian tube
Middle ear cavity

What is the decibel level?

- Considering that 85dB is the level at which hearing protection is required.
- Also taking into account that if you have to raise your voice to communicate that the noise level is probably 85dB or above.
- Within a 6 point range what decibels are met for the following sounds?

What is the decibel?

- A typical conversation
  = ___dB
- Power saw at 3 feet
  = ___dB
- Telephone dial tone
  = ___dB
- Sand blasting
  = ___dB
- Lawn Mowing
  = ___dB
- Train whistle at 500 feet
  = ___dB
- Car horn at 15 feet
  = ___dB
- Loudest noise possible
  = ___dB

Hearing Protection Devices (HPDs)

- Ear plugs
- Earmuffs

Management Responsibility

- Provide hearing protection devices
- Provide hearing protection training
- Ensure that hearing protection is being used.

Training

- Required annually
- Topics must include:
  - How noise impacts hearing
  - Hearing protection devices
  - Hearing tests

Summary

- Constant exposure to noise over 85 decibels can cause hearing damage.
- Hearing loss cannot be cured or repaired
- Hearing tests are conducted annually