Occupational Noise Exposure

Hearing Conservation Training Program

Presented by the Office of Environmental Health and Safety
Did You Know?

- About 30 million workers are exposed to hazardous noise on the job.
- Noise-induced hearing loss is the most common occupational hazard for American workers.
- Hearing loss from noise is slow and painless; you can have a disability before you notice it.
- If you must raise your voice to speak with someone only 3 feet away, you are in high (hazardous) noise.
- It is 100% preventable.
What Is Noise?

- Noise is any unwanted sound
- By-product of many industrial processes, e.g. operating machinery
- Exposure to high levels of noise may lead to hearing loss and other harmful health effects
General Estimates of Work-Related Noises

Rocket launch 180
Jet engine at takeoff 140
Pneumatic percussion drill 119
Chain saw 110
Bulldozer, Spray painter 105
Hand drill 98
Belt sander 93

194 Loudest tone possible
165 12-Gauge shotgun
120 Ambulance siren
114 Hammer drill
108 Continuous miner
103 Impact wrench
96 Tractor
90 Hair dryer/ Power lawn mower

Exposures > 85 may cause hearing loss

80 Ringing telephone

Normal conversation 60

30 Whisper

Weakest sound heard by the average ear 0 dB

For more information on occupational hearing loss or other work-related injuries or illnesses contact the National Institute for Occupational Safety and Health (NIOSH) at 1-800-35-NIOSH or http://www.cdc.gov/niosh
Common Sounds may be louder than you think...

- Dripping faucet—20 db
- Conversation—60 db
- Bulldozer, idling (damage at >8 h/day)—85 db
- Power tools (damage at >1 h/day)—100 db
- Earphones (vol >5) (damage at >15 min/day)—110 db
- Thunderclap (near) (damage immediate)—120 db
- Gunshot (may cause ear pain)—140 db
Anatomy of the Ear

- Ear Drum
- Semi-Circular Canals
- Cochlea
- Ear Bones
- Outer Ear
Signs of Hearing Loss

- Do you ask people to speak louder so that you can hear?
- Do you have to turn the TV or Radio so loud that others complain?
Hearing Loss

**Temporary Hearing Loss**
- results from short term exposure to noise
- hearing returns when away from the noise

**Permanent Hearing Loss**
- results from exposure to a moderate or high level of noise over a long period of time
- hearing loss is PERMANENT

"If I was wearing my ‘what’?!”
Selection of Hearing Protection Devices

- Hearing protection devices are selected according to:
  - Employee comfort
  - Level of noise exposure
  - NRR of device
  - Type of work being performed
  - Environmental conditions

Employee may select hearing protection from a variety of suitable hearing protectors provided by employer.
Types of Hearing Protection Devices

- Ear muffs
- Foam insert earplugs
- Semi-aural earplugs
Ear Muffs

Advantages

- More protection at higher frequencies than earplugs
- Various NRRs available
- Durable, long lasting
- Can be fitted on hard hat
- Reusable

Disadvantages

- Higher cost
- Eye glasses can interfere with ear muff seal
- May be uncomfortable in hot environments
- Must be cleaned before use by another worker
Foam Insert Earplugs

**Advantages**

- More protection at lower frequencies than muffs
- Various NRRs available
- Inexpensive; disposable
- Can be custom molded for individual worker
- Reusable plugs are available

**Disadvantages**

- Hands must be cleaned before inserting earplugs
- Improper insertion reduces NRR value
Semi-aural Caps

Advantages

- Various NRRs available
- Easy to insert
- May be used several times
- Ideal for people going in and out of noisy areas

Disadvantages

- Improper insertion reduces effectiveness
- More expensive than ear plugs
- Typically have lower NRRs than plugs or muffs
Fit, Use, and Care of Hearing Protection Devices

- Employer must ensure proper initial fitting
- Employer must supervise the correct use of hearing protectors
- Hearing protectors must be replaced as necessary at no cost to employee, contact your supervisor
- Hearing protection devices must be cleaned and stored according to the manufacturer’s specification
- For questions concerning selection of hearing protection based on NRR and proper fit contact EH&S @ 328-6166
Audiometric Testing

- Monitors employee’s hearing over time
- Baseline audiogram must be performed within first 6 months of work exposure (8 hour TWA ≥ 85 dBA)
- Annual audiograms are required each year after baseline audiogram
- Employer must pay for the cost of each required audiogram
Why Do Audiometric Testing?

- Obtain a Baseline Audiogram for future comparison
- Identify occupational hearing loss
- Identify Standard Threshold Shifts (STS)
Normal Vs Noise-Induced Audiometric testing

Normal Hearing

Noise-Induced Hearing Loss

Hearing Level in dB

Pitch Frequency in Hz

Normal Speech

Left

Right

Hearing Level in dB

Pitch Frequency in Hz

Normal Speech

Left

Right
Access to Information and Training Materials

- A copy of the OSHA 29 CFR1910.95 standard available to affected employees online @ www.osha.gov
- OSHA Occupational noise exposure standard must be posted in the workplace
- Employer is responsible for record keeping regarding employee noise exposure (at least 2 years)
TOTAL HEARING CONSERVATION CYCLE

- Noise Exposure Assessment
- Hearing and Noise Education
- Regular Measurement Of Personal Hearing
- Tuned Personal Hearing Protection
- Reduction Of Noise Exposure
Please take the linked **QUIZ** to complete this training session.

Thank you.

If you have any questions please contact EH&S at 328-6166 or safety@ecu.edu