



The Need for Hearing Protection at Work and at Play

Session 475

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What is Noise?

Webster' defines "Noise" as:

- o A sound of any kind;
- o Any loud, unmusical or disagreeable sound.

What is Noise?

The American Speech-Language- Hearing Association defines "Noise":

- o As complex sound waves that are aperiodic, in other words, sound waves with irregular vibrations and no defined pitch.

What is Noise?

Engineering defines "Noise":

- o As a signal that interferes with the detection of or quality of another signal.

What is Noise?

The combined disciplines of psychology and acoustics (psychoacoustics) study the response of humans to sound. They define noise as the unwanted sound.

- o Is music noise?
- o Is the hum of tires on the highway noise?
- o Is the surround-sound movie theater noise?
- o Is a philharmonic concert noise?

What is Noise?

- o The sounds that are soothing for some are irritating to others.
- o Sounds can be considered one of the largest pollutants in America.
- o Noise can affect physical health.
- o Noise can affect our well being and quality of life.

What Are the Statistics on Hearing Loss

- Men are more likely to have a loss of hearing than women
- 17% of American adults report some degree of hearing loss
- 18% of Americans 45 to 64 have hearing loss
- 30% of Americans 65 to 74 have hearing loss

What Are the Statistics on Hearing Loss

- 47% of Americans 75 years and older have hearing impairment
- 15% (26 Million) Americans between the age of 20 & 64 have high frequency hearing loss due to exposure to loud noise at work or leisure activities
- From 1971 to 1990 hearing difficulties have jumped 17% among those 18 to 44

Why Do We Need Hearing Protection?

What has changed with regard to noise?

- I-pod's/walkman's
- Cell phones
- Lawn care equipment
- Surround sound
- Power tools
- Vacuum Cleaners

Why Do We Need Hearing Protection?

Different Decibel Levels;

- | | |
|----------------------------------|--------|
| ○ Outdoors, no people or traffic | 20 dB |
| ○ Background noise in library | 40 dB |
| ○ Heavy traffic | 85 dB |
| ○ Power lawnmower up close | 90 dB |
| ○ Chainsaw | 100 dB |
| ○ Leaf blower | 115 dB |
| ○ Jet plane takeoff at 100 yards | 120 dB |
| ○ Threshold of pain | 140 dB |
| ○ 12-Gauge Shotgun | 165 dB |

Why Do We Need Hearing Protection?

What are the levels noise we are exposed to daily?

- | | |
|--------------------|-------|
| ○ Soft whisper | 20 dB |
| ○ Conversation | 50 dB |
| ○ Noisy restaurant | 70 dB |
| ○ Washing machine | 75 dB |
| ○ Vacuum cleaner | 90 dB |
| ○ Hair dryer | 95 dB |

Quiz

1. Most hearing protection devices, regardless of type or design, reduce about the same amount of noise that reaches the ear. (True or False)

2. An extended time in a noisy environment can make people feel anxious and fatigued. (True or False)

Quiz

- 3. It's more difficult to hear conversations in a noisy environment while wearing hearing protection. (True or False)
- 4. Muffs always block out more noise than plugs. (True or False)

Hearing Conservation

- o Do you need hearing protection?
- o When do you need protection?
- o Do you need a program?
- o When Do you need a program?

Hearing Protection Off the Job

What outside activities do you partake in?

- o Racing – drag, stockcar, motor cross
- o Riding motorcycles/four wheelers
- o Music events
- o Shooting of guns
- o Use of lawn care equipment
- o Wood working tools

Hearing Protection On the Job

DECIBEL - d(BA)	EQUIPMENT
112	Pile driver
110	Air aving grouting
108	Impact wrench
107	Bulldozer - no muffle
105-104	Air grinder
102	Crane - unenclosed cab
101-103	Bulldozer - no cab
97	Chipping concrete
96	Circular saw and hammering
96	Jack hammer
95	Chain cut saw
95	Masonry saw
94	Compressor - no cab
93	Crane - insulated cab
92	Loader/backhoe - insulated cab
91	Generator
85-90	Welding machine
85	Bulldozer - insulated cab
60-70	Speaking voice

Table 1. Some typical noise levels found on construction sites

Chart obtained from OSHA's outreach program

When is Hearing Protection Required?

- o As with other types of hazards, you must implement feasible engineering and work practice controls before resorting to PPE, in this case hearing protection, so if you can't engineer out you may need hearing protection
- o OSHA's noise standard (29 CFR 1910.95) requires the use of hearing protection when the employee's noise exposure exceeds an 8-hour time-weighted average (TWA) sound level of 90 dBA

When is Hearing Protection Required?

- o Employees who are exposed to an 8-hour TWA of 85 dBA and who have measured hearing loss (as prescribed by the OSHA standard) are also required to wear hearing protection
- o Anyone that is exposed at 85 dBA it is recommended

Hearing Conservation Program

As part of this PPE program, you must do the following:

- Assess the workplace for hazards,(written);
- Implement engineering controls and work practices to control or eliminate these hazards to the extent feasible;
- Select appropriate PPE to protect employees from hazards that cannot be eliminated or controlled through engineering controls and work practices.

Hearing Conservation Program

As part of this PPE program, you must do the following continued:

- Inform your employees why the PPE is necessary and when it must be worn;
- Train your employees how to use and care for the selected PPE and how to recognize PPE deterioration and failure;
- Require your employees to wear the selected PPE in the workplace.

Hearing Conservation Program (HCP)

All employees whose noise exposures equal or exceed an 8-hour TWA of 85 dBA must be included in a HCP

- HCP is comprised of five basic elements
 - Exposure monitoring
 - Audiometric testing
 - Hearing protection
 - Employee training
 - Recordkeeping

What Should You Train Your Employees About Hearing Protection?

- Why hearing protection is necessary, i.e., the workplace hazards that threaten their hearing.
- How the ear plugs or earmuffs will protect them.
- The limitations of the hearing protection.
- When they must insert or wear the hearing protectors.

What Should You Train Your Employees About Hearing Protection?

- How to adjust earmuff parts for a comfortable and effective fit, or form the ear plugs to fit their ears.
- How special earmuffs fit over an employee's corrective lenses.
- How to clean and disinfect the hearing protection you provide for them.

1910.95 Occupational Noise Exposure (Hearing Protection)

- Training requirements
- Noise exposure > 85dBA
- Required participation
- Annual training and testing
- Elements of training

1910.95 Occupational Noise Exposure (Hearing Protection)

Legal requirements under this standard

- A variety of hearing protectors
- Training annually
- Hearing test annually
- Fitting/correct use
- No cost to employees

1910.95 Occupational Noise Exposure (Hearing Protection)

What things to consider when selecting hearing protection?

- Comfort
- NRR Value
- What will be used

Types of hearing protection

Which type of hearing protection provides the greater level of protection?

- Foam plugs
- Molded plastic plugs
- Ear caps
- Ear muffs

Noise Reduction Rating (NRR)

If you have a noise NRR of 33 on the hearing protection what is the actual level that you can expect to reduce noise to with that hearing protection?

- $33 - 7 = 26$ Then divide by 2 = 13

Ten Ways To Recognize Hearing Loss

- Do you have a problem hearing over the telephone?
- Do you have trouble following the conversation when two or more people are talking at the same time?
- Do people complain that you turn the TV volume up too high?
- Do you have to strain to understand conversation?
- Do you have trouble hearing in a noisy background?

Ten Ways To Recognize Hearing Loss

- Do you find yourself asking people to repeat themselves?
- Do many people you talk to seem to mumble (or not speak clearly)?
- Do you misunderstand what others are saying and respond inappropriately?
- Do you have trouble understanding the speech of women and children?
- Do people get annoyed because you misunderstand what they say?

Summary

- Assess the need for hearing protection
- Attempt to engineer out the noise
- Select hearing protection needed
- Train those that fall under a HCP