

Great Western Painting

Noise Awareness

OSHA Standards:

29 CFR 1910.95, Occupational Noise Exposure

29 CFR 1926.52, Occupational Noise Exposure

29 CFR 1926.101, Hearing Protection

Noise Awareness

All employees are to receive noise awareness training prior to initial assignment and on an annual basis.

If employees are exposed to occupational noise levels above the action level [an 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response] or work in high noise areas, they will fall under the provisions of our Hearing Conservation Program.

Hearing protection will be worn by all employees working in areas where they are exposed to an 8-hour time-weighted average of 85 decibels or greater **and** in areas where signage indicates it is required while on an owner client facility.

Hearing protection will be provided at no cost to the employee and each employee will be given the opportunity select from a variety of approved, suitable, hearing protectors. Further, hearing protectors will be replaced, at no cost, as necessary.

Oral, hands-on, and written training will be given to ensure that employees' hearing protectors are properly fitted and maintained. Training will also cover how hearing works, temporary hearing loss, and the importance of preserving your ability to hear.

Training will be updated to reflect changes or improvements in PPE as well as changes in our work processes.

Hearing protection is different from most other types of PPE because loss of hearing generally occurs painlessly over a period of time and, when finally realized, the damage is permanent.

Because of the above, it is vital that cooperation between all affected employees and management be established to prevent occupational hearing loss.

Employees are to understand the importance of protecting their hearing from damage. If job site noise bothers an employee and those noises are

below the threshold for required ear protection, that employee should bring this to the attention of the Safety Director.

Hearing Protectors:

Appropriate hearing protectors will be available in a variety of styles from which to choose from to provide a comfortable fit; employees will be made aware of the proper use and care of the protectors selected.

In selecting appropriate hearing protectors, the following factors will be considered:

- a. the hearing protector's noise reduction rating (Subject Fit) [NRR(SF)].

Note: The NRR(SF), measured in dB and found as a number on the hearing protector, can be used by subtracting that number from an A-weighted sound level or a time-weighted average noise exposure to determine the level of protection for most (84%) of the users.

Note: The NRR(SF) is based on tests of continuous noise and may not be an appropriate indicator for protection against impulse or impact noise.

- b. the user's daily equivalent noise exposure.
- c. variations in noise levels.
- d. user preference.
- e. communication needs.
- f. hearing ability.
- g. compatibility with other safety equipment.
- h. user's physical limitations.
- i. climate and other working conditions.
- j. replacement, care, and use requirements.

Using one of the methods described in Appendix B to 29 CFR 1910.95, a competent person or an outside qualified professional will evaluate hearing protector attenuation for the environment in which the hearing protector will be used.

Specifically, hearing protectors must attenuate sound exposure at least to an 8-hour time-weighted average of 90 dB or, for those who have experienced a standard threshold shift, to an 8-hour time-weighted average of 85 dB or below.

Should noise levels increase, more effective hearing protectors will be provided to meet the above requirements.

Process of hearing:

Hearing involves, in its simplest terms, conducting sounds from outside your body to your brain. The ear is divided into three main sections:

- a. EXTERNAL EAR collects sounds and directs them to the tympanic membrane (ear drum).

Major Components:

Pinna: the visible part of the ear.

External auditory canal: approximately 1¼ inch tube to direct sound to the eardrum.

Tympanic membrane: vibrates as it is hit with incoming sounds.

- b. MIDDLE EAR air filled space that connects outer ear to inner ear.

Major Components:

Ossicles: three bones commonly called the “hammer”, the “anvil”, and the “stirrup”. These bones collect the sound, amplify it, and transfer it to the fluid in the inner ear.

Eustachian tube: small tube connected to the throat that brings air into the middle ear allowing pressure equalization of both sides of the ear drum.

- c. INNER EAR transfers sound vibrations to nerve impulses and sends them to the brain.

Major Components:

Vestibule: helps maintain balance.

Cochlea: takes vibrations of the middle ear bones and transfers them into nerve impulses that go to the brain. The stirrup, in the middle ear, vibrates through a small opening in the cochlea. This opening is connected to fluid filled canals. The pressure waves in the fluid cause small hair type cells to bend. As they bend, they release a nerve impulse which is sent to the brain. The brain perceives

these impulses as sound. This is where noise induced hearing loss occurs.

Semicircular canals: involved with equilibrium (balance)

- Acoustic nerve:
- a. cochlear nerve: connects the cochlea to the brain.
 - b. vestibular nerve: connects the semicircular canals to the brain.

Noise Induced Hearing Loss (NIHL):

Moderate exposure to loud noise (over 90 dB for one or more hours) may cause **reversible** changes within the inner ear such as: subtle intracellular changes in the hair cells or swelling of the auditory nerve endings. These temporary changes present themselves as temporary threshold shifts (TTS) 10 dB or more at various frequencies in either ear. This temporary hearing loss will go away within hours -- 16 hours maximum.

How this loss may occur is as follows: continued sound may decrease the stiffness in the hair bundles at the top of the hair cells in the inner ear. This in turn would cause less vibration at a given sound level and an accompanying loss in hearing.

However, continued exposure to loud noise over time will result in permanent threshold shift (PTS) and the resultant permanent, **non-reversible** hearing loss.

Additionally, the most common cause of tinnitus (an annoying ringing in the ears) is damage to the ear from noise exposure resulting in hearing loss.

Because the loss of hearing is so gradual, so painless, so unnoticeable, there may be a tendency to not take hearing conservation seriously until it is too late and you have lost one of your major contacts with the world around you -- your hearing.

Why is there not a requirement to just require hearing protectors at all times, in all situations?" This misses the point. Your hearing -- just as your sight, touch, and smell -- is your means of contact and placement in the world around you. By wearing hearing protectors when not needed, you lessen your ability to hear and be in touch with your environment.

You certainly wouldn't want to save your hearing and lose your life because you didn't hear the warning "Watch out!", "Stop!" or you missed the sound of approaching danger.