Hear Today - Gone Tomorrow?
Hearing Conservation in the Construction Industry

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Hearing loss in the construction industry is a serious health risk for construction trades. In a study conducted by the National Institute of Occupational Safety and Health (NIOSH), the average carpenter's hearing is comparable to that of a 55 year-old non-noise exposed worker! By the age of 55, serious hearing losses are likely to be present.[1]

OSHA's regulation for the construction industry (29 CFR 1926.52) in this regard is minimal when compared to the rules for a general industry employee (29 CFR 1910.95). There is a clear requirement for audiometric testing of employees' hearing in a plant environment when the noise exposure exceeds 85-dBA time-weighted-average (TWA) over eight-hours. This requirement is not specifically mentioned in the construction standards. For this reason, many construction companies may not institute a hearing conservation program, believing it is not required.

In actuality, 29 CFR 1926.52(d)(1) requires that "…where sound levels exceed the values shown herein, a continuing effective hearing conservation program shall be administered". In a 1982 letter of interpretation, OSHA specified what they consider to be an "effective hearing conservation program" as outlined below:

(1) Monitoring of employee noise exposures,

(2) The institution of engineering, work practice, and administrative controls for excessive noise,

(3) The provision of each overexposed employee with an individually fitted hearing protector with an adequate noise reduction rating,

(4) Employee training and education regarding noise hazards and protection measures,

(5) Baseline and annual audiometry,

(6) Procedures for preventing further occupational hearing loss by an employee whenever such an event has been identified.

(7) Recording Keeping[2]

While a letter of interpretation does not carry the same force as law, it is OSHA's current enforcement policy. Audiometric testing allows for the early detection of hearing loss. When hearing loss occurs, it most often occurs initially in the high frequencies that do not affect our daily lives. The opportunity to control noise-induced hearing loss is at this early stage. In addition, conducting base-line audiometric testing is imperative to defend a hearing-loss claim from a pre-existing hearing deficient.

Noise exposure levels are based on decibel readings. Decibels are a logarithmic method to measure sound-pressure levels. An "A" scale filter is typically used for most applications to represent human hearing. An increase in sound levels of just a few decibels is significant. While the OSHA standards permit 8-hours of exposure at 90 decibels, most other standards (American Conference of Governmental Industrial Hygienists, NIOSH) recognize 85 dBA as exposure limit for eight hours. Note that for every three decibels of increase, the exposure level is nearly doubling in intensity!

It is important to understand that noise is measured overtime. An exposure of 110 decibels is permitted for ½ an hour per day, provided the rest of the day is in a quiet environment (< 85 dBA). Measuring noise for dose exposure is most effectively performed with a dosimeter which averages the exposure over the time exposed. Individual sound level readings of tools and equipment can be helpful for employees to understand the exposures created by common construction activities.

Recently OSHA enacted new requirements for OSHA recordkeeping that affect the recordability of a hearing-loss case. For the construction industry, if it has been determined that the work-exposure for your employees is below the 90dBA, 8-hour average, then you are not obligated to provide hearing tests.

When hearing tests are performed, the criteria for putting a hearing loss case on the OSHA log is well defined by three criteria:

1) If an employee has a shift in her hearing test of 10 decibels over the frequencies of 2000, 3000 and 4000 Hz from the baseline test which is persistent; AND

2) There is an average shift in hearing of 25 decibels over these same frequencies when compared to audiometric zero; AND

3) The loss is work-related. (Note that work-relatedness is assumed when there is noise in the workplace).

This recording criteria went into effect at the beginning of this year (2003). If you are not conducting audiometric tests and someone files a claim for hearing

loss, then the company will need to establish that the claim is not work-related or that the shifts in hearing do not meet the above thresholds.

From a risk control perspective and for the protection of employees, it is appropriate for most construction trades to institute an appropriate hearing conservation program as outlined above. Use of the 29 CFR 1910.95 standard can provide guidance to a construction firm in implementing an effective hearing conservation program.

Often, construction noise can be controlled using engineering controls on equipment and processes. Having a qualified resource to assist in determining the controlling noise frequencies and developing a noise abatement plan can make the difference between hearing loss and a safe workplace. The challenge in a construction setting is the variations in tasks, sub-contractor activities, and jobsite conditions.

The use of ear-protection alone on construction sites may not always be adequate. Hearing protection devices provide a Noise Reduction Rating (NRR). This number represents the amount of reduction that can be achieved with the protector in a laboratory setting. These numbers must be adjusted for real-world conditions. There are four different techniques used to adjust these ratings downward. Perhaps the easiest (but not the most stringent) is to reduce the NRR by 50%. As an example, if an employee uses a jack hammer for eight hours that produces a TWA exposure of 106 dBA and the hearing protection devices is rated for 28 dBA, the actual exposure is likely to be 92 dBA. This level of exposure still has the potential to cause damage. In this case, double ear protection is required (muffs and plugs).

Hearing loss cases can be costly from a workers' compensation perspective and can be avoided with an effective hearing conservation program. Many individuals have high-frequency hearing losses (myself included) and don't realize that their hearing has been affected by noise exposure at work or at home. Next time you start up the lawn mower or the chainsaw, consider that what you hear today, may be gone tomorrow!

Sources:

[1] Centers for Disease Control – National Institute of Occupational Safety and Health - A Comparison And Contrast Of Workers' vs. Health And Safety Professionals' Attitudes And Beliefs About Preventing Occupational Hearing Loss MARK R. STEPHENSON, PH.D. & CAROL J. MERRY, PH.D.

[2] Standard Interpretations, Mr. F.W. Lundy, BE&K Construction Company 08/04/1992 - Hearing conservation program. www.osha.gov