

85 Decibels or Higher

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Safety interventions for the prevention of construction injuries often involve mitigating risks associated with slips, trips, falls, and machinery incidents. But not all serious construction injuries are physical in nature. One predominant injury that is more insidious and just as detrimental to the health and wellbeing of construction site employees is associated with loud noises. In fact, 51% of construction employees have been exposed to hazardous noise levels (i.e., 85 decibels or higher), according to the National Institute for Occupational Safety and Health (NIOSH), with 52% of those exposed employees reporting not wearing hearing protection.

Continuous or intermittent noise exposure greater than 85 decibels (dB) over a prolonged period can result in noise-induced hearing loss (NIHL), one of the most prevalent occupational conditions occurring across a wide spectrum of industries, including construction. According to the Centers for Disease Control and Prevention (CDC), 14% of all construction employees report significant difficulty hearing due to job-related noise. Early signs of NIHL can include speech that sounds muffled, a ringing sensation in the ears, difficulty following a conversation with background noise, and a need to ask others to repeat themselves or speak more loudly.

The hearing loss is sensorineural, as damage occurs within the cochlea (sensory apparatus) of the inner ear. It generally affects both ears symmetrically, although unilateral noise exposure can result in greater hearing loss in the exposed ear.

Certain chemicals can also adversely affect hearing. Known as ototoxic chemicals, they include solvents such as ethylbenzene, carbon monoxide, and hydrogen cyanide, and are often found



in common household products such as paints (benzene), pesticides (carbon disulfide), and adhesives (toluene). Because most people are unknowingly exposed to ototoxic chemicals in their daily lives, occupational exposure to ototoxic chemicals may exacerbate the effects of NIHL.

The Sound of Compliance

What can, should, and must construction companies do to protect workers from NIHL? As is usually the case when it comes to on-the-job safety, start with the Occupational Safety and Health Administration (OSHA).

Hearing conservation program (HCP): According to OSHA noise standard 29 CFR 1910.95, employers must have an HCP in place and offer hearing protection if employees are exposed to noise levels greater than 85 dBA (adjusted decibels) over

an eight-hour, time-weighted average while at work. The responsibilities of the HCP are vast and can include noise assessment, engineering and administrative controls, training, and hearing surveillance of exposed employees.

Hearing protection: Employers must offer hearing protection at no cost to exposed employees; that can include earmuffs, ear caps, and formable, pre-molded and/or custom-molded earplugs. Employees may select a hearing protector from a variety supplied by the employer based on comfort, safety, and the device's ability to reduce noise. Guidance on the selection should be provided by an audiologist, safety manager, or individual certified by the Council for Accreditation in Occupational Hearing Conservation (CAOHC). The construction company must provide training in the use and care of hearing protectors as well as initial fitting and ongoing supervision of use.

Audiometric surveillance: Audiometric surveillance is a pivotal part of an HCP. NIHL can be first detected by obtaining an OSHA-required baseline audiogram and subsequent annual audiograms, which measure hearing thresholds. Baseline audiograms must be performed within six months of an employee's first exposure to noise at or above 85 dBA as time-weighted average, and at least annually for employees with continuing exposure. Annual audiograms must be performed for each exposed employee and evaluated against the baseline audiogram to determine if a standard threshold shift (STS) – a hearing loss of 10 dB or greater detected in either ear in the average of two, three and four kilohertz (kHz) – has occurred in either ear.

If an STS is discovered at the time of an annual audiogram, the employer may order a retest audiogram within 30 days to confirm that the STS has persisted. If the STS is no longer present at the time of recheck, it is still an early (but reversible) harbinger of damage that may progress to an STS without adequate preventive intervention.

If the retest audiogram confirms that the STS has persisted, an audiologist or physician may be asked to perform a further evaluation to determine whether the threshold shift is work-related. If the comparison of the annual audiogram to the baseline audiograms identified an STS that is determined to be work-related, the employee must be informed in writing within 21 days of the determination. If an employee has experienced

a work-related STS in one or both ears, and the employee's total hearing level – i.e., the average of two, three, and four kHz – is 25 dB or more in the same ear(s) as the STS, the injury is compensable and must be recorded on the OSHA 300 Log.


A Proactive Approach to NIHL

Engaging employees in the construction industry on the importance of using hearing protection is crucial. Although a common complaint among construction employees is that hearing protectors limit their ability to communicate with coworkers, it should be reinforced that NIHL is irreversible and may permanently impact employee communications and safety. This could result in the need for workplace accommodations and restrictions from hearing-critical tasks.

While alternative solutions to permanent hearing loss exist – for example, hearing aids – prevention is key. Prevention starts by reinforcing the importance of hearing protection and implementing administrative controls and monitoring services to detect and minimize hazardous noise exposure.

Your company does not have to take this on alone. Occupational health specialists are well-suited for educating construction workforces on hearing conservation and performing comprehensive evaluations of employees presenting with an STS. Their other responsibilities may include:

- » Identifying and confirming an STS
- » Identifying and reviewing problem audiograms and determining need for further evaluation
- » Determining work-relatedness of an STS and need for work accommodations for employees with hearing loss
- » Identifying medical conditions potentially causing hearing loss
- » Counseling employees with hearing loss on future prevention and hazard-related education

Occupational health professionals can also play a vital role in a company's efforts to identify trends in hearing threshold levels and develop appropriate intervention plans. It's all part of a comprehensive strategy to safeguard the health and safety of construction workers. 



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