examinetics
Occupational Health Pathfinder

Noise and hearing conservation

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Overview

It is estimated that over 30 million workers in the USA are exposed to hazardous noise that puts their hearing at risk. One incident of explosive noise can have an immediate damaging effect while exposure to harmful noise over prolonged periods of time can result in gradual hearing loss, tinnitus (ringing, whistling, humming or buzzing in the ears) through to total deafness over time. This is because the length of exposure to noise is just as important as how loud it is.

The ear is a complex structure and is highly sensitive. Sound, measured in decibels (dB), travels through the ear canal towards sensory cells called hair cells within the inner ear. The hair cells convert sounds into electrical impulses which then travel to the brain to be processed and understood as sound. When exposed to long periods of noise or a short abrupt loud sound, the hair cells become damaged and cannot process sound effectively. Once destroyed, they can never be repaired and so a person's hearing loss can never be cured.

What standards should you be aware of?

Noise-induced hearing loss can be prevented by the introduction of effective hearing conservation programs for 'at-risk' employees. The OSHA website (www.osha.gov) has excellent information related to measurement and control of noise as well as information on hearing conservation programs. Employers should be familiar with specific standards for recordkeeping and the general industry including 1910 Subpart G, 'Occupational health and environment control' of which 1910.95 is titled 'Occupational noise exposure'. These regulations outline the maximum noise levels and duration that workers are exposed to before monitoring and conservation programs should be administered.

Monitoring your workers

It is important for employers to evaluate noise levels at work and to make sure that they identify employees at risk. For those who are exposed to noise levels of 85dB or more, over an 8-hour time weighted average, monitoring is essential. Employers of workers who experience those levels are required to carry out an audiometric testing program, where workers' hearing is monitored over time. A baseline audiogram is required within six months of a worker first becoming exposed to those levels from which all other audiograms are subsequently compared. Audiograms must be carried out within one year of the baseline audiogram and then annually to detect deterioration. For workers enduring 85dB or more over eight hours, hearing protectors such as plugs must be worn.

KEY POINT SUMMARY:

- 30 million workers in the USA face significant exposure to hazardous noise
- Hearing can be damaged by a one-off extremely loud sound or by prolonged exposure to a noisy environment
- Hair cells in the inner ear are responsible for converting sound into electrical impulses that travel to the brain to be processed
- Hearing loss is, in part, caused by damage to hair cells
- Noise-induced hearing loss can be prevented by the introduction of effective hearing conservation programs
- Employers should be familiar with the OSHA standard 1910.95 'Occupational noise exposure'
- Noise levels are measured in decibels (dB)
- Workers who are exposed to 85dB over an average of 8 hours must be monitored, tested and protected

FIND OUT MORE...

OSHA Website
www.osha.gov/SLTC/noisehearingconservation/index.html
American Academy of Audiology
www.audiology.org/
Nat Inst for Occ Safety & Health
www.cdc.gov/niosh/topics/noise/

Business Owner Briefing
Hearing conservation
OSHA 3074, 2002(revised)
www.osha.gov/Publications/osha3074.pdf

Medical Director Review
"Occupationally-acquired noise-induced hearing loss: a senseless workplace hazard"
http://versita.metapress.com/content/rp3q622342167173/fulltext.pdf