

HEHF program monitors workers' hearing

Approximately 2,000 individuals are involved in the Hearing Conservation Program, a medical monitoring program designed by the Hanford Environmental Health Foundation to track an individual's hearing. Individuals are enrolled in the HCP based on their employee job task analysis, which captures noise hazards and potential exposure levels.

In analyzing the implications for the Hanford Site, HEHF looked at individuals who had experienced a shift in hearing during the past three years and compared them with their individual employee job task analysis results. HEHF found 797 records of hearing shifts.

After determining the number of hearing shifts, the HEHF staff looked at the exposure information data derived from the Risk Management Medical Surveillance system employee job task analysis database. These data were divided into four exposure categories:

- Level 0 — no known exposure
- Level 1 — potential exposure below the specified criterion
- Level 2 — potential exposure above the specified criterion for less than 30 days per year
- Level 3 — potential exposure above the specified criterion for more than 30 days per year.

The specified criterion or action level was exposure to noise above 85 decibels for 8 hours time-weighted average. Of the employees with a recorded potential exposure to noise from 1998 to 2000, 78 percent were in level 0, 11 percent were in level 1, 9 percent were in level 2 and 2 percent were in level 3.

Individuals whose exposure levels meet the criteria for levels 2 or 3 according to their employee job task analysis are placed in the HEHF medical monitoring program where their hearing ability is measured at least annually. Through the HCP, HEHF staff members measure the outcomes, which may reflect on how well work practices such as personal protective equipment or engineered or administrative controls are succeeding in preventing hearing losses.

In reviewing the data, it appeared that few if any of the hearing loss shifts were recordable by Occupational Safety and Health Administration standards; however, HEHF could not tell whether the hearing losses were caused by work or non-work exposures.

After reviewing the data, HEHF staff members met with site health and safety personnel and site workers to discuss their HCPs. The information shared in these meetings helps improve the effectiveness of data gathering and thus enables further improvements in the workers' HCPs.

The Hanford workforce is diverse, ranging from skilled laborers to executive officers. This diversity means that the potential for exposures to noise is equally complex and diverse. Some operations, such as core drilling or aqua blasting, can produce known high levels of noise for extended periods, whereas working in an open bay set of offices, while sometimes annoying, is well below 80 dB. Sometimes the real culprit isn't the heavy equipment so much as it is the alarms on the equipment, which must be set to be heard above the background noise. This type of noise is an intermittent high-frequency noise and as such poses different problems and needs for controls.

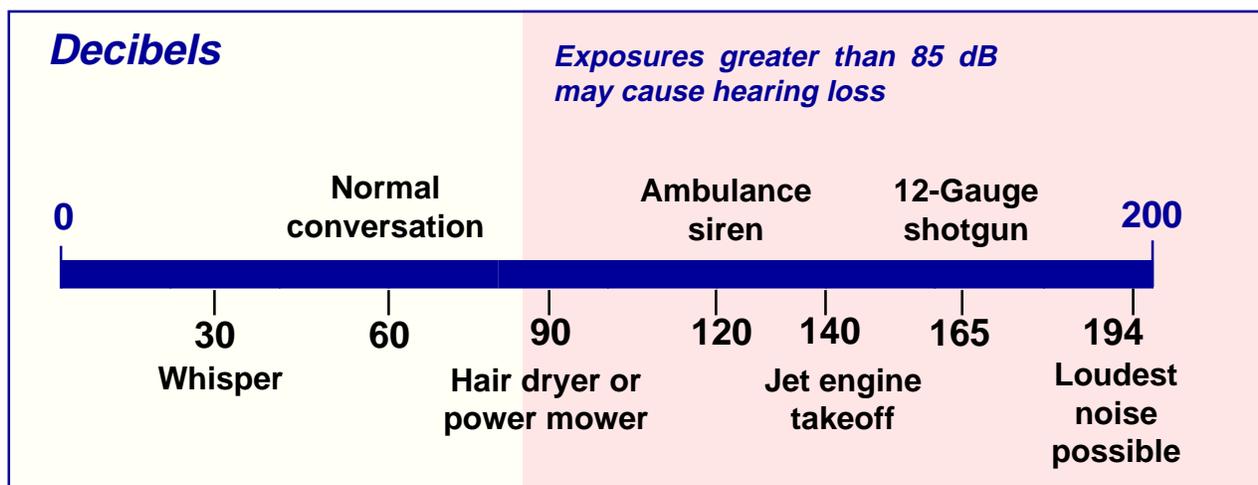
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Generally the contractor groups HEHF staff members spoke with have good, well-thought-out programs in place for dealing with noise at the worksite. They all recognize that their employees have different needs depending on the work being performed.

If it is not possible to apply appropriate engineering controls to prevent or mitigate the noise hazard, then hearing protection is used. Personal hearing protection ranges from simple disposable foam plugs to full ear-muffs, depending on the noise levels and job requirements. Each job package also identifies the relevant hazards, such as noise, and employees are trained and prepared to complete the task in a safe environment.

Another issue with a hazard such as noise is the difficulty in proving that the actual source of the hearing loss is work-related. Even when there are exposures to noise at work, we all are exposed to various areas of loud noises in our everyday life. Many recreational activities, especially those involved with the use of gas-powered internal combustion engines or firearms, subject our ears to offensive and often damaging noise levels. In short, while occupationally related noise-induced hearing loss is a serious problem, we are all responsible for protecting our hearing both on and off the job. ♦



Editors' Note: This article represents a new approach to the discussion of health surveillance issues by the staff at HEHF. In the future, the HEHF medical surveillance group, in cooperation with site contractors and employees, plans on presenting similar reports on various health-related topics. If you have any questions about the information in this article or would like to suggest topics for review, contact Buffi LaDue, PhD, MPH, manager of medical surveillance and health education, at 373-0188 or at buffi_ladue@rl.gov.

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Noises related to work and recreation can affect your hearing

“That’s one thing he hated! The NOISE! NOISE! NOISE! NOISE!” The Grinch hated the noise of Christmas, but loud noises abound in our environment, and not only around the holidays. We expose ourselves to loud noises when we listen to loud music, spend a day snowmobiling, or use power tools such as saws, drills or impact wrenches.

Loud noises (i.e., those above 106 decibels) can lead to hearing loss in just 4 minutes.

While noise-induced hearing loss seldom involves total hearing loss or deafness, the damage cannot be repaired and hearing aids do little good. Constant exposure to noise affects the inner ear.

The first sign of hearing damage is an inability to hear high-pitched sounds. With continued exposure to noise, our ability to tell musical tones apart becomes impossible. Eventually, with continual exposure to excess noise, we find it difficult to hear normal conversation.

According to the National Institute for Occupational Safety and Health, there are 30 million people exposed to hazardous noise levels in the workplace. Of these individuals, approximately one third have noise-induced hearing loss that can be attributed to occupational noise exposure. Claims for hearing losses represent the largest single category of compensation under the Washington State Labor and Industries workers’ compensation program.

One group of workers who are commonly exposed to high noise levels is carpenters. A carpenter’s power tools expose him or her to high noise levels. For instance, an orbital sander has a noise level of 91 decibels, or dB, whereas a circular saw registers 101 dB and a hammer drill can measure 114 dB.

The length of time an individual is exposed to a given noise level affects his or her hearing. Determining how long a worker can safely work at a particular noise level before the hearing is affected is an important part of worker safety.

The American Conference of Governmental Industrial Hygienists makes the following recommendations for how long a worker can be exposed to a given level of noise without hearing protection. The following noise levels are given in decibels and multiplied by the A weighting scale used by the American National Standards Institute to determine the time of unprotected ear exposure before hearing is affected:

- 85 dB(A) - 8 hours
- 88 dB(A) - 4 hours
- 91 dB(A) - 2 hours
- 94 dB(A) - 1 hour
- 97 dB(A) - 30 minutes
- 100 dB(A) - 15 minutes
- 103 dB(A) - 7.5 minutes
- 106 dB(A) - 3.75 minutes. ♦

Noise is too loud when:

- Your ears ring after prolonged exposure to noise.
- Speech and other sounds seem muffled after exposure.
- You lose the ability to tell musical tones apart.
- You fail to hear a high-pitched sound.
- Normal conversations cannot take place.

If you think the noise levels in your workplace are too loud, contact your manager, supervisor or health and safety representative, who can arrange for a noise survey.