

## Evaluating Excessive Noise in the Workplace

Working in a noisy environment presents a safety hazard for workers. Unwanted noise inhibits communication, causes worker fatigue, and results in physical discomfort. Acute and chronic exposure to loud noise can result in permanent hearing damage, which can be a compensable Workers' Compensation claim.

Several factors can affect an individual's hearing. Natural causes of hearing loss include ear diseases and the aging process. In the workplace, factors contributing to worker hearing loss include an individual's proximity to noise-producing machinery or equipment, the decibel level or loudness of noise, the frequency and duration of noise exposure.

OSHA mandates reduction of noise levels for employees exposed to over a 50% dose or 85 dBA (decibels) over an 8-hour time weighted average. OSHA looks for implementation of engineering controls to reduce noise levels below 85 dBA. If engineering controls are not feasible, workers are to be protected from excessive noise by implementation of a hearing conservation program.

**Determining Noise Levels:** Noise exposure is determined by conducting noise measurement. A sound level meter can be used to take an instant measurement of area noise levels. Personal monitoring is a more precise method of noise measurement. This measurement involves use of an audio dosimeter to collect noise exposure over several hours of a worker's shift. The audio dosimeter is commonly hooked to an employee's belt with microphone located near the ear. Noise exposure for employees at or over the action level of 85 dba requires management response.

**Effective Engineering Controls:** Eliminating or reducing the noise exposure at the source with engineering controls is the most effective method of preventing hearing loss. Engineering controls can also be the most cost effective approach provided existing plant noise levels can be reduced to under 85 dBA based on an 8-hour shift. Engineering controls are generally determined by noise reduction consultants conducting a noise study. These consultants can determine whether implementing the study's recommendations will reduce plant noise levels under 85 dBA action level. Reducing noise under 85 dBA action level eliminates the need for a Hearing Conservation Program and the cost of annual audiometric testing. Study recommendations may include;

- Installation of sound absorbing materials in the plant. Noise reverberation can be reduced by covering interior walls with noise absorption blankets, and hanging noise absorption baffles from the ceiling.
- Noise producing machinery can be set on noise dampening pads.
- Bar stock machines, such as screw machines, can have material holding tubes lined with noise dampening material.

## Administrative Controls: Hearing Conservation Program

OSHA requires a Hearing Conservation Program at the 85 dBA 8-hour shift action level if engineering controls are not feasible. A designated manager should be responsible for this program as the program administrator. Written procedures should be developed identifying primary components of the program. A Hearing Conservation Program should contain annual noise exposure monitoring, audiometric testing, training, recordkeeping, and mandatory use of hearing protection for workers with noise exposure at or above 90 dBA per 8-hour shift.

## Annual Noise Exposure Monitoring

Conducting noise exposure monitoring each year may indicate a change to noise levels in the work-place. Noise levels may have changed due to the installation of additional machinery or existing machinery needing service as it is producing more noise than in prior years. Noise levels of 85 dBA or greater require warning signs being posted at entrances or around the perimeter of the noisy environment. Employees are to be notified of noise exposure monitoring results.

An audiometric evaluation should be conducted for all employees working in the noise exposure area on an annual basis. A certified audiometric technician or physician should conduct this evaluation. Employees being tested should not be exposed to excessive noise for at least fourteen hours prior to the test. Newly hired employees should receive a baseline audiometric



test when they first start working for the company. This test will reveal any pre-existing hearing loss and establish a baseline audiogram that can be compared to an annual test. If the new employee does not have an audiometric test when they are hired, the company has no way of knowing if they have pre-existent hearing loss.

Annual follow-up tests can be compared to the baseline for determining if a standard threshold shift (loss of hearing) has occurred. If hearing loss is identified:

- Implement administrative controls, such as a job rotation to a quieter area for the affected employee(s).
- Provide hearing protection with instruction on proper fitting into the ear canal.
- Inform the employee of the hearing test results.
- Send the audiogram to a qualified medical person for further evaluation.

**Training:** Employees who are exposed to excessive noise should be trained annually on all components of the Hearing Conservation Program. Include the reasons for having the program in place, how noise affects hearing, the purpose of the audiometric testing, the test procedures, the purpose and advantages and disadvantages of hearing protection devices offered, fitting and use of hearing protection, and care and maintenance of hearing protection.

**Recordkeeping** is a good way to document the program. Document the exposure monitoring, hearing protection provided to workers, and the training conducted. Maintain the records in each employee's personnel file. Keep audiometric test results in the individual's file, including test dates, results, re-test dates, physical exams as a result of testing, and consultation documents. All records should be retained indefinitely.

**Hearing protection** is required by OSHA at the action level of 90 dBA per 8-hour shift. The effectiveness of hearing protection is greatly reduced if not worn correctly. Employees should understand that correctly wearing hearing protection is a condition of employment when working in areas of 90 dBA or more. Employees should also be required to participate in audiometric testing when conducted. A selection of hearing protection should be available to employees. Let the employee choose the hearing protection they prefer based on Noise Reduction Rating (NRR), comfort, and proper fit into the ear canal. Be aware that not everyone can physically wear the same type of hearing protection.

Hearing protection devices should have attenuation capabilities to reduce noise exposures to 85 dBA or lower. NRRs are printed on packaging. Hearing protection devices only indicate an approximate effectiveness. The employee improperly fitting the device into the ear canal reduces the actual effectiveness by half. Treat the NRR rating conservatively when selecting hearing protection for employees. Noise levels over 100 dBA in an 8-hour shift require double use of hearing protection.

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