What are the Steps to Eliminate the Negative Effects of Hearing Loss in the Workplace?

QUESTION

What are the steps to eliminate the negative effects of hearing loss in the workplace?

A. Hearing protective devices, tinnitus syndrome, and workplace accommodations.
B. Disclosure of hearing loss, managing hearing loss in workplace, workplace accommodations.
C. Engineering and administrative controls, disclosure of hearing Loss, audiometric evaluation.
D. Noise exposure monitoring, managing hearing loss in workplace, evaluations and motivation.

ANSWER

B. Disclosure of hearing loss, managing hearing loss in workplace, workplace accommodations.

WHY IS IT RIGHT

Sometimes after being subjected to loud noises, people experience deafness that goes away after a while. This is called temporary threshold shift. But after sudden, extremely loud explosive noises, or more usually prolonged lower level exposures to noise over a number of years, permanent hearing loss can occur. It may be that the damage caused is only noticeable when it becomes severe enough to interfere with daily life. This incurable hearing loss may mean that the individual’s family complains about the television being too loud, the individual cannot keep up with conversations in a group, or they have trouble using the telephone. Eventually everything becomes muffled and people find

it difficult to catch sounds like ’t’, ’d’ and ’s’, so they confuse similar words. Social situations can become very difficult.

Age and general fitness are no protection from hearing loss – young people can be damaged as easily as the old. Someone in their mid-twenties can have the hearing that would be expected in a 65 year old. Once ears have been damaged by noise there is no cure.

Hearing loss is not the only problem. Tinnitus or ringing in the ears may be caused as well. Most people suffer temporary tinnitus from time to time, often after a spell in a noisy place, but with noise-damaged ears it can become permanent. Some people find it more distressing than the hearing loss.

Methods to treat hearing related conditions ie. tinnitus

Permanent hearing damage, which can be caused immediately by sudden, extremely loud, explosive noises, or gradually due to prolonged exposure noise, is thought to be incurable.

Tinnitus (ringing, whistling, buzzing or humming in the ears) arises from excessive exposure to noise. This distressing condition can also lead to disturbed sleep. Unfortunately there is no treatment for noise-induced tinnitus.

NOISE INDUCED HEARING LOSS

Many tools, equipment, and processes in the workplace generate high levels of noise that will have a negative effect on the hearing of the exposed workers. Short loud bursts of noise such as explosions or gun shots can damage our ears in a short time of being exposed. Less hazardous noise such as woodworking equipment, heavy equipment, and machinery can lead to damage over an extended amount of time being exposed to the noise.

It’s hard to believe that noise can cause permanent damage to your hearing. It’s important to protect yourself against noise hazards.

Hearing Loss has a dramatic impact in our economy bourne out by statistics.

The steps to eliminate the negative effects of hearing loss, economically and personally, is done through **Disclosure of Hearing Loss, Workplace Accommodations and Managing Hearing Loss in the Workplace.**

Hearing is precious. Once we diminish or lose our hearing we can never fully recover it. Both on the job and at home there are many sources of **noise** which can damage our hearing. These sounds can damage sensitive structures in the inner ear and cause noise-induced hearing loss (NIHL). Approximately 26 million Americans have some type of noise-induced hearing loss. According to the CDC, over 22 million workers are exposed to hazardous noise levels at work each year. Occupational hearing loss is one of the most common workplace injuries today in the United States.

Ears Damaged from Noise

Hearing depends on a series of events that change sound waves in the air into electrical signals. Our auditory nerve then carries these signals to the brain through a complex series of steps. To breakdown the process simply- the sound waves travel through the ear and eventually move hair cells up and down in the ear that cause channels to open up. This allows chemicals to rush into a cell that creates an electrical signal that translates the sound into something we can understand.

Most noise-induced hearing loss is caused by the damage and eventual death of these hair cells. Unlike bird and amphibian hair cells, human hair cells don’t grow back. They are gone for good.

Noise Induced Hearing Loss – Signs and Symptoms

Most damage due to noise is gradual and over time. Because of this, many people ignore or do not realize that their hearing is being damaged. It becomes noticeable to an individual when it is harder to understand someone talking or needing to turn the TV volume up.

Damage can also occur from a single loud impulse noise such as a gunshot or explosion. These types of noises can rupture the eardrum or damage the bones in the middle ear. This kind of NIHL

can be immediate and permanent. Loud noise exposure can also cause tinnitus—a ringing, buzzing, or roaring in the ears or head. Tinnitus may subside over time, but can sometimes continue constantly or occasionally throughout a person's life. Hearing loss and tinnitus can occur in one or both ears. Sometimes temporary hearing loss can subside however the event that caused it can still cause long term damage to your hearing.

The NIOSH recommended exposure limit (REL) for occupational noise exposure (85 decibels, A-weighted, as an 8-hour time-weighted average [85 dBA as an 8-hr TWA]) was reevaluated using contemporary risk assessment techniques and incorporating the 4000-hertz (Hz) audiometric frequency in the definition of hearing impairment. The new risk assessment reaffirms support for the 85-dBA REL. With a 40-year lifetime exposure at the 85-dBA REL, the excess risk of developing occupational NIHL is 8%—considerably lower than the 25% excess risk at the 90-dBA permissible exposure limit (PEL) currently enforced by the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA). NIOSH recommends a 3-dB exchange rate, which is more firmly supported by scientific evidence. The 5-dB exchange rate is still used by OSHA and MSHA, but the 3-dB exchange rate has been increasingly supported by national and international consensus. NIOSH recommends an improved criterion for significant threshold shift: an increase of 15 dB in the hearing threshold level (HTL) at 500, 1000, 2000, 3000, 4000, or 6000 Hz in either ear, as determined by two consecutive audiometric tests. The new criterion has the advantages of a high identification rate and a low false-positive rate. The NIOSH criterion no longer recommends age correction on individual audiograms. OSHA currently allows age correction only as an option. Finally, regarding hearing protection, NIOSH indicated that the noise reduction rating (NRR), a single-number, laboratory-derived rating that the U.S. Environmental Protection Agency (EPA) requires to be shown on the label of each hearing protector sold in the United States is not adequate. In calculating the noise exposure to the wearer of a hearing protector at work, NIOSH recommends derating the NRR by subtracting from the NRR 25%, 50%, and 70% for earmuffs, formable

earplugs, and all other earplugs, respectively. Today, the issue of hearing protection attenuation is best addressed by testing the performance of hearing protection objectively. This fit testing technology is a huge advancement in efforts to save workers' hearing. Finally, the NIOSH criteria document provides recommendations for the management of hearing loss prevention programs (HLPPs) for workers whose noise exposures equal or exceed 85 dBA.

WHY IS EVERYTHING ELSE WRONG

Your employer is responsible for figuring out the right hearing protection equipment for you to use, and keeping the workplace as free as possible from noise hazards.

How to protect your hearing:

- ***Reduce***the noise reaching your ears. Nothing can totally block sound, but some hearing protection devices block out part of the noise.
- ***Electronic hearing protection*****devices** permit conversations and warnings to reach the ear, but prevent harmful sound-pressure levels. Other electronic hearing protectors pick up and amplify desirable sounds. Some earmuffs or earplugs combine with communication systems for use in noisy areas.
- ***Earmuffs***– filled with liquid or foam – come in various styles for function and comfort. Earmuffs are fitted with a headband made of metal or plastic. Some headbands can be folded or put around the front or back of the neck in various positions. Cooling pads are even available for earmuffs worn in hot work environments.
- ***Earplugs***can be pre-molded to fit all wearers, or custom molded to fit exactly. They can be made expandable or non-expandable, and may be either reusable or disposable. Earplugs are available on cords you can wear around your neck so you can take earplugs out and put them in easily.
- ***Ensure***your hearing protection is comfortable, fits properly and is compatible with other personal protective equipment (PPE) such as a hardhat.

- ***Check*** *out*specially-designed hearing protectors made to wear with other PPE. They attach to slots and brackets on hardhats or helmets for combined hearing, head and face protection.
- ***Cooperate***with your workplace's hearing protection program. Take the regular hearing tests and wear recommended personal protective equipment. Take good care of your PPE by cleaning it according to the manufacturer's recommendations and replacing it as needed.

A. The essential parts of a Hearing Loss Prevention Program are as follows:

- Identify and assess areas and activities where employees may be exposed to:
- high noise levels that may exceed 85 decibels (dBA) averaged over an eight-hour period,
- extreme noise levels of 115 dBA at any time (greater than one second)
- extreme impact noise levels of 140 dBC (less than one second)
- Reduce or control noise using engineering and administrative controls, where feasible.
- Post signs at noisy areas and require hearing protectors.
- Identify employees who need hearing protection.
- Provide hearing protectors to employees and train them in their use.
- Provide baseline and annual audiometric hearing exams to employees.

B. Responsibilities of Managers, Supervisors and Investigators

- Identify areas of excessive noise and affected employees.
- Coordinate sound level surveys and personnel monitoring for noise exposure, conducted by EH&S, to provide a quantitative assessment of noise hazards in your workplace.
- If employees are exposed to noise above 90 dBA averaged over the work shift, implement engineering or administrative controls.
- Ensure individuals exposed to noise levels at or above 85

dBA averaged over an 8-hour work shift are enrolled in the Hearing Loss Prevention Program, receive training and medical surveillance.
- Ensure employees are provided with baseline and annual audiometric exams at the UW Speech and Hearing Clinic, or equivalent, through EH&S.
- Ensure staff has taken the Hearing Conservation training.
- Provide at least two types of hearing protectors to employees if controls cannot be implemented, and for all employees exposed to noise levels at or over 85 dBA averaged over an 8-hour work shift, greater than 115 dBA any time and 140 dBC impact noise any time.
- Ensure hearing protectors are worn properly.
- Post caution signs where noise may exceed 85 dBA averaged over an 8-hour work shift.
- Post danger signs where noise may exceed 115 dBA, even intermittently.
- Ensure that reports of high noise are investigated.
- Maintain records as required.

C. Responsibilities of Employees

- Report elevated noise levels, noisy equipment and hearing protector problems to supervisor.
- Take training on Hearing Conservation.
- Choose the most comfortable, effective hearing protection devices that fit well. Remember that the BEST protector is one you'll wear. Earplugs are available in different sizes and shapes to fit different ear canals; earmuffs are easy to put on and take off for short-term loud noise exposure. A combination of earmuffs and earplugs may be needed.
- Wear hearing protectors in posted noise areas.
- Keep hearing protectors clean and replace when necessary.
- Take baseline and annual audiogram tests.