What control measures need to be in place to prevent hearing damage from excessive noise in the workplace?

QUESTION

What control measures need to be in place to prevent hearing damage from excessive noise in the workplace?

A. Install sound-proofing materials, post signage to worn excessive noise, job rotation.
B. Use the right hearing protection, wear all hearing protection provided by employers, know the “Safe Noise Threshold”.
C. Get Audiometric Testing, regular maintenance, and install sound – dampening material.
D. Enclose a noisy process or equipment, regular maintenance, job rotation, install sound – proofing or sound dampening materials.

ANSWER

D. Enclose a noisy process or equipment, regular maintenance, job rotation, install sound – proofing or sound dampening materials.

WHY IS IT RIGHT

Any reduction in the normal ability to hear is referred to as a loss of hearing. A hearing loss can be either temporary or permanent.

Other prime causes of permanent hearing loss are age, traumatic injuries (such as from explosions or gunfire), and infection. Noise, however, is the major identifiable cause of hearing loss.

Causes a host of health problems, with painless symptoms that

progress unnoticed until it is too late. Even more disturbing is that the ears become accustomed to noise and the brain accepts it as normal, after a short while. Do not be fooled though, noise-induced hearing loss cannot be reversed!

Loss of hearing from high noise makes it hard to hear warnings and directions and this can lead to accidents. Though most employers make great effort to protect workers from noise hazards, sometimes, the problem is not what is done but how it is done.

Some workplaces might not understand what level of noise is harmful and this creates room for error while implementing controls. But safety regulations require employers to protect workers from excessive noise; this means, having a program that regulates noise exposure through noise level assessments, hearing protection, employee training and hearing tests. Without this program and its annual reviews, control measures are useless and may even become hazardous.

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.

How the Ear is 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 Exposure Hazards

Over time, exposure to noise can cause the following problems:

- Noise-induced hearing loss (NIHL)
- Tinnitus (ringing in the ears)
- High blood pressure
- Fatigue.

WHY IS EVERYTHING ELSE WRONG
The best way to prevent hearing damage is by avoiding exposure to excessive noise. Noisy jobs should be identified, and control measures put in place.

Control measures might include:

- Installing sound-dampening or sound-proofing materials.
- Enclosing a noisy process or equipment.
- Regular maintenance.
- Job rotation – to lessen exposure time.
- Putting up signage to warn workers hearing protection is required.

Workers can prevent hearing loss by:

- Staying informed and watching for warning signs, such as ringing or humming in your ears and temporary loss of hearing when you leave work.
- Wearing and maintaining all hearing protection provided by your employer.
- Using the right hearing protection for the job, task, or

area.
- Participating in your employer’s audiometric program and understanding the results of your hearing tests.
- Asking questions about noise levels, hearing protection, and other noise and hearing related issues, as soon as you have a concern.

Hearing Protection Devices

Hearing protection devices (HPDs) should only be provided when engineering and administrative controls to reduce noise at the source or along the path cannot be implemented or while such controls are being put in place. HPDs are barriers that reduce the amount of noise reaching the sensitive inner ear. Fit, comfort, and sound reduction or “attenuation” are important considerations in choosing HPDs. The types of HPDs used most commonly are earplugs or earmuffs. Earplugs attenuate noise by plugging the ear canal. Earmuffs cover the external part of the ear, providing an “acoustical seal”.

Effectiveness

The effectiveness of HPDs depend on the amount of time they are worn. What is not obvious to most wearers is that the effectiveness of HPDs can be reduced by as much as 95% or more if the protectors are not worn for as little as three or four minutes in noisy environments. It is therefore important to wear HPDs during the entire period of exposure in order to achieve the maximum protection available.

Comfort

Comfort is an important consideration in selection. An HPD that isn’t comfortable will simply not be worn or will be worn improperly. With earplugs, several factors affect comfort. Since some plugs are relatively non-porous, they can often create a pressure buildup within the ear and cause discomfort. Dirty plugs may irritate the ear canal. Because of the shape of an individual’s ear canals, certain plugs may not fit properly. Earmuffs should be made of materials that do not absorb sweat and

that are easy to maintain and clean. The earmuff cup should be adjustable to conform to various head sizes and shapes. Headband tension and earcup pressure should be adjusted so that they are effective without being uncomfortable. Weight may also be a factor.

Work Environment/Procedures

HPD selection is sometimes dictated by the constraints of the work area or work procedures. For example, large volume earmuffs may not be practical in confined work situations with little head room or clearance. In that case, flat-cup muffs or earplugs may be more practical. Where work is necessary near electrical hazards, it may be desirable to use non-conductive suspension type muffs. The choice of protector may also be affected by the nature of work, as in welding where certain types of earmuffs may interfere with the welder’s helmet. The attenuation of the muff-type hearing protector may be considerably reduced when worn with spectacle-type safety glasses. (The head configuration of the wearer and the type of glasses worn will determine the reduction in attenuation.)

Where safety glasses must be worn, cable-type temples should be used in order to allow the smallest possible opening between the seal of the protector and the head. Otherwise earplugs should be worn, provided they are adequate.

Consideration should be given to hearing protectors that can be attached to hard hats where exposures to noise may be high but intermittent and where hard hats must be worn at all times. Periodic adjustments may be necessary because movement of the hard hat may break the seal of the HPD.

Consideration should also be given to work involving oils, grease, and other products that may soil hands. Ear infections may occur when earplugs are inserted by dirty hands.

Overprotection

Workers wearing HPDs that provide too much attenuation may feel isolated from their surroundings. Sounds may be heard as muffled. Speech or warning sounds may be unrecognizable. Overprotection can

lead workers to resist wearing HPDs. Protectors should be chosen to provide sufficient, but not excessive, attenuation.

Where communication is critical and hearing protection is required, communication headsets can be considered. These devices provide protection against harmful levels of noise, yet allow for important communication to be heard.

Fit, Care, and Use

An employer who provides a worker with an HPD must provide adequate training and instruction to the worker in the care and use of the device.