

2022

PRESS RELEASE

For More Information:

ELLEN G. DUYSEN

Central States Center for Agricultural Safety and Health

University of Nebraska Medical Center

College of Public Health, Room 3035

984388 Nebraska Medical Center

Omaha, NE 68198-4388

402.552.3394

FOR IMMEDIATE RELEASE

By UNMC, Central States Center for Agricultural Safety and Health, Omaha, NE

HEARING PROTECTION

Gradual hearing loss is part of the aging process, however noise-induced hearing loss can happen to anyone at any age. Because they are regularly exposed to high-intensity noise in their work environment, farmers and ranchers are at high risk for noise-induced hearing loss unless they use proper hearing protection.

Noise-induced hearing loss can be prevented by reducing the level of noise at its source and correctly wearing appropriate personal protective equipment (PPE).

When sound enters the ear canal, it strikes the eardrum, causing the drum to vibrate. The vibrations cause waves that travel to the middle ear forming waves in the cochlea. Small hairlike cells called cilia are in the cochlea. When vibrations reach the cilia, they wave, sending a signal to the brain which interprets the waves as sound. Once the cilia become flattened or destroyed from overstimulation due to sound that is too loud or too long, hearing loss occurs. Once the cilia are damaged or destroyed, they can never be replaced, resulting in permanent hearing loss.

Sound intensity is measured in decibels (dB). In the United States, the Occupational Safety and Health Administration (OSHA) establishes guidelines regarding exposure to high levels of noise. OSHA recommends that hearing protection be used anytime you are exposed to a minimum sound level of 90 dB for eight hours. It should be noted, however, that some individuals have developed noise-induced hearing loss at lower levels.

OSHA examples of noise sources, sound levels, and maximum hours/day for each level:

Tractor, combine, ATV	90 dB	8
Tractor or combine	92 dB	6
Tractor, grain grinder		
Combine, air compressor	95 dB	4
Tractor, combine or		
Shop vacuum	97 dB	3
Tractor, pig squeals,		
Table saw	100 dB	2
Tractor, combine or		
Riding lawnmower	102	1 ½
Tractor, combine, chickens,		
or irrigation pump	105	1
Tractor or leaf blower	110	½
Chainsaw	115	¼

Four ways to prevent noise-induced hearing loss include noise reduction, noise isolation, administrative controls, and personal protective equipment.

An easy way to reduce noise levels in any work environment is to pay close attention to equipment maintenance such as regular lubrication and replacement of parts. Operating large equipment at a lower speed can also reduce noise levels. Installation of vibration isolation pads under the legs of noisy equipment can reduce noise coming from equipment vibration on a cement floor. Newer models of hand-held equipment feature flexible mountings to reduce noise from vibration.

When purchasing a tractor, consider one equipped with sound-reducing cabs and tightly fitting cab doors and windows. These changes can reduce the amount of noise heard inside the cab when operating the equipment.

Employers can control noise exposure for workers by rotating workstations to limit exposure time to jobs with high noise levels. Consider a rotation that allows a worker to operate a noisy machine for a specific amount of time, then rotate the worker to a less noisy task. If a person already has a hearing problem, they should not work in high noise areas.

Proper PPE should be required for all who work around noisy equipment or in high-intensity noise areas. Ear plugs and ear muffs are measured according to their noise reduction rating (NRR), a single number that indicates the reduction in decibels when the PPE is properly used. Hearing PPE should have a noise reduction rating of at least 25 decibels. Keep in mind that the rating is only achieved when the equipment is properly fitted and worn for the recommended period of time. Earplugs and earmuffs are the most widely used PPE to reduce noise levels.

Earplugs are either disposable or reusable. Disposable ear plugs are designed to fit into the ear opening. Ear plugs should never be shared with other due to the risk of ear infections. Disposable plugs should be thrown away as soon as they're removed from the ear.

Reusable ear plugs are either pre-molded, moldable, or custom fit. They have a limited usage period. If they become cracked, dirty, are no longer pliable, or are permanently deformed, dispose of them.

Ear plugs are generally available in roll-down foam, pre-molded, and semi-insert styles. Roll-down foam ear plugs are rolled before each use and inserted into the ear canal, conforming to the shape of the individual ear. One size of roll-down foam will fit most workers, although workers with extremely small or large ear canals may require a different size.

One disadvantage of roll-down foam ear plugs is that the plugs must be rolled each time they are worn. This makes them more difficult to use if workers must frequently remove the ear plugs

while they're working. This style is not a good choice in a dirty environment since they cannot be washed and must be rolled each time they're inserted into the ear.

When using pre-molded ear plugs, the right size must be used in order to provide adequate protection. They are relatively inexpensive, reusable, can be washed, require less handling, and are available in various sizes.

Semi-inserted ear plugs consist of soft tips held in place by a light-weight band. They can easily and quickly be removed and replaced. Because they tend not to provide adequate protection, this style is not usually recommended.

Earmuffs are usually one-size fits all and designed to cover the ear and ear canal. They generally consist of plastic ear cups that seal around the ear using foam filled cushions. The cups need to fit snugly against the head without interference to achieve full protection. Interference with earmuffs include eyeglass temple bars, long hair, or heavy beards. They are easily put on or removed. It's important to use muffs that are comfortable and fit properly. Earmuffs can be used for years. Certain models can be used in combination with other safety equipment such as goggles, a hard hat, or respiratory protection. One of these types of hearing protection should be used for anyone exposed to loud noise.

If you suspect you have suffered hearing loss, an audiologist can perform a specialized hearing test, an audiogram, to detect and diagnose hearing loss. Once hearing damage has occurred, it cannot be reversed. However, further hearing loss can be prevented.

Indications that hearing loss may have already occurred include:

- Turning up the volume on radio or television.
- Difficulty understanding consonants in words and high notes of music.
- Difficulty hearing a person's voice when they are just a few feet away.

- Muffled sounds after a noise source is stopped.
- Ringing in the ears.

Funding for this educational article comes from the Central States Center for Agricultural Safety and Health and the University of Nebraska Medical Center.