



Sunday Safety Moment

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Welcome to our TPE Safety topic for this week

Hearing Conservation

Today's safety moment is intended to give you a better understanding of the causes of hearing loss & the protection methods available to you.

It's true that some degree of hearing loss is the result of the normal aging process. By age 65, an average person will have lost approximately half of his/her ability to hear just from normal aging. However, it's important to understand that not all hearing loss is due to aging. Some loss is the result of exposure to noise levels that cause permanent damage to very delicate structures of the inner ear. This type of hearing loss is needless & easily preventable with the use of hearing protection.

So, what is sound & how can too much of it cause hearing loss?

Sound is a form of mechanical energy that moves through the air similar to a wave moving across the ocean. Just as a big ocean wave carries enough energy to knock down a building on the beach – a loud sound or noise carries enough energy to shatter tiny cilia (microscopic hair like cells in the inner ear). The purpose of the cilia is to convert the mechanical energy wave of sound into an electrochemical signal that travels along nerves from the inner ear to the brain where the brain recognizes it as sound. Once the cilia are damaged or destroyed they do not heal or re-grow & your ability to perceive sound is reduced. If enough cilia are destroyed the result is permanent deafness.

To protect yourself from hearing damage you need to understand how much noise or sound is too much & how loud is too loud?

The energy or loudness of sound is typically measured in decibels (written as dB or db). The db scale starts at ZERO – which is considered to be the threshold between silence & a barely perceptible sound. The maximum is 198 db – the loudest sound that can ever be generated. It's very important to understand that the Decibel scale is not linear. Each increase of 10 dB represents a 10 fold increase in sound energy. For example – increasing noise levels from 20 db to 30 dB represents a 10 fold increase in sound energy. Increasing from 20 dB to 30 dB represents 100 times as much energy. As dB levels increase, the sound energy represented quickly gets extremely large !

After years of study & testing, OSHA & NIOSH (National Institute of Occupational Safety & Health) have established what are considered to be safe exposure limits for different levels of noise. Sound level of 85 dB has

been set as threshold for safe exposure. A worker can be safely exposed to noise levels of 85 dB or less for a period up to 8 hours without having to wear any hearing protection equipment. As we don't carry around sound meters all the time to monitor noise level, we have a simple guideline to follow to determine if you should be wearing hearing protection. If you are standing arms length away from a co-worker & can clearly hear each other speaking in a normal voice (no shouting or raising your voice to be heard) then no hearing protection is required. However, if you do have to raise your voice or get closer than arms length, local noise levels likely exceed the 85 db threshold! You should leave the noisy area or put on ear protection immediately! If you follow this guideline, you should be able to work until retirement while still maintaining normal hearing for your age group.

Anyone with normal hearing who has ever been exposed to the sound of a gunshot or loud fireworks has likely experienced pain & ringing in the ears. Most people have no trouble understanding that painful noise levels can cause hearing damage. What most people don't realize is that prolonged & repeated exposure to lower noise levels can also cause hearing damage. OSHA & NIOSH have also established how long an individual can safely work at different noise levels. The louder the noise is the less time it takes to for hearing damage to occur. However, rather than try to establish different hearing protection requirements for the multiple tasks performed at TPE, we will follow the safest, most conservative & most simple policy. HEARING PROTECTION IS TO BE WORN FOR NOISE LEVELS OF 85 dB OR GREATER – using the guideline of normal conversation at arms length to determine 85 dB.

Hearing protection is available in the shop in the form of ear muffs or ear plugs. There are other styles of hearing protection available if these two don't work for you. When working away from the shop, almost all clients will be requiring hearing protection use on job sites. In these cases, ear plugs are easy to take along & clients will typically have some on site as well.

For anyone who might still see hearing protection as unnecessary or inconvenient, I would suggest that you Google Tinnitus. A medical condition caused by exposure to excessive noise levels. The damage caused to the inner ear results in ringing in the ears when no loud noises are present. Sometimes the ringing is faint & barely perceptible. Other times, loud enough that it blocks out all other sounds & sounds like a jet engine screaming in your head. Tinnitus makes it difficult to understand the people who speak to you. The noise can keep you awake at night. Once you have it, there is no cure or treatment & you will never again experience another "quite moment" for the rest of your life. I speak from personal experience.

Wear your hearing protection!