

# Everyone Goes Home “SAFE”!

## Hearing Protection

Noise, or unwanted sound, is one of the most common health problems in American workplaces. The National Institute for Occupational Safety and Health (NIOSH) estimates that 30 million workers in the U.S. are exposed to hazardous noise. Exposure to high levels of noise may cause hearing loss, create physical and psychological stress, reduce productivity, interfere with communication, and contribute to accidents and injuries by making it difficult to hear warning signals.

Our ears process sounds for the brain and also allow us to distinguish sounds so that we can tell a shout from a whisper, music from machinery, the voice of a friend from that of a stranger. Ears also process noise, but they don't like it much. Noise above certain levels can damage parts of the ear so that you stop hearing some kinds or certain levels of sounds.

### Anatomy and Physiology of the Ear

The function of the ear is to gather, transmit, and perceive sounds from the environment.

The ear is the organ that makes hearing possible. It can be divided into three sections: the **outer ear**, **middle ear** and the **inner ear**.

The outer ear collects sound and funnels it the ear drum, causing it to vibrate. These vibrations are routed into the middle ear, where they pass through a small opening into the fluid-filled inner ear. Here the vibrations agitate a fragile membrane which in turn stimulates thousands of tiny sensory hair cells. It is these cells that stimulate the auditory nerve sending signals to the brain. Prolonged exposure to high noise levels can damage these tiny hair cells resulting in hearing loss.



Loudness is measured in decibels (dBA) and exposure to more than 90 dBA over an 8-hour workday can mean a risk of hearing loss.

### Typical Noise Levels

Noise Source	dBA	Note
Quiet Room	28 – 33	
Refrigerator	40 – 43	
Normal Conversation	55 – 65	<b>Nuisance Noise</b>
Garbage Disposal	76 – 83	
Hair Dryer	80 – 95	<b>Potential Hazardous Noise</b>
Vacuum Cleaner	84 – 89	
Lawn Mower	88 – 94	<b>Hazardous Noise</b>
Weed Whacker	94 – 96	
Leaf Blower	95 – 105	
Motorcycle	100 – 120	



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Jet Engine/Artillery	120	
Shotgun Blast	140	

- ***For the iPod & MP3 generation, it is estimated that 5.2 million 6 – 19 year olds already have hearing damage from amplified sound. The full volume setting of the Apple iPod equals 120 – 125 dBA and the Sony Walkman is 108 – 115 dBA.***

Our hearing conservation program is designed to provide protection against damage from noise by measuring noise levels, requiring hearing test and requiring hearing protection. Hearing protectors MUST reduce the noise coming into the ears to at least 90 dBA and employees and contractors are required to use hearing protection in all operating units, all posted high noise areas and when working in the vicinity of power tools or other high noise equipment.

**Ear plugs** are a popular choice because they can expand to fit the shape of each user’s ear canal. To be effective, the foam plug is fitted by rolling it to form a thin cylinder & inserting the tapered end into the ear canal where it expands. The plug should then be held in place for a minute to allow it to expand.

**Muffs** have the advantage of not having to be inserted and fitted in the ear canal, but are only effective when there is complete contact between the user’s head and seals of the muff. This can be difficult with muffs attached to a helmet/hard hat and the seal is also broken when wearing safety glasses.

Hearing protection should never be altered in an attempt to reduce discomfort or because of difficulty hearing spoken words. Altered hearing protectors cannot protect from workplace noise.

Another protection is audiograms or hearing test. As you know, employees included in the hearing conservation plan have an initial test that sets what is called a *baseline* for your hearing. Then annual test are done to see if there is any change so actions can be taken if needed. In order for a hearing conservation program to work employees need to be active participants by wearing the appropriate hearing protection and do their part to maintain equipment to reduce noise levels.

## **Hearing Loss**

Noise is all around and work is not the only place you are exposed to loud noise. More “baby boomers”, age 45–65, have diminished hearing than people above 65. Steps should be taken to protect your hearing in your personal life by keeping a moderate volume on your stereo or radio, especially when wearing headphones. Protection should also be worn when using power tools, mowing grass, riding motorcycles, boats or other loud vehicles and don’t forget hunting/shooting.

Noise cannot be eliminated; however, we can reduce our exposure to dangerous levels of noise by using hearing protection, on and off the job. Hearing is something you cannot fix or replace; all you can do is make every effort to preserve what you have.

**OSHA Occupational Safety and Health Standards Occupational Noise Exposure - 1910.95**