

Noise

Effects of exposure to loud noise

Exposure to loud noise will inevitably cause hearing loss over time. Loud noise damages or destroys the nerves in the inner ear. Another effect can be "tinnitus" or permanent ringing in the ear.

When is Noise Too Loud?

Noise is measured in units called "decibels" or "dB". If two people 3 feet apart must shout to be heard, the background noise is too loud (above 85 decibels). Noise above 140 decibels causes pain and immediate hearing loss.



Long Term Exposure to Noise

Our ears can recover from short exposure to loud noise, but over time nerve damage will occur. The longer and louder the noise, the greater chance permanent damage will occur. There is really no such thing as "tough ears" or "getting used to it".

Effects of noise to inner ear

Hair cells in inner ear transmit noise signals to the brain



Normal hair cells



Noise-damaged hair cells

Hearing Loss From Noise Exposure

Hearing loss from noise exposure is usually not noticed because it is so gradual. Usually a person loses the ability to hear higher pitches first. Often the first noticeable effect is difficulty in hearing speech.



Tinnitus From Noise Exposure

Exposure to high noise levels can also cause permanent ringing in the ear or "tinnitus". Tinnitus sufferers usually complain of constant whistling, squealing, roaring or buzzing in one or both ears. Severe tinnitus may disrupt sleep, reduce concentration and cause irritability and depression.

What is Too Much Noise Exposure?



Damage from noise exposure depends on the loudness and length of exposure. Scientific studies have shown that hearing loss can occur when 8-hour average noise exposure exceeds 85 decibels. The risk of hearing loss increases dramatically as noise levels increase. Exposure to noise levels above 115 decibels for even five minutes is very risky. Impact or banging noise above 140 decibels will cause immediate damage to nerves in the ear.

Daily Allowable Exposure Times to Noise

The table below shows noise levels and how long a person can be exposed without hearing protection before there is damage to the ear.

<u>Noise Level</u>	<u>Allowable Exposure Time</u>
85 decibels	8 hours
90 decibels	4 hours
100 decibels	1 hour
105 decibels	30 minutes
110 decibels	15 minutes
115 decibels	0 minutes

Examples of Noisy Equipment

<u>Equipment</u>	<u>Noise Level</u>
Back Hoe	85-95 decibels
Chain Saw	110 decibels
Front-end Loader	90-95 decibels
Gunshot	140 decibels
Jackhammer	112 decibels
Lawn Mower	90 decibels
Tractor	95-105 decibels
Circular Saw	90-100 decibels

Types of Hearing Protection

There are three types of hearing protection – ear muffs, earplugs and ear caps.

Ear muffs and earplugs provide about equal protection, ear caps somewhat less.



Earmuffs



earplugs



ear caps

All hearing protectors are designed to reduce the intensity (loudness) of noise to the inner ear.

They work much better than wads of cotton or bits of cloth stuffed in the ear. All three types have advantages and disadvantages and people vary on which they prefer to use.

Proper Use of Hearing Protection

Earmuffs and plugs provide good protection only when used properly.

Sometimes people will remove hearing protection for “just a minute” in a noisy area.

In areas of very high noise exposure, this could result in noise overexposure.



It takes just a few minutes of unprotected exposure at noise above 115 decibels to risk hearing damage.

Earplugs not well inserted into the ear canal will not provide complete protection.

Likewise, earmuffs not snug against the head will “leak” noise into the ear.

What is Audiometric Testing?

“Audiometric testing” is the same thing as hearing tests.

It is done by trained technicians to detect any hearing loss.

Audiometric testing is required by DOSH for any employees exposed to excessive noise.

Purpose of Audiometric Testing

Most of us develop a mild hearing loss as we age, especially in the higher pitches.

A severe or significant hearing loss at a younger age may mean you have had excessive noise exposure.

Audiometric testing done yearly can detect early stages of hearing loss.

Audiometric testing results can be used to check the following:

- If the hearing protection in use is adequate,
- If there is a change in noise exposure,
- If there is a medical condition of the ear unrelated to noise exposure.

