

Noise and Hearing Loss

Occasional excessive exposure to loud noise can damage the tiny hairs in the cochlea and lead to hearing loss. Generally, this type of hearing loss is reversible (except in some cases of a sudden, very loud noise, such as an explosion).

However, over time, repeated exposure to loud noise can cause permanent damage and hearing loss. This condition is known as **noise-induced hearing loss**.

Your ears are very delicate, prolonged exposure to sound pressure levels above 85dB will cause damage to your hearing. If you have ever been to a party or to a concert where loud music was played, you may have experienced **Temporary Threshold Shift (TTS)**. This temporary loss of hearing can become permanent if exposure is done on a regular basis. TTS is taking place when you 'get used to' the volume levels of a loud situation. Your ears are reacting to the steady loud sound by 'tightening', and therefore reducing the amplitude of the signal getting to your brain.

One way to tell if you've been exposed to excessive sound pressure levels is that you tend to hear a ringing in your ears.

Ringing in your ears, hissing, clicking or buzzing sounds all represent the effects of **tinnitus**, which is often a side effect of noise-induced hearing loss. Inner-ear cells are sensitive to vibrations. But if they're damaged, the ears will still record ringing or buzzing, even when there's no sound.

Remember, it is your high frequency hearing that deteriorates first. Think of what music would sound like if you couldn't hear anything above 10KHz: just like with a crummy old transistor radio or listening to music over a telephone (no cymbals or high pitched instruments, voices sounding deadened). Protect yourself or just turn it down!

The high frequencies are lost first, so you may have difficulty hearing high-pitched voices. Loss of high-frequency hearing makes many words sound alike, especially those containing the high-frequency sounds S or soft C, F, SH, CH or H. Words like "hill," "fill" and "sill" may sound exactly the same.

If you don't want to end up deaf in a few years time you **MUST** protect your hearing now and that means either a maximum exposure time of 15 minutes per gig – very unlikely! – or by using hearing protection – that is ear-plugs.

For this application, conventional foam or fully sealed pre-moulded hearing protectors or earmuffs are recommended. But be aware of the limitations:

1. Conventional earplugs attenuate more than necessary for much of the noise in industry and the environment.

2. Regardless of their exact construction, existing earplugs produce 10 to 20 dB of high frequency attenuation and the result is that people often reject them because they can't hear speech clearly.

3. Conventional earplugs make the wearer's own voice sound hollow (known as the **occlusion effect**; this means hearing the sound of your voice ONLY by transmission through the bones in your head).

4. Many people risk their hearing by either wearing earplugs loosely or wearing no protection at all so they will be able to hear voices, machinery or music more clearly.

5. Finally, cotton balls and tissue are useless. They only reduce sound by less than 7 dB.

If I wear hearing protection devices while I'm playing, won't it be hard to hear myself or the other instruments?

No, actually with distracting noise removed or minimised you will hear more clearly.

If a hearing device cuts down on the noise from my instrument or voice, how will I know what I sound like?

Your ears adjust very quickly to the protectors.

Don't people in places with loud music or sounds just get used to the volume?

No. Hearing loss and tinnitus (ringing in the ears) are insidious. Problems can occur gradually. People often don't know they have a problem until it's too late.

Custom fit earplugs, worn by many musicians, are made from an impression of the ear canal taken by an audiologist or other hearing health professional. The impression is sent to a lab, where the final ear-mould is made. Custom earplugs are comfortable, easy to insert correctly, and filter sound better than disposable plugs.

Your doctor or an audiologist will be able to advise you further.