

## Not Just for Rockers

While rock musicians get their share of the blame for playing too loud, significant exposure to noise can occur in many other musical settings.

Symphony musicians, who in many cases put in long hours of rehearsal, may be exposed to sound levels that exceed OSHA permissible limits. Research has found sound levels exceeding 100 dBA average,

based on location and acoustical properties of the rehearsal and performance venues.



The high power of professional public address systems makes no entertainer, crew, or concert goer immune to the effects of noise.

### How Did This Happen to Me?

The part of the hearing system that converts sound waves (a physical effect) into nerve impulses for your brain to handle (electrical signal) is called the cochlea. The actual conversion takes place when fluid, excited by sound waves conducted through the ear, puts the hair cells inside your cochlea into motion.

The hair cells in your ear act like the grass in your lawn — walk on them a little, and they recover. Walk on them too much, and the damage is permanent. Repeated and excessive exposure to noise is like walking on the grass too much. Dead hair cells won't let you hear; they won't grow back, and you can't re-seed your ear.

## Keep Hearing that Rock and Roll

Musicians say it's all in the feeling — the raw surge of power from the sound that makes you feel at one with the music and the crowd. The down side is that too many decibels can result in permanent damage to your ears. Your local audiologist or hearing health professional can suggest ways of enjoying the loud sensation of the music while playing at a less damaging level.

Musicians are in the business of sound, but many are at risk of damaging their ability to do the work they love due to noise-induced hearing loss. Ted Nugent, Pete Townsend, Lars Ulrich, and countless others are living testimony to the damage that high sound levels can do to unprotected ears.

This guide is intended to help musicians protect themselves from the effects of excessive exposure to sound by providing information and education about noise and hearing.

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A practical guide to:

## Hearing Loss Prevention for Musicians



National Hearing Conservation Association

*The mission of the National Hearing Conservation Association is to prevent hearing loss due to noise and other environmental factors in all sectors of society.*



## How Loud is Too Loud?

The human hearing mechanism is amazingly sensitive. Along with the ability to hear a pin drop (literally!), it can accommodate extreme sound pressures like gunshots and explosions.

Damage starts to occur with extended exposures to sound levels of around 85 dBA. The higher the sound level, the greater the risk of damage; the longer the time of exposure, the greater the risk.

How can you tell when the sound around you, be it industrial, musical, or otherwise, is reaching the point where it is dangerous to your hearing? Here are a couple of clues to help figure out if the noise is too much for your ears.

**You only get one set of ears — treat them right!**

**Tinnitus** or ringing in the ears is a sign of potential damage. If you hear a ringing or a rushing sound in your ears after playing, it was too loud.

**Temporary Threshold Shift** — after exposure to loud noise, you may lose some hearing, then recover after a rest period in quiet. If, after exposure to noise, conversation sounds muffled or unclear, it's likely that you overloaded your hearing system.

**Raise your voice** — if you must strain your voice to be heard at a distance of about three feet, sound levels are likely approaching the dangerous range.

## How to be Loud and Safe

■ **Turn down.** Let the PA carry the load; keep stage volume at a minimum to protect your hearing.

■ **Monitor your monitors.** Using custom earmold (or in-the-ear) monitors can help reduce levels on stage.

■ **Protect your ears.** Commonly available industrial earplugs may not be well suited for musical applications due to their strong reduction of treble frequencies. Several manufacturers provide musician's plugs (like ER-15, ER-25, and the vented/filtered type), designed to protect relatively equally at all frequencies, making the music sound natural. Each plug has a different effect, and each may be suitable for different musicians in different situations. Contact your audiologist or hearing health professional for more details.

■ **Equipment positioning.** Position speaker cabinets so that your ears do not get the full force of the acoustical energy. If custom earphone monitors are not available, position side fills and floor wedge monitors as far away as practical.

■ **Save it for the gig.** The time you spend in rehearsal adds to your total noise dose. Rehearse at moderate volume levels. Talk to the drummer about using smaller or softer tip sticks for rehearsal.

### A Quick Hearing Test

Pick a quiet place to park your car on the way into a concert, rehearsal hall or club. Set the volume on your radio so it is just barely audible. Then, without adjusting the volume, see if you can hear the radio after the show or rehearsal. If not, you are experiencing a **temporary threshold shift** — which with repeated exposures, may become permanent.

## On the Gig and Off

Your ears can't tell the difference between the sound you expose yourself to in rehearsal and performance from the noise involved with the rest of your day. Total cumulative noise dose is the final word on how your hearing will last over time.

### Typical Sound Levels

