

- Position speakers, amps and loud instruments as far away as possible from yourself, your crew, your musicians and your audience without compromising performance quality.
- Give your ears quiet breaks of at least 15 minutes before and after a live production – If your ears are already fatigued prior to a loud production, you may increase the risk of hearing damage and degrade your listening acuity on the job. Inversely, finding quiet space to rest your hearing after a loud performance may aid in your ear's ability to recover more quickly.
- Communicate – Prior to production, establish an understanding between performers, production crew, promoters and venue management on best ways to manage decibel levels and acceptable limits for audience and production safety.

Off the Job – Recreational Exposure

If you've been over-exposed on the job, limit your risk for hearing damage off the job!

- Be extra vigilant to limit or avoid activities and environments where decibel levels exceed 85 dB. A variety of amateur sound meter phone apps can provide basic dB readings that are adequate for off the job use.
- Wear earplugs or earmuffs with a high noise-reduction rating (NRR) whenever you are around loud powertools, lawnmowers, home appliances, sports events, machinery, and concert and club venues.
- Listen to your personal audio device at no more than 60% of maximum volume. No one near you should be able to hear your device if you are wearing earbuds or headphones.
- Invest in noise-cancellation earbuds or headphones.

Notice a change? Seek Medical Advice

If you notice a change in your hearing ability, it is important to have it checked by a licensed ENT or otologist, so it can be diagnosed and properly treated. There are many causes for hearing loss – some are fully treatable, some can be a sign of a more serious health issue, while others - such as noise-induced hearing loss - can be managed through physician and audiologist recommendations.

Assess Your Hearing Abilities



If you're a music industry professional and depend on good hearing for your career, you should have your hearing tested annually by a licensed audiologist. They can assess your personal hearing ability, monitor changes, and help address your specific listening and protection needs both on and off the job.

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On the Job

Off the Job

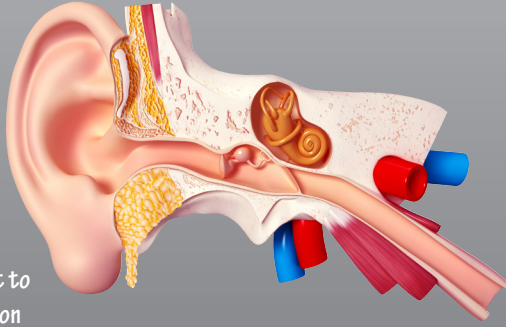
Hearing Health Facts for Sound Professionals & Musicians

Your Ears - Your Most Valuable Sound Equipment

Your auditory system is one of the most complex systems in your body. Working in concert with your brain, it manages both your hearing and balance functions. Damage to this intricate process can produce hearing and balance problems.

How You Hear

Your outer ear condenses, amplifies and directs sound energy to your eardrum, causing it to vibrate. The vibration then travels across three middle ear bones (known as the malleus, incus and stapes) where the sound is further amplified. The oval window membrane then transfers the vibration into the inner ear's cochlea, where thousands of microscopic sensorineural "hair" cells convert the energy into chemical-electrical signals and then transfer it on to your hearing nerve, which leads to your brain. Once all that happens, you can interpret the sound.



Excessive exposure to loud sound can cause irreversible damage to the sensorineural hair cells inside the cochlea. If your family has a history of hearing loss (including age-related loss), it may increase your personal susceptibility to hearing damage from noise.

Effects of Ear Damage from Excessive Sound Exposure

The result is commonly experienced as a temporary hearing loss or (temporary threshold shift), which may become permanent with repeated exposures over time. Recent studies suggest that every single occurrence may weaken vital neural structures in the auditory system.

Symptoms include

- Degradation of frequency resolution recognition and ability to discriminate tonal richness and subtleties
- Distortion of frequencies and decibel levels; sounds seem either too soft or too loud and what you hear is no longer what your audience hears
- Difficulty hearing people speak to you in places with background noise - you may hear them, but you can't understand what they are saying
- Increased stress and fatigue

On the Job Exposure – Put Hearing Safety into Your Mix

- For live audience productions, mix without headphones – not only for sound quality purposes but also to help ensure a more accurate perspective of the decibel levels of your audience's environment.
- If you know you have hearing loss, factor it into your mix. Avoid turning your mix console into your personal amplifier (or hearing aid).
- Avoid mixing at loud dB levels.
- Monitor and manage loud dB level environments – Use the dB(A) weighting to manage exposure times to levels that rise above 85 dB, particularly for the 500 to 8kHz hearing range. Couple dB(A) with dB(C) weightings to assess dB levels across the broader spectrum of low and high frequencies – dB(C) can be most effective for measuring sound peaks and where loud low frequencies might be distorting perceptions of high frequency decibel levels.



- In certain live sound mix situations, wearing even the best high fidelity hearing protection in both ears may prove too inhibitive for mixing accuracy. In those situations, consider compromises that will still give you some limited hearing protection -
 1. Wear hearing protection on one ear so your other ear is free for critical listening – to equally protect both ears, frequently alternate which ear you protect and which one you expose.
 2. Shorten your exposure time to levels above 85 dB for your unprotected ear(s) using the NIOSH guidelines for sound safety.
 3. Wear hearing protection in both ears between sets and even songs, and immediately before and after performances. (Crowd noise by itself often can reach more than 105 dB in many concert and club environments.)
- On-stage musicians should wear high fidelity earplugs or use in-ear monitors set at safe volume levels for the duration of performances.
- Keep practice sessions at decibel levels lower than performance levels whenever possible.



NIOSH Safe Exposure Guide

