



Hearing FAQ



Here you'll find answers to some of the most common questions regarding the risk and prevention of hearing damage and hearing loss.

WHAT CAUSES NOISE-INDUCED HEARING LOSS (NIHL)?

"Noise exposure, whether occupational or recreational, is the leading preventable cause of hearing loss." -- Peter M. Rabinowitz, M.D., M.P.H., Yale University School of Medicine, New Haven, Connecticut. ("Noise Induced Hearing Loss." American Family Physician. May 1, 2000.

HOW MANY PEOPLE ARE AFFECTED?

Here are some figures to give you an idea of the scope of hearing loss.

"As many as 10 million have hearing loss caused in part by excessive noise exposure in the workplace or during recreational activities." -- Brookhouser PE. Prevention of Noise-Induced Hearing Loss. Prev Med 1994;23:665-9.

"More than 28 million Americans have a hearing loss; 80% of those affected have hearing damage that is irreversible and permanent." -- HEAR and House Ear Institute.

"More than 30 million Americans are exposed to hazardous sound levels on a regular basis. Individuals of all ages including children, adolescents, young adults and older people can develop NIHL (Noise-Induced Hearing Loss)." -- National Institute of Deafness and other Communicative Disorders (NIDCD).

AM I AT RISK AS A MUSICIAN?

You bet you are. According to Michael Santucci, M.S. F-AAA:

"Hearing loss as an occupational hazard in the music industry is of increasing concern to musicians. Research has demonstrated that music, from orchestral to rock, has the capacity to cause permanent hearing loss."

YOU MEAN MY HEARING MIGHT NOT BE OKAY?

According to the American Academy of Audiology, hearing loss is invisible and almost always painless. You may feel like your hearing is fine. You may suspect you have a problem - either way, the only way to really know is to have your hearing checked by a professional.

HOW CAN I KNOW IF MY HEARING HAS BEEN AFFECTED?

Most hearing loss can occur in minor increments over the course of time, and therefore might not be easily detectable. Some of the signs of hearing loss are:

Difficulty understanding certain words or parts of words

Frequently asking others to repeat themselves

Difficulty understanding others on the telephone

Turning up the sound on the television or radio to a level that is too loud for others in the room

Difficulty hearing in noisy surroundings

Perceiving sounds as muffled

HOW CAN THIS AFFECT MY QUALITY OF LIFE?

As it progresses, a hearing loss can interfere with communication, performance at work social activities, and personal relationships. Left unassisted, a hearing loss may even result in isolation and depression.

Hearing loss caused by exposure to loud sound over prolonged periods is both subtle in onset and permanent. All musicians should be encouraged to obtain an assessment of their own personal risks based on a complete hearing evaluation and work place sound level measurements. -- Michael Santucci, M.S. F-AAA

OKAY, TECHNICALLY, WHAT CAN HAPPEN?

Results of noise induced hearing loss, according to the NIDCD:

The effect from impulse sound can be instantaneous and can result in an immediate hearing loss that may be permanent.

The structures of the inner ear may be severely damaged. This kind of hearing loss may be accompanied by tinnitus, an experience of sound like ringing, buzzing or roaring in the ears or head, which may subside over time. Hearing loss and tinnitus may be experienced in one or both ears, and tinnitus may continue constantly or intermittently throughout a lifetime.

The damage that occurs slowly over years of continuous exposure to loud noise is accompanied by various changes in the structure of the hair cells. It also results in hearing loss and tinnitus. Exposure to impulse and continuous noise may cause only a temporary hearing loss. If the hearing recovers, the temporary hearing loss is called a temporary threshold shift. The temporary threshold shift largely disappears within 16 hours after exposure to loud noise.

Both forms of NIHL can be prevented by the regular use of hearing protectors such as earplugs or personal monitors.

WOW. SO HOW MUCH HEARING LOSS ARE WE TALKING ABOUT?

Typically, there are seven degrees of severity used to describe hearing loss. These numbers are based on the average of the hearing loss at three frequencies - 500 Hz, 1000 Hz, and 2000 Hz, in the better ear without amplification. Some people may use slightly smaller or slightly larger numbers for each of the categories below:

Normal range or no impairment = -10dB to 15dB

Slight Loss/Minimal loss = 16dB to 25dB

Mild loss = 26dB to 30dB

Moderate loss = 31dB to 50dB

Moderate/Severe loss = 51dB to 70dB

Severe loss = 71dB to 90dB

Profound loss = 91dB or more

WHY IS THIS ALL OF A SUDDEN SUCH A BIG DEAL TODAY?

According to the House Ear Institute (HEI), "Advances in the electronics industry have made possible clean sound production at higher sound pressure levels. This has resulted in an average sound increase of 10-15dB in the work environments of musicians, audio engineers, record and movie/television producers, post-production mixers, dancers and other entertainment professionals."

OH YEAH? HOW LOUD CAN IT GET?

A typical rock concert can average between 110 and 120 dB, even in locations with local noise ordinances.

According to the organization H.E.A.R. (Hearing Education and Awareness for Rockers), "At rock shows, the dB level can be as great as 140 dB in front of the speakers, but less than 120 dB at the back which is still very loud and dangerous."

In 2000, a Smashing Pumpkins concert reached loudness levels of 125 decibels, enough to cause some permanent hearing loss in a fairly short time. -- Bernard D. Sherman. "Losing Your Ears to Music: The hearing loss epidemic and musicians." Early Music America. Spring 2000)

HOW LOUD IS TOO LOUD?

Here's a basic reference chart of common sound pressure levels:



Graphic by www.hearnet.com

HOW MUCH EXPOSURE CAN I HANDLE SAFELY?

Additionally, according to the Occupational Safety and Health Administration (OSHA), the following ranges act as the guidelines for potential hearing damage:

Sound Pressure Level	Exposure time
90 dB SPL	8 hours
95 dB SPL	4 hours
100 dB SPL	2 hours
105 dB SPL	1 hour
110 dB SPL	30 minute
115 dB SPL	15 minutes

I'M NOT A ROCK MUSICIAN. AM I STILL AT RISK?

Studies have found that sound levels within orchestras can reach peaks of 130dBA. In addition, individual instruments can produce extremely loud sound intensities exceeding 90dBA, particularly the brass and percussion sections.

I'VE ONLY BEEN PLAYING FOR A COUPLE OF YEARS. AM I STILL AT RISK?

Statistics support doctors' observations that people are suffering from hearing loss at younger ages. Between 1971 and 1990, the number [of people] between the ages of 18 and 44 increased 17 percent, according to the National Health Interview Survey. -- CNN.com with WebMD "Huh? Baby Boomers Bam Themselves Into Hearing Loss."

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I'VE BEEN PLAYING FOR TOO LONG FOR ANY CHANGE TO MATTER, RIGHT?

Wrong. Once again, accredited audiologist Michael Santucci has this to say: "Hearing loss is a problem that musicians may face at some point in their careers. It is never too soon or too late to begin to conserve your hearing.

"The view that hearing loss is an inevitable physical disability associated with being a musician is incorrect. Advances in technology and the demand for more sophisticated devices now afford musicians viable choices to effectively protect their hearing with the least amount of compromise."

ALL RIGHT, WHAT CAN I DO TO SAVE MY HEARING?

"Hearing loss caused by exposure to recreational and occupational noise results in devastating disability that is virtually 100 percent preventable." -- American Family Physician 2000; 61:2749-56, 2759-60. Here are some general tips for diminishing potential damage to your hearing:

- Limit the amount of time you spend in loud environments
- Wear earplugs or other hearing protective devices when involved in a loud activity
- Be alert to noise levels in your environment
- Protect children who are too young to protect themselves
- Have a medical examination by an otolaryngologist, a physician who specializes in diseases of the ears, nose, throat, head and neck
- Have a hearing test by an audiologist, a health professional trained to identify and measure hearing loss and to rehabilitate persons with hearing impairments
- Buy a sound pressure level meter, and measure SPL in your environment(s) against the OSHA guidelines as to the recommended time spent at different sound pressure levels

WHAT IF MY LIVELIHOOD DEPENDS ON OPERATING IN LOUD ENVIRONMENTS?

Since exposure to sound is part of the job for the music or audio professional, it is important to take preventative steps rather than attempt to eradicate loud sound in an effort to conserve our hearing. There are several simple ways to conserve one's hearing:

- If you know that a session or gig will be longer than usual, try to decrease the intensity level
- Be aware of the locations of the P.A. system, amplifiers, and other sound sources. Standing directly in the critical path of the sound source will result in greater levels of exposure than standing at an angle from the source (in other words, increase distance between you and the sound source)
- After exposure, give your ears a rest

If total silence is not possible, go to a reasonably quiet place

If your session runs long, take frequent breaks

Make regular visits to an audiologist

WHAT ELSE CAN I DO?

Other ways for musicians to protect their hearing:

Wear hearing protection during performance and rehearsals

Avoid loud noise exposure whenever possible

When used properly, custom personal monitors such as Shure's PSM Series can be used to help reduce sound levels during a performance

Use sound absorbing materials on the performance stage whenever possible

Know what sounds are loud enough to pose a potential risk of hearing damage

Educate others on hearing loss and hearing conservation strategies

Have your hearing tested by an audiologist

I HATE WEARING EARPLUGS BECAUSE I FEEL DETACHED FROM THE SOUND. DO I HAVE ANY OPTIONS?

According to the House Ear Institute, "Proper use of personal monitoring systems may conserve hearing if sound levels in live performances are reduced."

Personal monitor systems such as Shure's PSM Series can assist in hearing conservation when used properly. The advantage for the performer is that the control of onstage volume levels is now in his hands. Obviously, this is not a foolproof solution, but at least now, each musician can control his personal monitoring levels.

SO PERSONAL MONITORS SOLVE THE PROBLEM, RIGHT?

Not entirely. It is your responsibility as the user to utilize the personal monitor system at safe volume levels. The good news is that, with the isolation afforded by personal monitors, musicians can hear their monitor mix more clearly at lower volumes than necessary with traditional floor wedge monitors.

Unfortunately, at this point, there is no direct correlation between where to set the volume control of your personal monitors and how much SPL is present in your ears. The way to accurately test the sound pressure level in your ears is by consulting an audiologist who can test the levels as you use the product.

IF THEY'RE NOT FOOLPROOF, WHY DO SO MANY ARTISTS USE PERSONAL MONITORS?

We'll let them speak for themselves. Here are some quotes from our users.

"I was sold almost immediately on the Shure PSM 600. I no longer had to shout over a monitor. I felt more comfortable about my pitch, and I can listen at lower volumes, which means I never go home with ringing in my ears." -- David Byrne

"I could sing night after night and not hurt my voice." -- LeAnn Rimes

"It just sounds so much better. Live is very loud on stage, and Ed (Kowalczyk) was always fighting to hear his monitors. It was a major battle. When I got the PSM 600 to try, it was amazing hearing it through my own custom molds." -- Brendan McCabe, Monitor Engineer (1999)

"The clarity is fantastic and the signal-to-noise ratio is amazing. I also find that the limiter that is incorporated into the system is excellent. Lately, I have been using it in the studio for drummers and find it very useful. Thus proving that, as always, Shure products are great in the studio and on the road." -- Bobby Pridden, Sound Designer for The Who

"Traditionally, Beastie Boys have used a pretty massive monitor system, with about 30 wedges and a sizable sidefill system. At this stage in their career, they've become concerned about hearing loss. They took to the PSM systems quickly in rehearsals, so we went on the road with them. With everyone using the systems, we got rid of the huge quantities of wedges and sidefills, bringing the stage volume under control. Now the sound on stage is completely consistent wherever we go." -- Steve Wallace, Monitor Engineer (1999)

"I am bowled over and fully converted to this exciting, well thought out product. My floor-wedge monitors spent the rest of the tour in the back of the truck. It is such a relief to finally hear all the nuances and detail of my efforts, particularly in the case of the flute. Now after 29 years of playing it, I can finally hear every note! Well done. Shure has come up with another winner." -- Ian Anderson of Jethro Tull

SOURCE: <http://www.shure.com/Corporate/CorporateCause/HearingFAQ/index.htm>