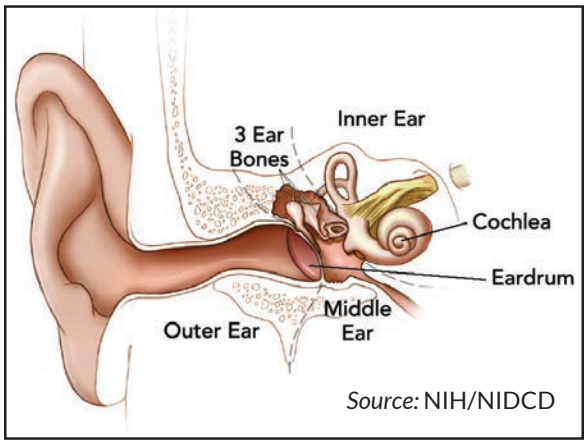
It's A Noisy Planet PROTECT THEIR HEARING®

A program of the National Institutes of Health

https://www.noisyplanet.nidcd.nih.gov

How Does Noise Damage Your Hearing?

Sounds that are too loud for too long can damage your hearing permanently. This is called *noise-induced hearing loss* (NIHL). The louder the noise, the faster it can damage your hearing. If the noise is *very* loud, you could lose your ability to hear instantly. If the noise is not as loud but long-lasting, hearing damage can build slowly. NIHL can happen to anyone at any age, so it's important to start protecting your hearing—and your children's hearing—early.



Source: NIH/NIDCD

Think of the many sounds at different volumes you hear in a day, a week, or a year. The effects of loud sounds add up over a lifetime. Because the damage from noise exposure is usually gradual, you might not notice it, or you might ignore the signs of hearing loss until they become more serious.

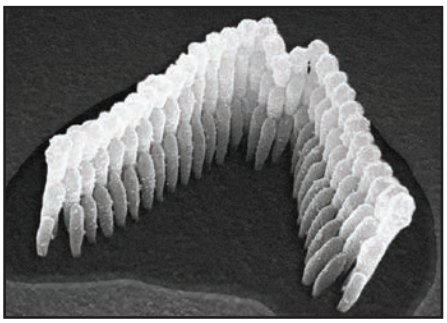
Over time, sounds may become distorted or muffled. You might find it difficult to understand people when they talk, or you might turn up the volume on the TV. The damage from NIHL can lead to hearing loss serious enough that you need to make sounds louder with devices like hearing aids, to help you hear, communicate, and participate fully in daily activities.

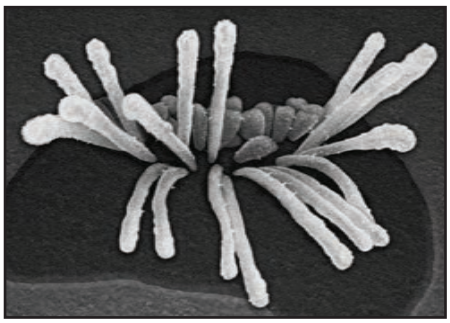
The good news is that you can prevent NIHL. By teaching children healthy hearing habits, you can help them keep their hearing too.

How You Hear

You hear because of a series of steps in your ear that change sound into electrical signals. The auditory nerve carries these signals from your inner ear to your brain, which makes sense of the sounds you've heard.

- The cochlea—a snail-shaped structure in your inner ear—is lined with sensory *hair cells*.
- On top of each hair cell is a wispy bundle of *stereocilia* (pronounced STARE-ee-oh-SILL-ee-ah), which sways with sound vibrations. Over time, sounds that are too loud can damage these hair cell bundles. When that happens, hair cells can't send information about sounds to the brain. In humans, the hair cell bundles cannot be fixed or replaced, so this damage leads to permanent hearing loss.

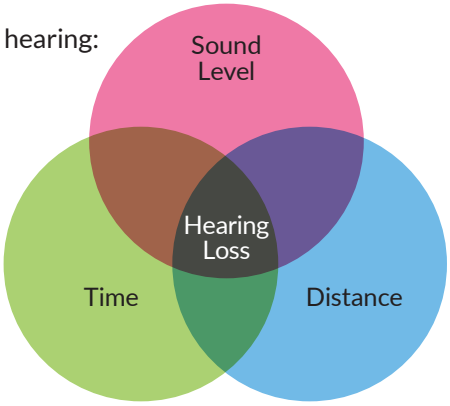

This wispy bundle of stereocilia sits on top of a hair cell in the ear. The hair cell bundle sways with sound vibrations.


Loud noise can damage the hair cell bundle, and then the hair cell can't respond to sounds.

Causes and Signs of Noise-Induced Hearing Loss

There are three key factors that affect whether and by how much a sound will damage your hearing:

1. Decibel level: How loud the sound is.
2. Distance: How close you are to the source of the sound.
3. Time: The length of time you are exposed to the sound.



NIHL can result from a one-time exposure to a very loud noise, like a nearby explosion or a shotgun firing. You're more likely to lose your hearing gradually, however, from sounds that aren't as loud but that you're exposed to repeatedly for long periods.

Some examples of noisy activities that could damage your hearing are:

- Listening to loud music through headphones, at a concert, or while you're playing an instrument.
- Going to the movies in theaters or cranking up the volume on the TV at home.
- Going to sporting events attended by large, noisy crowds.
- Going to fireworks shows.
- Working with loud power tools.

Your hearing might return to normal a day or two after you've been exposed to loud noises. Recent research suggests, however, that your hearing can be permanently damaged even if you don't have noticeable hearing loss right away.

Because NIHL can build slowly over time, you might not notice the early signs of hearing loss. As your hearing gets worse, certain sounds—particularly speech—begin to sound muffled. As a result, you may:

- Ask others to repeat what they've said more often.
- Turn up the sound on the TV, music player, or other devices.
- Have ringing or buzzing in your ears (a condition called tinnitus).
- Have trouble hearing high-frequency speech sounds, like some consonants. For example, the sentence, "I asked Skip if he felt sick" might sound like a series of vowels: "I a____ __i_ i_ _e _el_ _i__."

How Can You Help Your Kids Protect Their Hearing?

Just as wearing sunscreen can protect you from sun damage, healthy hearing habits can help protect you from NIHL. When you talk to your kids about noise and hearing loss, remind them to:

- Lower the volume.
- Move away from the noise.
- Wear hearing protectors, such as earplugs or earmuffs.

It's a Noisy Planet. Protect Their Hearing.® is a national public education campaign designed to inform preteens, parents, and educators about the causes and prevention of noise-induced hearing loss. It is supported and administered by the National Institute on Deafness and Other Communication Disorders (NIDCD), part of the National Institutes of Health (NIH).
https://www.noisyplanet.nidcd.nih.gov.

For more information about your hearing and hearing loss, contact:

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