



Safety

Sound Effects: How to Protect Your Hearing from On-the-Job Hubbub

James Langford | Feb 08, 2024

Even legends can find their careers come with a price. Sting, Pete Townshend of The Who and Coldplay's Chris Martin all made names for themselves rocking packed houses.

Often at noise levels of 100 to 120 decibels—or higher. Which may explain why all three eventually developed hearing loss, especially if you think about how long you've waited for your own ears to stop ringing after a high-powered concert.

Those levels are considerably higher than the average 85 decibels at which the U.S. Occupational Safety and Health Administration requires hearing protection for employees exposed to them for eight hours or more, a regulation that applies to a wide swath of manufacturing facilities and machine shops.

In real-world terms, 85 decibels is about the level of a lawn mower, vacuum cleaner or earbuds set at a volume of 70 percent, according to the U.S. Centers for Disease Control.

It's loud enough that you have to raise your voice for someone 3 feet away to hear you, and on-the-job exposure to that volume is somewhat common.

Roughly 22 million U.S. workers experience loud noises each year, according to the National Institute for Occupational Safety and Health, and 58 percent of hearing-loss cases reported by employees were linked to their occupations.

The risks for manufacturing workers are particularly high, according to government statistics. **About 18 percent** of them have hearing problems, compared with just 12 percent of U.S. workers **on average**, according to the institute.

Identifying Hazardous Noise Levels

Some 46 percent of manufacturing workers have been exposed to hazardous levels of noise, and tests afterward showed that 20 percent of them suffered sufficient hearing loss to affect their day-to-day activities; 14 percent had hearing impairment in both ears.

While employers operating worksites with hazardous noise levels are required to monitor them and provide personal protective equipment to workers if needed, there are two simple ways employees themselves can identify potential risks.

“First, if you have to raise your voice to talk to someone who is an arm’s length away, then the noise is likely to be hazardous,” the *CDC says*. “Second, if your ears are ringing or sounds seem dull or flat after leaving a noisy place, then you probably were exposed to hazardous noise.”

Safety suppliers including Honeywell and 3M offer a variety of hearing protection devices to curb such risks, with options from disposable foam earplugs to sophisticated electronic earmuffs with Bluetooth® connectivity and built-in communication systems.

“One of the challenges is to try to find a hearing protector that not only matches the regulatory requirements for reducing noise but is something that people are going to wear because it fits well, it’s comfortable and it gives them the flexibility they need to do their jobs,” says Laurie Wells, a doctor of audiology and the lead regulatory specialist in 3M’s Personal Safety Division.

People’s ears—and ear canals—are unique and getting the right fit is essential to achieving the needed amount of protection, in much the same way that a respirator can’t protect wearers from airborne toxins without a tight seal around the nose and mouth.

Read More: *7 Key Factors in OSHA’s Hearing Conservation Standard*

3M’s solution to that challenge is the E-A-Rfit™ Dual-Ear Validation System—a device that measures across seven standard frequencies in under five seconds—generating a detailed report on an earplug’s noise attenuation performance, or how well it’s reducing sound. Users also can receive a pass/fail rating that indicates whether their hearing protection is lowering sound volume enough for them to perform their assignments safely.

The level of attenuation required typically varies from job to job, based on the noise level of equipment used and the environment in which employees work.

PPE Training Documentation

E-A-Rfit™ helps businesses, too, simplifying fit-testing and allowing more time for training on how to use earplugs and earphones correctly. It also provides documentation that the tests were done, which can prove beneficial during any regulatory review.

“The fact that you did the training, you documented that a hearing protector is suitable for a particular worker and that the worker demonstrated being able to use it correctly are all things that are going to help show a robust hearing conservation program and due diligence by the employer,” Wells explains.

Another of the E-A-Rfit™ system’s strengths is its objective measurement of sound pressure level.

“There’s no judgment required on the listener’s part,” Wells says. “If you don’t get the amount of attenuation you need, then it’s very easy to retest it because the test is almost instantaneous. That means the test operator gets to focus on coaching and teaching and reinforcing. And if they put the earplug in and it works great the first time, then they’re done.”

All 3M products should be used according to the manufacturer’s labels, warnings and accompanying instructions, the company says.

One of 3M’s latest innovations is the *Peltor™ PIC-100*, which includes a corded headset with replaceable eartips as well as an in-ear microphone attached to a control unit that enables wireless conversations with up to 50 listeners as far as 22 yards away and Bluetooth connectivity with other

smart devices.

The PIC-100 also offers on-demand fit-test functionality that lets users measure noise reduction at the push of a button.

What makes fit-testing uniquely valuable to employers is that it's a leading indicator, helping to identify problems that might occur before they actually do and helping to curb the potential for a worker to be under-protected, Wells explains.

'Not One-Size-Fits-All'

"Employers are trying to get ahead of the game," she says. "Fit-testing alerts them to something that might go wrong but can be prevented, as opposed to something that has already happened and can't be fixed."

Another vital piece of hearing protection programs is PPE hygiene. Businesses need to ensure that they provide clean earplugs, since the devices slide into the ear canal and dirty ones can introduce bacteria and germs, potentially leading to infection.

Honeywell makes that simpler with a variety of dispensers, including ones that store corded plugs still in their original plastic bags so that they aren't contaminated with workplace grime.

"It's a really optimal way for consumers to receive their hearing protection equipment while maintaining hygiene," says Lisa Steckert, Honeywell Americas customer marketing leader.

Honeywell's dispensers are compatible with a variety of earplugs, from low-pressure foam to silicon as well as T-shaped and cylindrical devices.

"Employers have to be able to offer a variety of hearing solutions, because they aren't one-size-fits-all," Steckert says. "We all have different ear canals and different facial features."

The company also sells protective earmuffs that fit over the ear rather than earplugs, accommodating workers who must wear the devices over hard hats, for example.

'You Can't Get It Back'

Dielectric versions such as the *Verishield™ 100* are designed not to conduct electricity, helping to safeguard utility workers and others working in environments with electrical hazards.

Regardless of the type of hearing protection needed, a correct fit is crucial, Steckert emphasizes—not only for the protection it provides but because workers are more likely to remove poorly fitting or uncomfortable devices, leaving their ears exposed.

A one-size-fits-all philosophy doesn't work when determining required noise-level reduction, either: Simply distributing hearing protection systems that block out all sound for everyone isn't viable.

Generally, the best option for workers provides the lowest level of noise reduction that still safeguards them in a specific work environment, Steckert explains.

Otherwise, wearers may remove an earplug or headphone to communicate "and that's when that one noise may come that can really cause tinnitus or the decibel level can skyrocket and have a permanent impact on your hearing," she says. "Hearing damage is permanent, but it's also progressive and once you've lost it, you can't get it back."

While many people assume their hearing is simply growing worse because they're getting older, aging generally doesn't impair hearing before at least age 60, ***according to the CDC***.

People who are exposed to loud noises and don't protect their hearing, however, begin to lose it much earlier.

"For example, by age 25, the average carpenter has '50-year-old' ears," the agency says—the same hearing as someone who is 50 years old and has worked in a quiet job.

"Looking after your ears is unfortunately something you don't think about until there's a problem," Martin, the lead singer of Coldplay, told the ***Daily Mirror*** in an interview. "I wish I'd thought about it earlier."

How does your company make sure that hearing protection fits workers correctly? Tell us in the comments below.

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