Turn Down the Noise, Turn Up the Quiet

The U.S. government has noise standards that mandate hearing protection in the workplace. But there are no similar laws to protect people from loud sounds during recreational activities or in shared public places. It’s time to take action to protect our hearing everywhere.

By Daniel Fink, M.D., and Bryan Pollard

Our world has become too noisy. The dangers of occupational exposure have been known for years, but now nonoccupational noise exposure has increased enough so that it is a public health concern. Did you know that all it takes is brief exposure—just 30 seconds or less—to very loud noise to cause permanent auditory damage? The National Institute of Occupational Safety and Health (NIOSH) states that for a 115 decibel (dB) noise level, the threshold for hearing damage is only 28 seconds.

And Health (NIOSH) states that for a 115 decibel (dB) exposure, voluntary exposure is when people choose to listen to music too loudly via earbuds or headphones, or at a rock concert or motor sports event.

Involuntary exposure is when public spaces—such as restaurants, stores, or malls—that don’t need to be loud are. The public doesn’t have a choice in these noisy places. Just as secondhand smoke endangers cardiac and pulmonary health in nonsmokers, secondhand noise causes auditory damage in those who prefer quiet.

In middle-aged and older adults, exposure to a lifetime of loud noise can coexist with or even contribute to presbycusis (age-related hearing loss) and other auditory problems, such as tinnitus (ringing in the ears) and hyperacusis (sensitivity to loud noise). For those who already have hearing loss, conversation is made more difficult by loud environments. For those with tinnitus or hyperacusis, loud sounds are painful and may make dining, shopping, or spending time in noisy environments unbearable.

TAKE ACTION

It’s too noisy to suffer in silence, but we don’t have to suffer silently, either. The time to speak up is now. We need to protect our hearing. We need to request—even demand—less-noise in all settings, both indoors and outdoors, be limited to safe, tolerable levels, no more than the EPA or OSHA thresholds.

The Americans With Disabilities Act (ADA) defines places like restaurants and malls as “places of public accommodation,” businesses that are generally open to and serve the public. The ADA defines an individual with a disability as “a person with a physical or mental impairment that substantially limits one or more major life activities.” Individuals with auditory disabilities other than complete deafness meet this definition.

The ADA requires “reasonable accommodations” for those with disabilities in these public places, such as stores, malls, offices, banks, museums, gyms, and restaurants. Those of us with hearing loss, tinnitus, or hyperacusis appear to have a right to expect it to be quiet enough not to hurt our ears or to interfere with communication. The easiest accommodation—which costs nothing—is simply to turn down the volume of the amplified sound. Other accommodations may include the addition of sound-absorbing materials or other modifications.

Modifications that would “fundamentally alter” the experience of most of the participants are not required. Some places are inherently noisy—where the loudness is an inseparable part of the experience, such as at a rock concert or sports event—and it may not be possible to make the event quieter, but earplugs could be made available. (See “What the ADA Means for You,” in the Fall 2014 issue, at hearinghealthmag.com.)

SMOKE-FREE, NOISE-FREE

It’s hard to regulate individual behavior in a free society. People have the right to smoke or listen to loud music. But they don’t have a right to make others breathe their smoke or hear their noise. We can educate leaders and lawmakers about the noise problem, so they can develop and implement laws and regulations to protect the public. This is what we need to do to protect our hearing.

The no-smoking movement may be the best model to follow. The first law regulating indoor smoking was passed in 1990. Initially the law only required no-smoking sections in restaurants, but then people realized that secondhand smoke spilled into no-smoking areas, so these restrictions were extended to the entire restaurant. Empowered by mounting scientific evidence that secondhand smoke is dangerous, no-smoking laws were extended to airplane flights, offices, schools, hospital grounds, bars, and entire college campuses. Today in the U.S. we enjoy a largely smoke-free environment. We have a similar right to a quiet environment.

For outdoor noise, look up the noise ordinances where you live, learn whom to call when there is a violation, document the loud noise (see the section “Game-Changing Technology,” next page), and then begin complaining. Only when citizens file complaints will the enforcement authorities and elected officials become aware that there are noise problems. These laws are usually “on the books” but rarely enforced. We need to change that.

For most cities and towns, getting a quieter indoor environment is “an individual act.” How Loud Is It?

<table>
<thead>
<tr>
<th>How Loud Is It?</th>
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<tbody>
<tr>
<td>70 dB</td>
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<tr>
<td>EPA safe-noise limit (over a 24-hour period)</td>
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<tr>
<td>90 dB</td>
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<td>OSHA safe-noise limit (over an 8-hour period)</td>
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<td>85-95 dB</td>
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<td>Music broadcast in health clubs</td>
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<td>100 dB</td>
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<tr>
<td>Ambient noise in restaurants and bars</td>
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<td>100-125 dB</td>
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<tr>
<td>Loud movie scenes in movie theaters</td>
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<td>142.2 dB</td>
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<tr>
<td>World record for loudest sports stadium, a dubious honor given to the fans for the Kansas City Chiefs at Arrowhead Stadium in October 2014</td>
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By John Drinkwater. It is used here by permission.

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Talk about the action you can take in your community to bring down noise levels in your city, town, or workplace.
environment will require the passage of new laws. (It is not clear that existing noise ordinances apply only to outdoor noise sources, but this is the widely held interpretation of these laws.) Become active in your local government, learn how things are done in your community, build relationships with other activists, and make efforts to get local laws passed requiring a quiet indoor environment.

GAME-CHANGING TECHNOLOGY

The "game changer" in the quiet environment movement is smartphone technology with accurate sound level meter apps. With these apps (which include GPS locations and time stamps), you can show a restaurant manager the average and peak noise levels rather than just complaining, "It's too loud in here!" For reference, carry a copy of a decibel chart (at hhf.org/safe-and-sound).

The sound meter apps also allow you to report to the local police or authorities empowered to enforce local ordinances the specifics about decibel levels and addresses. With these apps, the noise isn't just one person's complaint. It's a documented, accurate, scientific measurement that is harder to ignore. (See "The Best Apps for Measuring Decibels," opposite page, top.)

Don't be shy about politely asking proprietors of stores, restaurants, and gyms to turn down the music levels. They might do so by how many people prefer the quieter option. "Quiet car" are popular on Amtrak trains and local public transportation systems.

John Drinkwater of SecondhandSound.org persuaded his health club, Kennedy Fitness, with five locations in California, to start a "quiet yoga" class, and in what may be a first, he had special ADA seating provided at the outdoor jazz festival in San Luis Obispo, California. You can do the same. Ask that public address system volumes be a first, he had special ADA seating provided at the California, to start a "quiet yoga" class, and in what may be a first, he had special ADA seating provided at the outdoor jazz festival in San Luis Obispo, California. You can do the same. Ask that public address system volumes be lowered. In the meantime, in arenas and stadiums be turned down. Ask that the "quieter option. "Quiet car" are popular on Amtrak trains and local public transportation systems.

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Daniel Fink, M.D., who coauthored this story, made a presentation about how noise damages hearing to the Health and Safety Commission in Beverly Hills, California, in January 2015. He proposed an indoor quiet law, building on existing portions of the municipal code. As of June, the proposal continues to wend its way through the system. "Be aware that the wheels of government grind slowly," he says. "But if you put in the time to educate committee members and city council members, and build the needed relationships, you will succeed." For a sample ordinance to propose to your local government, see hhf.org/noise_ordinance.

Local Level

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The Best Apps for Measuring Decibels

Intermet2day ($6), and SoundMeter by Faber Acoustical ($20). Android apps were not included, they said, because Android devices had uneven conformity and the apps lacked the features and functionalities found in Apple iOS apps.

Dry, Clean Hands May Come at a Price

It’s not your imagination. Super-strong electric hand dryers are definitely as loud as you think.

By Shari Salzhauer Berkowitz

Public restrooms nowadays are more likely to have high-airflow electric hand dryers instead of paper towel dispensers, in order to provide a hygienic, fast, and environmentally friendly way to dry your hands. Although bathrooms with these electric hand dryers do save paper, many people find the loud noise that emanates from them to be irritating.

The noise is worse if you have a hearing problem. Some people complain that the dryers aggravate their tinnitus (ringing or buzzing in the ear). Those with hyperacusis, or sensitivity to loud noises, may also suffer. For custodial workers, who are likely exposed to the sound of dryers for cumulative hours per day, the dryers may actually be an occupational hazard.

My post-baccalaureate students and I examined the decibel output of three common high-airflow hand dryers and published our research in the March-April 2015 issue of the journal Noise & Health. We measured hand dryers around Mercy College in Dobbs Ferry, New York, using a Radio Shack sound level meter to take readings at 2.5 feet (about arm's length), 5 feet, and 10 feet.

We found that the sound generated by the machines—the Dyson Airblade, the Excel Dryer Xlerator, and the World Dryer Airforce—was over 80 decibels (dB), even at 10 feet away. The loudest sound recorded was 94 dB—about as loud as a subway train. The Occupational Safety and Health Administration says workers should not be exposed to more than 90 dB for eight continuous hours.

Why are these hand dryers so loud? It is to generate enough high-velocity airflow to quickly dry your hands. Jet engines also need to generate airflow, and think of how loud those are.

A state senator in Oregon is trying to pass legislation restricting the use of high-airflow hand dryers, and my students and I are undertaking a follow-up study of additional hand dryers to determine how they are actually used by patrons. For example, the manufacturers estimate they are used for 10 to 15 seconds per patron, but is that true? Is the dryer noise nearly constant in a busy restroom? That is part of what we aim to find out.

Aside from wiping your hands on your pants and making a quick exit, you can take these steps:*

* If you wear hearing aids, consider turning them down (or off) before entering the bathroom. This will protect from over-amplification of the dryer’s sound. Just remember to turn them back on again when you leave.

* Noise-canceling headphones can be helpful here, if you don’t mind wearing headphones into a restroom. Or you can carry around smaller, inexpensive, drugstore earplugs to help protect against the noise. Pop the plugs in before you enter, and remove them when you leave. You can get quite a bit of wear out of one set if you store them in a case or a Ziploc bag.

* Measure the noise level using a smartphone app (see "The Best Apps for Measuring Decibels," above) and use this evidence to lodge a complaint with the owner or manager of the shop, restaurant, or theater where the restroom is located. Vote with your wallet and frequent places that use paper towels.
A colleague recently gave a friend and her daughter tickets to see a popular singer in concert. She wondered, “Should I be giving them earplugs, too?”

We can’t expect people who love music to stop listening to it, whether via earbuds or headphones or at a concert. But we can remind them, and ourselves, that hearing loss can occur from cumulative exposure to noise, even when the “noise” is enjoyable. Noise exposure is like sun exposure—the more you are exposed at unsafe levels, the greater your risk for permanent damage. But, just as you can protect yourself from sunburns, noise-induced hearing loss is fully preventable.

A “temporary threshold shift” is the term for a short-term muffling of hearing—sometimes with tinnitus and/or a feeling of pressure in the ears—that frequently occurs after exposure to high volume. This sensation of hearing loss can actually be measured audiometrically, and it may last for hours or up to a few days. It is a warning sign—routinely ignored—that your hearing is being damaged. Imagine if you lost your vision for two days after attending a concert. You wouldn’t ignore that! Being smart about your hearing doesn’t have to mean total isolation from music you enjoy. Here are some ways to protect yourself.

**Wear earplugs.** Make sure you use them correctly, inserting them before the noise exposure and deeply enough to completely block the ear canal. If you wear hearing aids, take them out and use earplugs instead. Etymotic will be selling its reusable, high-fidelity Ety-Plugs at three dozen popular music venues this summer.

**Consider customized musician’s earplugs.** If you attend concerts regularly, invest in customized earplugs, such as those made by Etymotic, Westone Audio, or ACS Custom, that reduce volume without distorting sound. Used by individuals in the music industry, they also allow you to preselect the decibel reduction depending on the environment. For example, a 9 dB filter may be enough to block loud restaurant noise, while a rock concert may require a 25 dB reduction.

**Turn down the volume.** Set the volume on personal music devices used with earbuds or headphones to no more than 60 percent of the maximum volume for no more than 60 minutes. Volume-limiting headphones are especially useful for children and teens, and are sized for smaller heads. Puro Kids headphones deliver studio-grade sound at an always-on limit of 85 dB. (Puro Sound Labs is a Partner for Hearing Health; see “Sharing a Sound Strategy,” page 22.)

**Take a “sound break.”** Even if for just a few minutes each hour, taking a break from using earbuds or headphones gives your ears a rest metabolically from constant sound processing. If you notice your ears are ringing during a concert, step outside for a few minutes. And never stand next to the speakers.

M. Jennifer Derebery, M.D., FACS, is an otologist and neurotologist at the House Clinic in Los Angeles, and a past elected president of the American Academy of Otolaryngology-Head and Neck Surgery.

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