Noise Threatens Hearing

Noise is one of the leading causes of hearing loss in the 28 million people with impaired hearing in the United States, and health statistics suggest a trend that the incidence of hearing loss is occurring at younger and younger ages. Noise-induced hearing loss, though preventable, is permanent. Millions of Americans are exposed to dangerous levels of noise in the workplace and it is estimated that one in four workers exposed to high levels of noise in the workplace will develop hearing loss.

How loud is too loud?

To know if a sound is loud enough to cause damage to your ears, it is important to know both the level of intensity and the length of exposure to the sound. The unit used to measure environmental sound intensity is the decibel (dBA). Zero decibels is approximately the softest sound the healthy human ear can hear. The scale increases logarithmically; that is, the level of perceived loudness doubles every 10 decibels. Experts agree that continued exposure to noise above 85 dBA, over time, will eventually harm hearing. In general, the louder the sound, the less time required before hearing will be affected. According to the National Institute for Occupational Safety and Health (NIOSH, 1998), the maximum exposure time at 85 dBA is 8 hours. At 110 dBA, the maximum exposure time is one minute and 29 seconds. If you must be exposed to noise, it is recommended that you limit the exposure time and/or wear hearing protection.

Noise-Induced Hearing Loss - How the Damage Occurs

Loud noise typically causes damage to the delicate hair cells of the inner ear. Noise-induced hearing loss typically occurs gradually and without pain. After exposure to loud noise, a person may experience ringing in the ears or difficulty hearing. This is called a "temporary threshold shift". After a few hours (or in some cases, a few days), this temporary shift in hearing returns to normal. With repeated exposure, however, this temporary shift in hearing can become permanent. Once permanent hearing damage has occurred, it is not possible to restore hearing.

Pay Attention to the Warning Signs

Noise-induced hearing loss is cumulative across the life span. Often, by the time a person realizes that there is hearing loss, it is too late. But there are certain early warning signs to suggest that there may be a problem. If you experience any of the following early warning signs, have your hearing tested by a licensed audiologist, or have your ears examined by an ear doctor.

- A ringing or buzzing (tinnitus) in the ears immediately after exposure to noise.
- A slight muffling of sounds after exposure making it difficult to understand people when you leave a noisy area.
- Difficulty understanding speech; that is, you can hear all the words, but you can't understand all of them.
Protect Your Hearing

To avoid noise-induced hearing loss, pay attention to the noises around you and turn down the volume whenever possible. Avoid or limit time spent in noisy sports events, rock concerts and night clubs. Wear adequate hearing protection, such as foam ear plugs or ear muffs, when you must be in a noisy environment or when using loud equipment.

Measure Up and Turn it Down: Decibel Levels Around Us - The following are decibel levels of common noise sources around us. These are typical levels, however, actual noise levels may vary depending on the particular item. Remember noise levels above 85 dBA will harm hearing over time. Noise levels above 140dBA can cause damage to hearing after just one exposure.

Work & Home

- 40 quiet office, library
- 50 large office
- 60 - 95 hair dryer
- 65 - 95 power lawn mower
- 70 - 95 garbage disposal
- 80 manual machine, tools
- 85 handsaw
- 90 tractor
- 95 electric drill
- 100 factory machinery
- 100 woodworking class
- 110 power saw
- 110 leaf blower
- 110 baby crying
- 120 chain saw, hammer on nail
- 120 pneumatic drills, heavy machine
- 120 jet plane (at ramp)
- 120 ambulance siren
- 125 chain saw
- 130 jackhammer, power drill
- 130 percussion section at symphony
- 140 airplane taking off
- 150 jet engine taking off
- 163 rifle
- 166 handgun
- 170 shotgun

Noise Harms More Than Our Ears

Continued exposure to loud noise will cause hearing loss. Exposure to noise, or unwanted sound, however, is far more than just a threat to our ears. A former U.S. Surgeon General, stated, "Calling noise a nuisance is like calling smog an inconvenience. Noise must be considered a hazard to the health of people everywhere." Studies have correlated noise with physiological changes in sleep, blood pressure and digestion. Studies have also linked noise with a negative impact on the developing fetus.
Noise & Sleep
According to a noise expert, noise is one of the most common forms of sleep disturbance and when sleep disruption becomes chronic, adverse health effects are great. Research shows that intermittent and impulsive noise is more disturbing than continuous noise. The Environmental Protection Agency identified an indoor day-night average sound level (DNL) of 45 dBA (equivalent to a night-time average sound level of 35 dBA) to protect against sleep disturbance.

Noise & Cardiovascular Changes
Studies show that exposure to noise is associated with elevations in blood pressure. There is some disagreement as to whether or not these changes are permanent or temporary. A study reported increased levels of epinephrine and norepinephrine suggesting cardiovascular involvement. Also found was a correlation beyond noise annoyance and adverse cardiovascular effects.

Noise & Gastrointestinal Changes
Studies have linked noise exposure with increased gastric emptying, with increased peristaltic esophageal contraction, as well as increased anxiety. Another study found an increase in the use of antacids and hypnotics, sedatives and antihypertensives in a noisy community, as compared to a quiet community.

Noise & Annoyance
Noise is also a significant source of annoyance. In 1997 study found that nearly seventy percent of the residents surveyed living within the flight corridors reported that they were bothered by aircraft noise and that these noises interfered with daily activities. Further, the subjects who were bothered by aircraft noise were more likely to complain of sleep difficulties and more likely to perceive themselves to be in poorer health.

Noise & Mental Health
We all know the stress created by unwanted sound. Even noise that may not be at hazardous levels to our hearing can make us tense and angry. Consider how irritating the simple dripping of a faucet can be in the middle of the night, let alone more intrusive noises. Studies have found noise to be associated with increased aggression and less helpful behavior. Numerous articles in major newspapers have reported noise disputes leading to violence and in England, the Daily Mirror reported that in the previous six years, 16 people or more were murdered or committed suicide due to chronic noise.

Hearing Conservation in the Workplace
If it is not possible to reduce noise levels in the workplace through engineering and/or administrative controls and when noise exposures are at an eight-hour time-weighted average level of 85 dBA or more, OSHA's Hearing Conservation Amendment 29 CFR 1910.95 requires that the employer implement a five-phase hearing conservation program. The program includes noise monitoring to measure sound levels; hearing testing to obtain baseline measures of employees' hearing as well as annual hearing evaluations; employee training on the impact of noise on hearing, the use and purpose of hearing protection and the results of hearing testing; hearing protection made available for all employees; and recordkeeping of all measurements and testing. To avoid noise-induced hearing loss, OSHA recommends that hearing protection be worn in the workplace when loudness levels and exposure times exceed the allowable standards.

Refer to Safety Meeting Topic Hearing Protection for more information

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<tr>
<td>140 Introduction to Hearing Protection</td>
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<tr>
<td>145 Hearing Protection – HCP (Hearing Conservation Program) &amp; PPE</td>
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