HEARING CONSERVATION

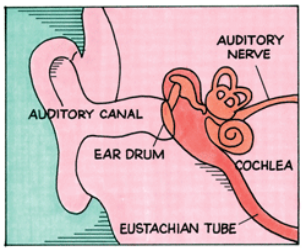
In the past, workers accepted partial hearing loss as a cost of working in a noisy plant. New workers were told by old-timers that they would soon get used to the noise. But times have changed. Noise is now recognized as an occupational hazard that can cause temporary or permanent hearing loss, stress, and other physical problems.

WHERE ARE THE REGULATIONS

Regulations governing the allowable levels of noise and hearing protection requirements for employers to provide employees have been issued by the Occupational Safety and Health Administration (OSHA). The regulations can be found at 29 CFR 1910.95.

HOW DO WE HEAR?

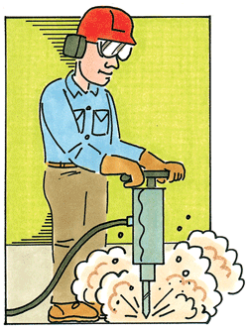
A sound source sends out vibrations into the air. These vibrations are called sound waves. The ear changes the energy in sound waves into nerve impulses which travel to the brain and are then interpreted.



Sound is measured by its frequency and intensity. Frequency is the pitch (high or low) of a sound. High-frequency sound can be more damaging to your hearing than low-frequency sound. Intensity is the loudness of a sound. Loudness is measured in decibels (dB).

Intensity that exceeds an average of 85 dB over an eight-hour day may cause hearing loss. According to OSHA standards, workers may not be exposed to more than an average of 85 dB over an eight-hour period without hearing protection being provided.

DIFFERENT KINDS OF NOISE



In general, there are three types of noise:

- Wide band is noise that is distributed over a wide range of frequencies. Examples are the noise produced in most manufacturing settings and by the operation of most internal combustion engines.
- Narrow band noise is restricted to a narrow range of frequencies. Examples include noise from various kinds of power tools, circular saws, fans, and planers.
- Impulse noise is composed of temporary "beats" that can occur in on-and-off repeating patterns. Jack hammers, or power or punch presses are good examples of tools that cause impulse noise.

HOW DOES NOISE HURT?

How you're affected by noise depends on several things - loudness and frequency, length of exposure, and even your age and health.

A temporary hearing loss can occur from a short exposure to loud noise, but your hearing soon recovers when the noise stops. If the level is high enough for long enough, it can cause permanent hearing loss.

Hearing loss due to noise in the workplace is frequently ignored because it usually takes place over a long period of time and may not be readily apparent until the damage is done. There's no visible wound or other sign of injury.

But, too much noise can cause a variety of problems. It can make you tired and irritable from the strain of talking or trying to listen over loud sounds. You might not be able to hear important work or safety instructions because of excessive noise.

Evidence exists that other physical damage may occur because of the way the body reacts to noise.

Studies link noise with high blood pressure, ulcers, headaches, and sleeping disorders. Add these potential dangers to the obvious damage that noise can do to hearing.

NOISE CAN BE CONTROLLED

If the noise level in your work area is too high, your employer must take additional action to reduce that noise. Steps to reduce noise might include:

- Moving noisy machinery to a separate area away from as many workers as possible, or building a sound barrier around it.
- Placing machinery on rubber mountings to reduce vibration.
- Using sound-absorbing acoustical tiles and blankets on floors, walls, and ceilings.
- Arranging work schedules to cut down on the time each worker spends in a noisy area.

Equipment manufacturers can also design quieter machinery.

However, if workers are still exposed to hazardous levels of noise after controls have been put in place, employers must provide hearing protective devices.

PROTECT YOUR HEARING

Various kinds of hearing protective devices are available for use in the workplace. The selection of the right hearing protection depends on several factors:

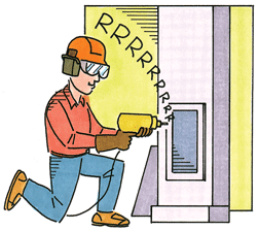
The noise hazard: What noise levels will you be dealing with?

Frequency of the noise: Will it be low pitch or high pitch? (Some earplugs or muffs reduce the force of noise (attenuate) better at lower frequencies than at the higher frequencies.)

Fit and comfort: The protective devices must fit properly and be comfortable enough to wear as long as they are needed.

Noise Reduction Rating or NRR: All hearing protectors carry a label indicating the NRR; a higher number on the label means more effectiveness.

TYPES OF HEARING PROTECTION



Your employer will determine what types of hearing protection devices (HPDs) are needed.

Hearing protectors do not block out sound completely, but they reduce the amount of sound reaching the delicate parts of the ear. By doing so, they offer some protection.

Enclosure

The enclosure type of hearing protection completely surrounds the head like an astronaut's helmet. This type of protection is not too popular due to its cost and discomfort.

Earplugs

Earplugs fit in the ear canal. They come in three forms:

- Custom-molded earplugs are made for specific individuals, molded to the exact shape of that person's ear. Made from soft silicone rubber or plastic, they are reusable.
- Molded inserts often called pre-molded, are also made from soft silicone rubber or plastic. They are reusable and should be kept very clean. Use warm, soapy water to clean them after each use, rinse off the soap, and store them in a clean carrying case.
- Formable plugs are usually made of foam rubber; they are disposable.

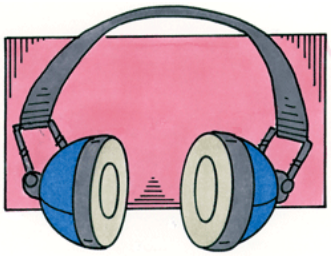
Canal caps

Canal caps (also known as supernatural) seal the external edge of the ear canal to reduce sound. The caps are made of a soft, rubber-like substance and are held in place by a headband. This type of ear protection is a good alternative for those who can't use earplugs or for workers who enter and leave high noise areas frequently during the course of their work day.

Earmuffs

Earmuffs (also known as circumaural) fit over the whole ear to seal out noise. A typical muff is made up of three basic parts - cups, cushions, and headband. The cups are made of molded plastic and are filled with foam or other material. They vary in size and are adjustable. The cushions are covered with plastic and filled with liquid, air, or foam. The headband simply holds the cups against the head. It may be worn over the head, behind the neck, or under the chin.

There are also specialty earmuffs for different job requirements. Dielectric muffs have no metal parts for those workers exposed to high voltages. Electronic earmuffs reduce hazardous noise but magnify wanted sounds like voices. Folding earmuffs are designed for use in situations where protection isn't required full-time but must be quickly available when needed. Cap-mounted muffs are attached directly to hard hats.



HOW EFFECTIVE ARE THEY?

In general, earplugs can reduce noise reaching the ear by 25 to 30 db. Earmuffs can reduce noise 20 to 25 dB Combinations of the two protectors can give 3 to 5 dB more protection. No matter what type of protection device you select, remember that the only effective hearing protector is the one that you wear!

AUDIOMETRIC TESTING IS VITAL

It is very important to keep track of your hearing by having it tested periodically. An audiometric test is a procedure for checking a person's hearing.

A trained technician uses an instrument (an audiometer) to send sounds (tones) through headphones. The person being tested responds to the test sounds when they are first heard. The chart that records responses to the test sounds is called an audiogram.

This test checks hearing ability so that any hearing loss can be identified and dealt with properly and promptly.

WORK AT WORKING SAFELY

You are ultimately responsible for protecting your own hearing. You have the most to lose if you suffer hearing loss as a result of on-the-job noise hazards. Let's review a few important reminders about hearing conservation:

1. Disposable earplugs may be more convenient to use than long-term use plugs, but make sure they fit you correctly so that they will be effective.
2. Employees whose noise exposure equal or exceeds 85 dBA over an eight-hour period are required to have an annual audiometric test to check their hearing.
3. Keep hearing protectors in good operational order with routine maintenance and replacement of defective parts.
4. Don't use homemade hearing protectors such as wadded cotton or tissue paper. They don't work.
5. Wear ear protection at home for any noisy job like operating a chainsaw or using various kinds of shop equipment. And watch the volume on your stereo headphones.

The sounds of everyday life - nature, music, the voices of family and friends - all add pleasure and meaning to our lives. Value them enough to protect your hearing.