



Timber Times

Partners for Healthy Forests

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SPECIAL POINTS OF INTEREST

- Importance of Protecting Our Ears
- Basics
- Hearing Protection Devices
- An Effective Hearing Conservation Program
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Safety Flyer

Hello All,

At the recent CTIA Annual Meeting in May, the board decided to continue the monthly safety flyer. Safety has always been a primary focus for CTIA and it is a critical component to keep our workman comp rates at a reasonable level.

If you have contractors or fellow loggers who are not CTIA members, we would be happy to add them to our list. Our goal is safety industry wide!

If you find an interesting article or an OSHA related issue, please share with me so that I can send to our larger list.

Hope this helps improve your safety program.

Molly

The Colorado Timber Industry Association (CTIA) is an association of small, family-owned businesses committed to logging, processing and performing service work in the forests of Colorado. We are exceptional partners to the public and private stewards of our valuable and beautiful forests. We embrace Best Management Practices (BMPs) and sustainable forestry. To meet these values, we host annual continuing education classes on BMPs and conduct field audits to demonstrate our accountability to high quality, active management designed to promote long term forest health.

Occupation Noise Exposure – The Importance of Protecting Our Ears

Overview

Twenty-two million workers are exposed to potentially damaging noise at work each year. Last year, U.S. businesses paid more than \$1.5 million in penalties for not protecting workers from noise. While it's impossible to put a number to the human toll of hearing loss, an estimated \$242 million is spent annually on workers' compensation for hearing loss disability.

Each of the elements below is critical to understand in order to ensure that workers are being protected where noise levels are unable to be reduced below the OSHA required levels.

Basics

1. How does the ear work?

When sound waves enter the outer ear, the vibrations impact the ear drum and are transmitted to the middle and inner ear. In the middle ear three small bones called the malleus (or hammer), the incus (or anvil), and the stapes (or stirrup) amplify and transmit the vibrations generated by the sound to the inner ear. The inner ear contains a snail-like structure called the cochlea, which is filled with fluid and lined with cells with very fine hairs. These microscopic hairs move with the vibrations and convert the sound waves into nerve impulses—the result is the sound we hear. Exposure to loud noise can destroy these hair cells and cause hearing loss!

2. What is noise?

Noise and vibration are both fluctuations in the pressure of air (or other media), which affect the human body. Vibrations that are detected by the human ear are classified as sound. We use the term 'noise' to indicate unwanted sound. Noise and vibration can harm workers when they occur at high levels, or continue for a long time.

3. What are the warning signs that your workplace may be too noisy?

Noise may be a problem in your workplace if:

- You hear ringing or humming in your ears when you leave work.
- You have to shout to be heard by a coworker an arm's length away.
- You experience temporary hearing loss when leaving work.

4. How loud is too loud?

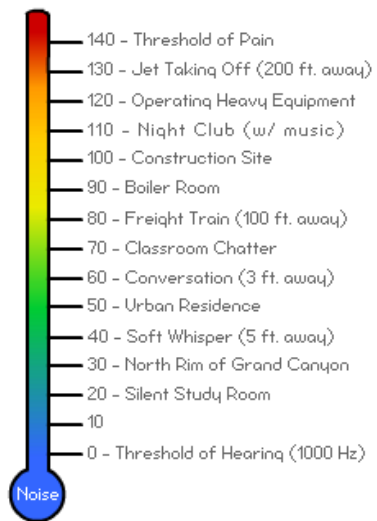
Noise is measured in units of sound pressure levels called decibels, named after Alexander Graham Bell, using A-weighted sound levels (dBA). The A-weighted sound levels closely match the perception of loudness by the human ear. Decibels are measured on a logarithmic scale, which means that a small change in the number of decibels results in a huge change in the amount of noise and the potential damage to a person's hearing.

OSHA sets legal limits on noise exposure in the workplace. These limits are based on a worker's time weighted average over an 8-hour day. With noise, OSHA's permissible exposure limit (PEL) is 90 dBA for all workers for an 8- hour day. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half.

The National Institute for Occupational Safety and Health (NIOSH) has [recommended](#) that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise induced hearing loss. NIOSH has found that significant noise-induced hearing loss occurs at the exposure levels equivalent to the OSHA PEL based on updated information obtained from literature reviews. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA doubles the amount of the noise and halves the recommended amount of exposure time.

In 1981, OSHA implemented new requirements to protect all workers in general industry (e.g. the manufacturing and the service sectors) for employers to implement a Hearing Conservation Program where **workers are exposed to a time weighted average noise level of 85 dBA** or higher over an 8-hour work shift. Hearing Conservation Programs require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protectors in use unless changes to tools, equipment and schedules are made so that they are less noisy and worker exposure to noise is less than the 85 dBA.

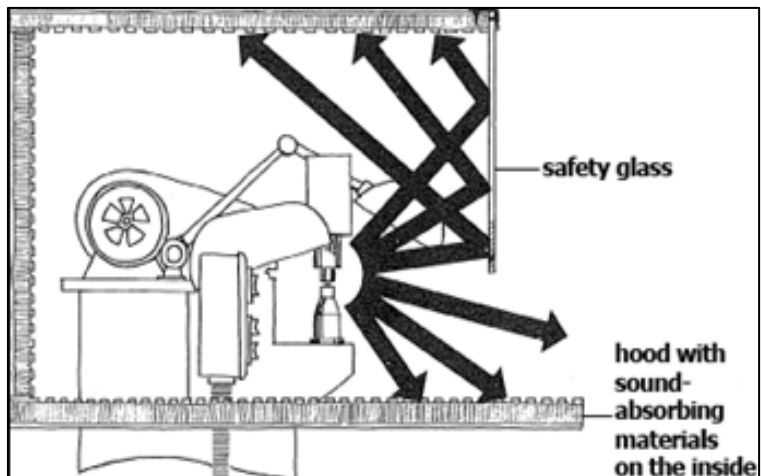
Typical Sound Levels (dBA)



5. What can be done to reduce the hazard from noise?

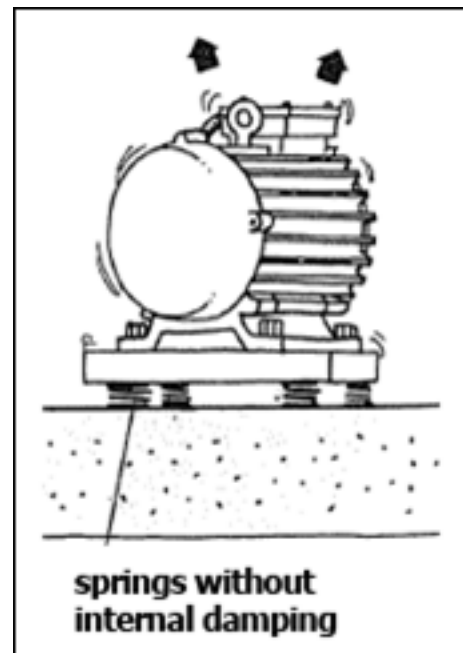
Noise controls are the first line of defense against excessive noise exposure. The use of these controls should aim to reduce the hazardous exposure to the point where the risk to hearing is eliminated or minimized. With the reduction of even a few decibels, the hazard to hearing is reduced, communication is improved, and noise-related annoyance is reduced. There are several ways to control and reduce worker exposure to noise in a workplace.

Engineering controls that reduce sound exposure levels are available and technologically feasible for most noise sources. Engineering controls involve modifying or replacing equipment, or making related physical changes at the noise source or along the transmission path to reduce the noise level at the



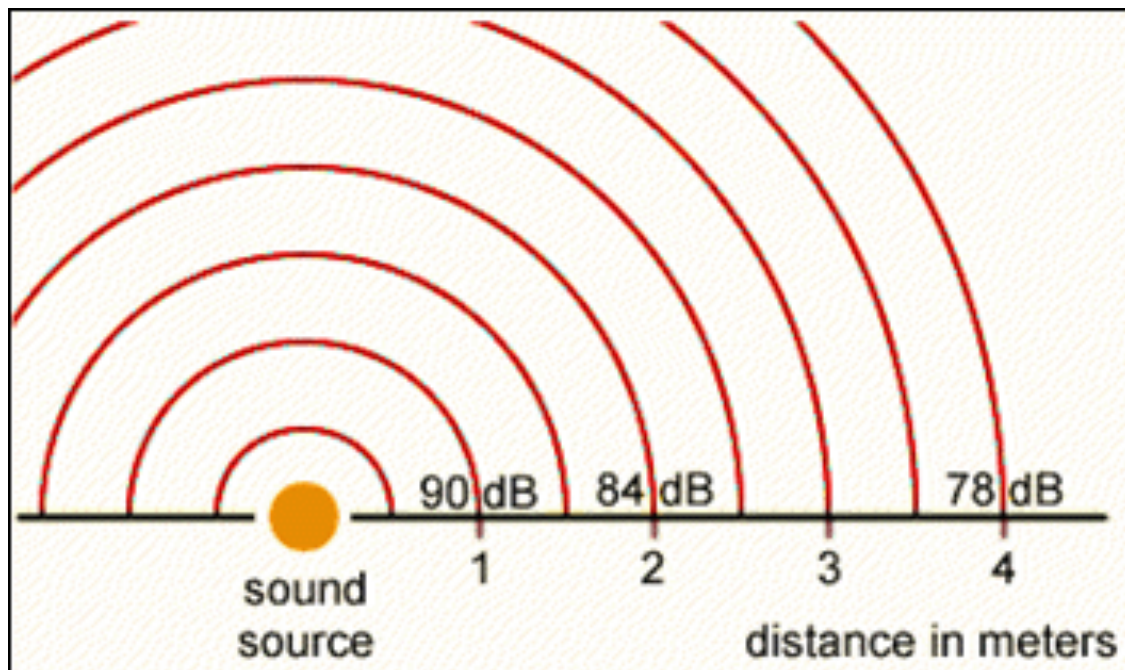
worker's ear. In some instances the application of a relatively simple engineering noise control solution reduces the noise hazard to the extent that further requirements of the [OSHA Noise standard](#) (e.g., audiometric testing (hearing tests), hearing conservation program, provision of hearing protectors, etc...) are not necessary. Examples of inexpensive, effective engineering controls include some of the following:

- Choose low-noise tools and machinery (e.g., [Buy Quiet Roadmap \(NASA\)](#)).
- Maintain and lubricate machinery and equipment (e.g., oil bearings).
- Place a barrier between the noise source and employee (e.g., sound walls or curtains).
- Enclose or isolate the noise source.



Administrative controls are changes in the workplace that reduce or eliminate the worker exposure to noise. Examples include:

- Operating noisy machines during shifts when fewer people are exposed.
- Limiting the amount of time a person spends at a noise source.
- Providing quiet areas where workers can gain relief from hazardous noise sources (e.g., construct a sound proof room where workers' hearing can recover – depending upon their individual noise level and duration of exposure, and time spent in the quiet area).
- Restricting worker presence to a suitable distance away from noisy equipment. Controlling noise exposure through distance is often an effective, yet simple and inexpensive administrative control. This control may be applicable when workers are present but are not actually working with a noise source or equipment. Increasing the distance between the noise source and the worker, reduces their exposure. In open space, for every doubling of the distance between the source of noise and the worker, the noise is decreased by 6 dBA.



Hearing Protection Devices

Hearing protection devices, or HPDs, are the best defense when you are unable to reduce exposure to loud noise levels. When worn properly, hearing protection can greatly reduce the decibel level that reaches your ear. HPDs act as barriers to reduce sound entering the ear. They are very important, in that they decrease the risk of excessive noise exposure and subsequent hearing loss.

3 Basic Types of HPDs

Ear plugs: Ear plugs have several advantages over ear muffs, such as:

- Lighter weight
- Can be worn without interference from eyeglasses, headgear, earrings or hair
- More comfortable in hot/humid environments
- Less expensive than ear muffs

There are several styles of ear plugs, including flanged type and malleable foam. When inserting your ear plugs:

- Before putting ear plugs in, wash your hands to prevent infections from entering the ear.
- Inspect the ear plugs for tears, cracks or hardening.
- To insert a malleable foam plug, roll the plug between your fingers and thumb to make it thinner, making sure there are no wrinkles or creases in the plug.
- Reach one hand behind your head and pull your ear outward and upward to widen the auditory canal. Insert the plug well into the ear and hold it in place until it expands. Don't be afraid to place the plug into the ear canal. You cannot hurt your eardrum because the plugs are too short to reach it. If the seal is not tight, the earplug will not be effective.

Remember to properly clean and store your ear plugs.



HPDs Continued

Ear Muffs: Hearing protection devices that are worn over the head, like headphones. Some advantages of wearing ear muffs include:

- Provide more consistent protection than plugs
- Easy to put on and take off
- Good for short jobs

Disadvantages include:

- Heavier than ear plugs
- May be uncomfortable in hot environments
- Eyeglass wearers may not get a good seal
- More expensive than other types of HPDs
- Resonate (vibrate) at lower sound frequencies



If you wear ear muffs, remember that anything that comes between your ear and the ear muff will make them less effective and reduce your level of protection! Also, you should choose eyewear with thin temples so they don't interfere with the seal. Some ear muffs attach to hard hats to form a good seal when wearing a hard hat (right). Also, when putting on ear muffs, remember to push your hair away from your ears. Center the ear muffs over your head and make sure the seal is tight. Adjust the headband so the ear muffs are resting comfortably on your head. The cups should entirely cover your ears. Before you put on your earmuffs, it is important to inspect them for cracks, tears or other signs of wear.

Canal Caps: Have flexible tips that act as caps, which plug the ear canal. They DO NOT extend into the ear canal, only close the ear opening. Therefore, they do not give you as much protection as ear plugs or ear muffs. Canal caps are ideal for situations where hearing protection must be taken on and off frequently. They are NOT designed for continuous, long-term wearing.



Insert canal caps much as you would ear plugs. Plus the outer ear up and back, then insert the tips of the caps into the ear, firmly pushing and wiggling them into place.

An Effective Hearing Conservation Program

An **effective hearing conservation program** must be implemented by employers in general industry whenever worker noise exposure is equal to or greater than 85 dBA for an 8 hour exposure or in the construction industry when exposures exceed 90 dBA for an 8 hour exposure. This program strives to prevent initial occupational hearing loss, preserve and protect remaining hearing, and equip workers with the knowledge and hearing protection devices necessary to protect them. Key elements of an [effective hearing conservation program](#) include:



- Workplace noise sampling including personal noise monitoring which identifies which employees are at risk from hazardous levels of noise.
- Informing workers at risk from hazardous levels of noise exposure of the results of their noise monitoring.
- Providing affected workers or their authorized representatives with an opportunity to observe any noise measurements conducted.
- Maintaining a worker audiometric testing program (hearing tests) which is a professional evaluation of the health effects of noise upon individual worker's hearing.
- Implementing comprehensive hearing protection follow-up procedures for workers who show a loss of hearing (standard threshold shift) after completing baseline (first) and yearly audiometric testing.
- Proper selection of hearing protection based upon individual fit and manufacturer's quality testing indicating the likely protection that they will provide to a properly trained wearer.
- Evaluate the hearing protectors attenuation and effectiveness for the specific workplace noise.
- Training and information that ensures the workers are aware of the hazard from excessive noise exposures and how to properly use the protective equipment that has been provided.
- Data management of and worker access to records regarding monitoring and noise sampling.

Helpful Links

<http://www.entnet.org/content/noise-and-hearing-protection>

<https://www.totalsafety.com/insights/the-importance-of-noise-protection-in-the-workplace/>

<http://ehstoday.com/hearing-protection/importance-properly-fitting-hearing-protection>

<http://www.oshasafetymanagement.com/blog/noise-importance-hearing-protection-workplace/>

