How loud is too loud for your ears?

Excerpt from Auto Upkeep

Ear Protection

Noise-induced hearing loss (NIHL) is permanent, but also preventable. NIHL can be caused by an intense impulse sound (e.g., fireworks or an explosion), intermittent sounds (those that come and go), or by continuous loud sounds over time (e.g., using an impact wrench).

Factors Affecting NIHL. Factors that affect hearing loss are sound level, distance to the sound, and the exposure time (***Figure 5.21***).

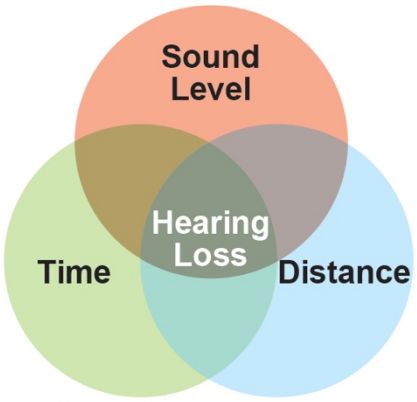

Figure 5.21 ***Factors Affecting NIHL***

Decibel. Sound travels in waves. How loud a sound is depends on the pressure of the sound wave. A unit used to measure sound level is called a decibel (dB). The dB scale is a logarithmic (based on multiplication) scale. A sound at 20 dB has ten times greater pressure than a sound at 10 dB. A sound at 30 dB has 100 times greater pressure than a sound at 10 dB. This means that an impact wrench at 110 dB has 100,000 times the sound pressure than a normal conversation at 60 dB. The problem is that a 10 dB increase may only sound twice as loud in your ears, but it actually represents 10 times the sound pressure.

Sound Level Meter. Sound level meters (decibel meters) can be used to help determine when hearing protection is needed. There are free smartphone apps that can also measure decibel levels. The NIOSH Sound Level Meter App (***Figure 5.22***) is not as accurate as a professional sound level meter, but using it will raise your awareness when protection is needed. This will help you make better decisions about potential hearing hazards.

Figure 5.22 ***NIOSH Sound Level Meter App***

Noise Levels. Noise levels that exceed 85 dB can damage your hearing (***Figure 5.23***).

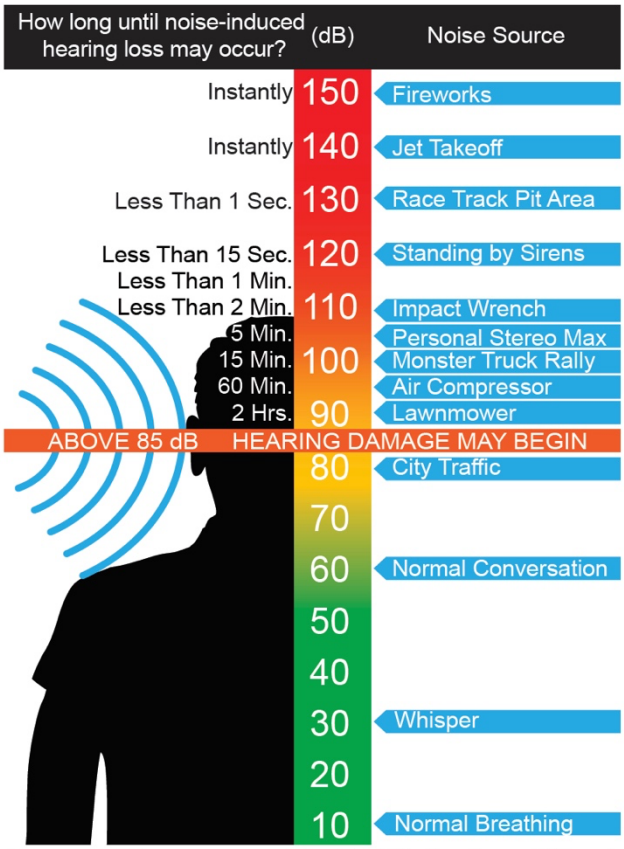

Figure 5.23 ***Decibel Noise Level Chart***

Price Guides

Earmuffs
- $10.00 to $20.00 each

Earplugs
- $1.00 pair

Hearing Protection. Use earmuffs or earplugs (***Figure 5.24***) when the work area exceeds 85 dB (OSHA's acceptable exposure limit).

Figure 5.24 ***Earmuffs and Earplugs***

Inserting Foam Earplugs. To be effective, foam earplugs must be inserted correctly (***Figure 5.25***). Wash your hands first to avoid getting dirt and germs in your ears.

How to Properly Insert Foam Earplugs	
STEP 1	Roll the earplug up into a small, thin "snake" with your fingers. You can use one or both hands.
STEP 2	Pull the top of your ear up and back with your opposite hand to straighten out your ear canal. The rolled-up earplug should slide right in.
STEP 3	Hold the earplug in with your finger. Count to 20 or 30 out loud while waiting for the plug to expand and fill the ear canal. Your voice will sound muffled when the plug has made a good seal.

Figure 5.25 ***Inserting Foam Earplugs***
Source: U.S. Dept. of Health and Human Services - www.cdc.gov

Study Questions

1. What is noise-induced hearing loss?
2. What factors affect hearing loss?
3. What unit of measure is used to identify sound level?
4. How loud is too loud for your ears? When should hearing protection be used?

Activity

How loud is too loud for your ears? Download a Sound Level Meter App to your smartphone or tablet. Use the App to measure different sound decibel (dB) levels around your home and garage. Wear hearing protection when sounds exceed 85 dB. Record your findings on a sheet of paper or in a spreadsheet program such as Microsoft Excel, Apple Numbers, or Google Sheets. Identify sounds that exceed 85 dB.

Available on the App Store

Apple
NIOSH Sound Level Meter → https://apps.apple.com/us/app/niosh-slm/id1096545820

ANDROID APP ON Google play

Android
Sound Level Meter → https://play.google.com/store/search?q=sound%20meter&c=apps&hl=en

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