

## HEARING LOSS PROTECTION FOR AGRICULTURAL WORKERS

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Farm environments and farm equipment can be quite noisy. Tractors, machinery, and animal confinement areas are common sources of loud noise. An agriculture worker exposed to this noise over an extended period of time is more likely to develop serious hearing loss. Knowing the typical sound levels of various sources of sounds will help you to recognize hazardous situations and take precautions to prevent hearing damage.

### TYPICAL NOISE LEVELS

Sound is measured in decibels, designated as dB(A), using a tool called a decibel meter. The decibel meter can be used to identify those noise sources that exceed a safe level. The decibel level chart illustrates the typical noise levels from various sources. For example, while a tractor at idle speed produces about 85 decibels, a tractor at work will produce up to 100 decibels. According to the Occupational Safety and Health Administration, sounds of 85 decibels or higher can damage hearing.

As a general rule, the permissible safe noise exposure decreases as sound levels increase. For example, without adequate hearing protection, a farmer operating a tractor at work (typically generating 100 decibels), may begin to experience hearing loss after only two hours. With each 5-decibel increase, the “safe” exposure time is cut in half.

**DECIBEL LEVEL CHART**

Decibel	Sound
0	Lowest sound audible to the human ear
30	Crickets, distant frogs, whisper
40	Kitten meowing, songbirds, distant dog bark
50	Refrigerator running, babbling stream, quiet empty barn
60	Average conversation level
70	Chicken coop, busy restaurant. At this level, noise may begin to affect your hearing if exposed over a long period of time.
80	Tractor idling, barn cleaner, conveyors, elevators. These noises can damage hearing if exposed for more than eight continuous hours.
90	Tractor at 50 percent load, blower, compressor, combine. As noise levels increase, the “safe” exposure time decreases; damage can occur in less than eight hours.
100	Tractor at 80 percent load, pig squeal, power tools. Even two hours of exposure can be dangerous. With each 5-decibel increase, the “safe time” is cut in half.
120	Tractor at full load, bad muffler, old chain saw. The danger is immediate.
140	Gunshot, backfire, dynamite blast. Any length of exposure time is dangerous. At this level, the noise may actually cause pain in the ear.

### DID YOU KNOW?

It is common for a farmer to lose hearing in one ear faster than the other. Typically, one ear is facing the tractor exhaust or loud towed machinery more than the other as he or she frequently looks back toward the working equipment.

## SAFETY ISSUES

Agricultural workers rely greatly on their ability to hear in order to detect machinery operation problems. For example, experienced mechanics can detect *missing* or misfiring in engines. Tractor operators operating hay balers rely upon sound pitch and sound variations in drive chains as a signal that it's time to oil or lubricate mechanical parts.

The ability to hear is essential for agricultural workers who rely upon verbal communication to avoid placing themselves or coworkers in danger. This is especially important when coworkers share hazardous tasks such as harvesting, loading, and conveying field crops.

Brief periods of excess noise have only minor effects, such as tinnitus (ringing or buzzing in your ears) or muffled hearing for a few hours after leaving work. Repeated exposure to loud noise may cause permanent hearing loss. First, you may have trouble hearing high-frequency sounds like phones ringing or high pitched voices. Next, you may lose speech frequencies, consonants, and then vowels. Finally, all verbal communication, including television, radios, and phone conversations may be difficult to hear.

Exposure to elevated noise is known to cause other health problems. It can cause fatigue, tension, and nervousness. It can also increase pulse rate, increase blood pressure, and narrow blood vessels. Over time, these conditions can stress the heart.

## HEARING PROTECTION

Hearing protection is designed to reduce noise exposure to a safe level. Two types of protection, acoustical muffs and ear plugs, are most common. Acoustical muffs are placed over the ear to provide a sound barrier to the entire ear. Because they do not block out all sound, conversation for instruction or safety purposes can still be heard. Ear muffs will generally reduce decibel levels by 20 to 30 decibels.

Ear plugs are made to fit inside the ear canal, and come in formable or preformed designs. Formable plugs are compressed and placed inside the ear canal where they expand to fit. Preformed plugs come in many sizes and must be selected to fit the individual's ear. Ear plugs typically reduce decibel levels by 26 to 33 decibels. Ear muffs and ear

plugs worn together can add another 3 to 5 decibels of protection.

## NOISE REDUCTION TIPS

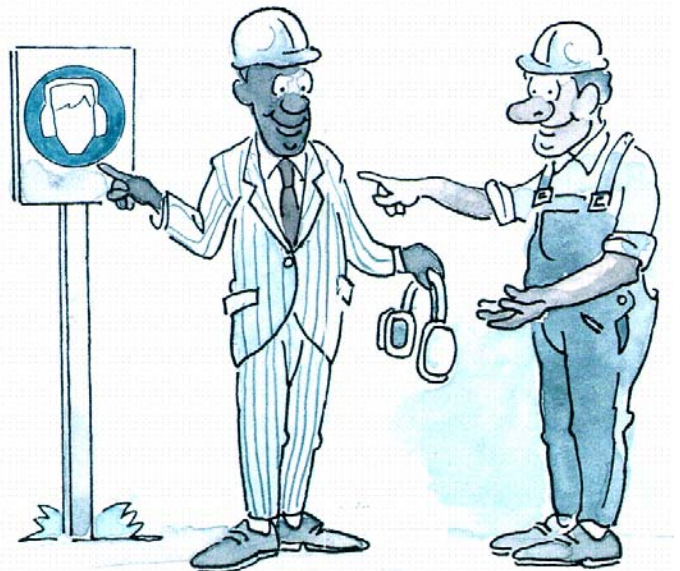
To reduce noise exposure levels on the farm:

- Keep machinery and equipment well lubricated
- Replace defective mufflers and exhaust parts
- Don't use "straight pipe" exhausts for tractors or any other engines
- Enclose noisy machine components
- Build acoustic barriers to loud machines
- Limit the duration of elevated noise exposure
- Stay away from noise when you don't need to control or tend the equipment
- Purchase power tools and equipment such as chain saws and lawnmowers that have built-in noise reduction systems.

Anyone experiencing hearing difficulty should get a hearing test so existing problems can be identified and monitored.

## OSHA HEARING CONSERVATION STANDARD

Employers are required by law to implement a "Hearing Conservation Program" if the noise exposure meets or exceeds an eight-hour time-weighted average of 85 decibels [29 CFR 1910.95(c)].



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