

Hearing Protection & the Shooting Sports



RECREATIONAL SHOOTING FOR HUNTING OR SPORT
purposes is a popular leisure-time activity. In the US, as many as 60 million people engage in shooting activities, with firearm use ranging from a few shots per year for the casual hunter to 10,000 or more shots per year for avid competition shooters.

This pamphlet is intended to provide information to shooters and range operators so that they will understand the potential hazards from sound generated by firearms and the actions they can take to protect their hearing. Exposure to gunfire in close proximity to the ear may result in serious permanent harm to the shooter's hearing. The Environmental Protection Agency (EPA) has estimated that exposure to one impulse noise per day over about 150 decibels has the potential to damage hearing over time. Shooting can generate sound levels approaching and, in some cases, exceeding this number. Hunting activities present unique challenges since the ability to hear all environmental sounds is paramount in hunting activities. Studies show that over 80% of hunters don't use hearing protection devices (HPDs) in the field. However, given the right circumstances exposure to even a single shot can permanently damage your hearing.

The good news is that proper and consistent use of appropriate HPDs will protect your hearing while you participate in the shooting sports.



INTRODUCTION

Noise-induced hearing loss (NIHL) is an irreversible condition that progresses with exposures to high levels of noise. Although hearing ability typically declines with age in all populations, exposure to noise produces hearing loss greater than that resulting from the natural aging process. Unprotected exposure to any loud continuous sound can cause hearing loss over a period of time. Unprotected exposure to loud impulse sounds may cause hearing damage with as little as one exposure.

THE POTENTIAL RISK FROM SHOOTING ACTIVITIES

Sound generated by firearms is categorized as an impulse sound. Although impulse type sound may only last for a few thousandths of a second, the force it can generate has the potential to destroy the delicate tissue in the inner ear if the sound level reaches a critical level. Sound level, however, is not the sole factor in hearing damage. Other factors, including the duration of the shot and the frequency of exposure, also have an effect on hearing loss.

FACTORS THAT INCREASE RISK INCLUDE

- ❖ Shooting in an indoor firing range or from an enclosed structure like a hunting blind can redirect the energy wave back at the shooter, increasing the noise levels reaching the ear.
- ❖ The caliber of the firearm can be a factor as well, as large calibers can generate higher energy sound waves.
- ❖ Short-barreled guns move the muzzle, the source of the sound, closer to the ear increasing the risk.
- ❖ Adding muzzle ports or a muzzle brake increases sound exposure by sending the shock wave back toward the shooter instead of out of the front of the muzzle.
- ❖ The amount of risk can also depend on other factors including ammunition, distance, direction and individual differences so it's best to protect yourself.

Studies show that almost any hearing protector, if used properly and consistently, can prevent noise-induced hearing loss from shooting activities. The only thing you need to do is select the hearing protection device that works best for you – for both fit and features – and make sure you **ALWAYS** use it and use it correctly.

WHAT CAN I DO TO PROTECT MY EARS?

Tips and Guidance to select your hearing protector

Target shooting and hunting activities have different requirements from an HPD.

For target shooting, you want maximum decrease of the sound level, but should also be able to communicate or hear the rangemaster. A trip to the range is frequently a social event, so the ability to converse is important, also. There are specially designed “level-dependent” hearing protectors with a filter or valve mechanism and electronic protectors to let more quiet sounds pass and provide increased protection with louder sounds. While the goal of wearing HPD’s is to protect hearing, there’s an additional significant benefit to wearing hearing protection at the range. The best target-shooters will tell you (and research backs it up) that with better hearing protection, you flinch less and are more accurate.

Because hunting involves listening for approaching game, wearing conventional hearing protectors is often not practical in the field. The level-dependent hearing protector works well for some hunters. A more costly option is to use electronic hearing protective devices.

EACH TYPE OF HPD HAS ADVANTAGES AND DISADVANTAGES, AS LISTED BELOW:

DISPOSABLE FOAM EARPLUGS

Cost	\$\$\$\$\$
Advantages	inexpensive, effective
Disadvantages	easy to misuse, decreases all sound (including conversation)

EAR PLUGS

Cost	\$\$\$\$
Advantages	inexpensive, effective (particularly the custom molded versions)
Disadvantages	decreases all sound (including conversation)

CONVENTIONAL EARMUFF

Cost	\$\$\$\$
Advantages	inexpensive, easiest to use
Disadvantages	larger, less comfortable for long periods of use, foam may collapse over time, decreases all sound (including conversation)

LEVEL-DEPENDENT EARPLUG

Cost	\$\$\$\$
Advantages	allows some conversation, reasonable cost
Disadvantages	decreased ability to hear high-pitched sounds

ELECTRONIC BEHIND-THE-EAR PLUG

Cost	\$\$\$\$
Advantages	lighter and less cumbersome than ear muffs
Disadvantages	wind noise, comfort can vary with user

ELECTRONIC EARMUFF

Cost	\$\$\$\$
Advantages	moderate amplification, allows conversation
Disadvantages	larger, more cumbersome, may be less comfortable, wind noise, poor localization of sounds

ELECTRONIC EARPLUG

Cost	\$\$\$\$\$
Advantages	mild amplification, good protection, best localization of sounds, least wind noise, good comfort (usually custom molded)
Disadvantages	most expensive

For hunting applications, the Noise Reduction Rating or NRR level on the package is not as critical as the other factors such as communication, fit, compatibility, and comfort. For target shooting, a higher NRR is better but the other factors are more important. To decrease the maximum amount of sound reaching the ear, muffs can be worn over plugs.

The most important factor in selecting hearing protection is to choose one you will wear because no matter what the NRR or cost of your hearing protector, if you aren't using it when a shot is fired, it provides no protection at all.

EFFECTS OF NOISE-INDUCED HEARING LOSS ON HEARING AND COMMUNICATION

Noise Induced Hearing Loss (NIHL) is caused by damage to nerve cells of the inner ear and limited medical treatment is typically available. Damage can occur before the condition is clearly recognized. Such impairment is usually severe enough to permanently affect a person's ability to hear and understand speech under everyday conditions. Because NIHL generally involves more hearing loss in high frequencies than in lower, bass ranges, a person with NIHL can usually hear louder, low frequency vowels better than softer, high frequency consonant sounds. This means that although they may be able to hear speech, they may not be able to understand it clearly. For example, the difference between "mine" and "kind", and "time" is very hard for someone with NIHL to pick out.

Often, people with NIHL think that others mumble. People with NIHL sometimes give the impression that they are not listening, when in fact, they just don't understand. Many times people with NIHL also have ringing or roaring in the ears called tinnitus that can be extremely annoying.

HERE ARE A FEW WAYS TO DETERMINE IF GUNFIRE NOISE IS AFFECTING YOUR HEARING:

- ❖ “Fullness” in the ear or muffled sound after shooting
- ❖ Temporary reduced ability to hear speech and quiet sounds
- ❖ Tinnitus or ringing in the ears is a sign of potential damage. If you hear a ringing or rushing sound in your ears after leaving a noisy environment, it was probably too loud.

WHERE TO GO FOR INFORMATION AND HELP

Several organizations can provide useful information on noise-induced hearing loss and shooting activities. These include government agencies such as the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) as well as organizations such as the National Association of Shooting Ranges and the National Hearing Conservation Association. See your audiologist or hearing health professional for more information.





National Shooting Sports Foundation, Inc.

11 Mile Hill Road

Newtown, CT 06470-2359

Tel 203.426.1320

Fax 203.426.1087

www.nssf.org