



DEPARTMENT OF DEFENSE  
**HEARING**  
 CENTER OF  
**EXCELLENCE**



**IT'S A NOISY WORLD. PROTECT YOUR HEARING.**

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## Noise is one of the most common occupational and recreational health hazards.

Excessive noise exposure without proper use of hearing protection is the most common cause of hearing loss in the military. According to a National Institutes of Health report (2014), approximately 26 million Americans, ages 20 to 69, have noise-induced hearing loss (NIHL) related to occupational or recreational noise exposures. Hearing loss caused by noise exposure is permanent.



## Types of Noise

**STEADY-STATE NOISE** can be continuous or intermittent noise that lasts longer than one second. Steady-state noise becomes most hazardous to your hearing when it is 85 decibels for more than eight hours. Higher levels of noise become hazardous with much shorter exposure times.

Hearing protection must be worn when noise is 85 decibels or greater. Both linear and non-linear hearing protection devices can be used to protect against steady-state noise exposures. However, non-linear hearing protection must be used in its linear, or closed, mode setting.



**IMPULSE NOISE** is a high level, short-duration sound energy that lasts for less than one second, such as gunfire or a firecracker. Impulse noise greater than 140 peak decibels is hazardous to your hearing. Both linear and non-linear hearing protection devices can be worn to protect against impulse noise. However, in most situations, a non-linear hearing protection device is preferred to improve communication.



# Types of Hearing Protection



**NOISE MUFFS** have a headband that fits over the top of your head and two tightly fitted ear cups that cover each ear entirely, blocking noise from entering the auditory system. They are best used for intermittent exposure to noise.

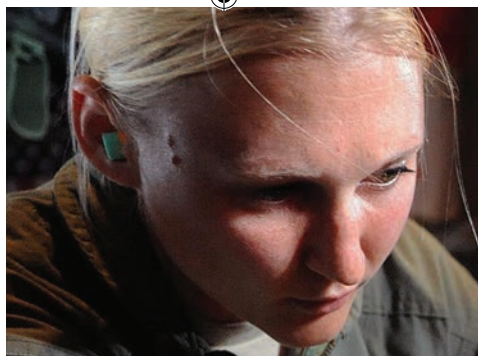
**When wearing noise muffs be aware of:**

- Headband tightness, and
- Ear cup fit

The headband must be tight to maintain a seal around your head. If the headband tension decreases, the noise reduction decreases.

Ear cups that are too small or large cannot create an airtight seal and protect against hazardous noise. Ear cup seals can be added to provide extra protection and comfort. Noise muffs can be uncomfortable to wear in hot climates. In these cases, earplugs may be a better choice.

Ear cups must be replaced if they show cracks and tears, or look worn. If the ear cups can't be replaced, new noise muffs are required.



**LINEAR EARPLUGS** provide protection from steady-state hazardous noise.

**Foam or hand-formed earplugs:**

- Do not require medical fitting
- Are disposable and to be worn once only
- Are appropriate for one-time exposures to hazardous noise, such as at concerts and sporting events

**Triple- and quad-flange earplugs:**

- Require fitting by medically trained personnel
- Are reusable and available in different sizes
- Can be used for both steady-state and impulse noise exposures when effective communication is not required, such as being in engine rooms and mowing the lawn
- Must be examined annually to ensure proper size and fit



**NON-LINEAR EARPLUGS** provide protection from hazardous noise, and in the open mode, allow for effective communication and situational awareness.

**Non-linear earplugs:**

- Require fitting by medically trained personnel
- Are reusable and available in small, medium, and large sizes
- Serve as tactical earplugs for steady-state or impulse noise
- Have a toggle switch that allows you to open and close the earplug
  - When open, they protect against impulse noise hazards, such as weapons fire and blasts
  - When closed, they protect against steady-state noise hazards, such as generators, vehicles, and aircraft

## EARLY WARNING SIGNS OF NIHL INCLUDE:

- You can hear people talking, but have difficulty understanding what they're saying
- You hear buzzing or ringing in your ears
- You have a feeling of "fullness" in your ears after leaving a noisy area, such as a concert venue

In general, the "three-foot rule" can be used as a low-tech approach to determine if noise is hazardous. If you have to raise your voice to be heard by someone standing within three feet of you, you are in a hazardous-noise situation. Hearing protection should be worn.

## SELF-CHECKS FOR GOOD EARPLUG FIT

- ✓ Do a buddy exam and make sure the earplug is well inserted into the ear
- ✓ Ensure that the inner flanges of the earplug are in the ear canal, and the outermost flange completely blocks the ear canal entrance
- ✓ Listen to your voice by counting to five. Your voice should sound deeper and fuller, or muffled, and should be heard in the center of your head
- ✓ Do a “tug test” by gently tugging on the stem or end of the earplug; you should feel resistance when you tug on it
- ✓ Listen to your voice and the sounds around you while cupping your hands over your ears, and then remove your hands; you should not notice a difference in the sound

Remove and reposition the earplugs if more than the outermost flange of your earplug is visible, if your voice is not heard in the center of your head, or if the earplugs come out easily when tugged. After repositioning, try the self-checks again until you have a proper fit.

*It's a noisy world. Protect your hearing.*

For additional information about hearing and hazardous noise, contact your hearing health provider or audiologist, or visit the Hearing Center of Excellence web site.



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The content in this pamphlet is for informational purposes only. The Hearing Center of Excellence does not endorse any specific brand of hearing protection. Visit [gsa.gov](http://gsa.gov) for a complete list of government-approved hearing protection devices (HPDs).



## Proper Insertion Techniques

**To properly insert and use foam earplugs in order to get their full benefit:**

- Wash your hands
- Roll and compress the entire earplug so that it is crease free and small enough to slide easily into your ear canal
- Reach over your head with the hand opposite of the ear being fitted, and pull up and back on your ear to straighten the ear canal
- With your other hand, slide the compressed earplug into your ear canal, as deeply as it fits comfortably
- Then let go of your ear, and the earplug expands to fill your ear canal

**To properly insert triple- or quad-flange, or non-linear earplugs:**

- Reach over your head with the hand opposite of the ear being fitted, and pull up and back on your ear to straighten the ear canal
- With your other hand, grasp the stem of the earplug and gently insert the earplug into your ear canal until the outer flange is coupled against the ear canal opening, and then let go of your ear
- Tug on the stem of the earplug to feel a good airtight seal between your ear canal and the earplugs

To remove these types of earplugs, use a slow, twisting motion to break the airtight seal.



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