

Use and Care of Hearing Protection Devices

by: Ted Madison, MA, CCC-A and Theresa Schulz, PhD, CPS/A, Lt. Col., USAF (Ret)

Purpose

To learn how to properly fit and use hearing protection devices

Chapter Topics

- Earplug Fitting
- Checking the Fit
- Cleaning and Replacement of Earplugs
- Earmuff Fitting
- Listening Check with Earmuffs
- Care and Cleaning of Earmuffs
- Replacement of Earmuffs
- Hearing Protector Modification

Workers learn how to wear **earplugs** in many settings: safety briefings, group training sessions or in an introduction to a job site. Too often, the person providing **hearing protector** training is little more than a dispenser, handing the worker earplugs and saying, “Here, use these around loud noise” or “Stick these in your ears.”

However, numerous studies have shown that the best way for workers to learn about hearing protection is through one-on-one training. Workers need to know not only when and why they should use earplugs but how to use them effectively. This chapter focuses on what trainers need to know to teach workers how to use earplugs effectively.

Figure 14-1 shows the difference in **attenuation** between two fittings of the same earplug in the same worker’s ear on the same day. The horizontal axis is frequency and the vertical axis is the attenuation. The top line (diamonds) shows the attenuation for a very good fit. The lower line (squares) shows a poor fit with no attenuation in the low frequencies due to a leak in the seal of the earplug.¹ In both cases, the earplug appeared to be far enough into the **ear canal** to satisfy a cursory compliance check. But the difference is that a good insertion (ie, the earplug is deeply inserted and achieves a good seal in the ear) is enough to cause an improvement of greater than 30 dB in attenuation. The worker with a bad fit may be lulled into a false sense of protection when he detects slight muffling of

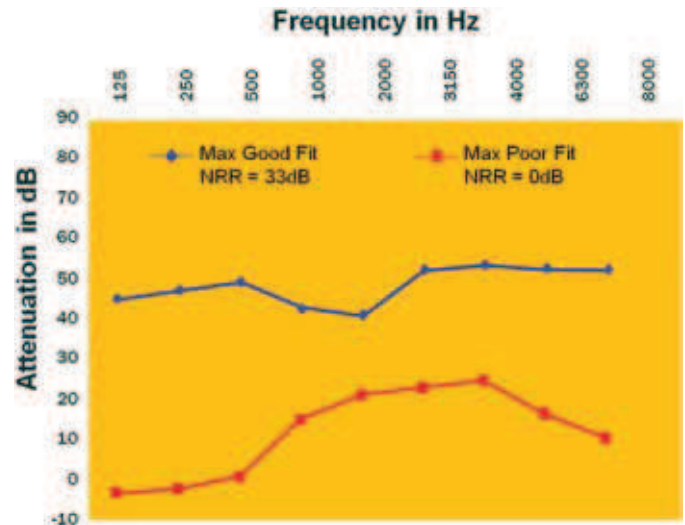


Figure 14-1. Attenuation achieved by a good fit versus a poor fit of a foam earplug in a worker’s ear. A poor acoustic seal provides no attenuation of hazardous low-frequency noise and little attenuation in high frequencies. Courtesy of Honeywell

high-frequency sounds or when some of the “edge” is taken off shrill noise. But because the poor fit has seriously compromised low-frequency protection, the effective overall protection is 0 dB.

Training in any new skill—whether it’s how to use a tool or how to be safe on the job—can be done by presentation or lecture, hands-on training, small-group training, consulting from a distance, informal training or one-on-one training. Studies of the effectiveness of earplugs to block noise reveal that one-on-one training is the most effective method to get a worker to use hearing protection appropriately. One study showed that one-on-one training for workers with very poor attenuation resulted in an average 9-dB improvement in attenuation.²

Earplug Fitting

Achieving good earplug fit is not always easy, and there are several points trainers need to understand in order to use training time well. Before inserting any type of earplug, observe the ear canal. If excessive wax might interfere with the insertion of an earplug, refer the worker to a professional to remediate the problem. There are 3 steps to fitting an earplug: 1) prepare the earplug (for roll-down or foam plugs); 2) open