

Three Steps to Effective Hearing Protection

1) Selection.

Offer a variety of hearing protectors, including a minimum of two types of premolded earplugs; two types of formable earplugs; semi-insert devices; and earmuffs. Identify the HPDs which are appropriate for the individual by considering the noise level, work environment, and the wearer's convenience, communication needs, and pre-existing hearing loss.

2) Fit the Individual.

Not every suitable device will fit the individual comfortably. Starting with the wearer's choice of HPDs, check the fit in each ear to see if the device is a good match for the individual's anatomy. The two

earcanals may differ, so check the fit for both ears. If the device comes in multiple sizes, determine the best size for each ear separately. Ask the wearer to judge

comfort. The best HPDs are the ones that will be worn all day, every day. Comfort is the key to user acceptance.

3) Train, train, train.

Don't just tell the individual how to wear the HPDs — have the wearer demonstrate correct placement of the device. Stress the importance of a good seal for adequate noise reduction, show what a good fit feels and sounds like, and reinforce the need to use HPDs at all times in noise. Teach the wearer how to care for HPDs and recognize when they need to be replaced.

...the best HPD is the one that gets used... comfort is the key!

One Size Does NOT Fit All!

An important and often overlooked part of an effective hearing conservation program is the fitting of hearing protection devices (HPDs).

Although some expandable foam earplugs come close, there is really no such thing as a one-size-fits-all HPD. Each person must be individually evaluated to determine the best match of HPD for their environment, noise exposure, anatomy, and hearing ability.

Individual fitting is also a great opportunity to provide training about the effects of noise and proper use of hearing protection. The individual attention given to the worker during the fitting session can increase the acceptance of HPDs by the user, and can help the user get more protection by learning how a proper fit should feel and sound.

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A practical guide to:

Fitting Hearing Protection



National Hearing Conservation Association

The mission of the National Hearing Conservation Association is to prevent hearing loss due to noise and other environmental factors in all sectors of society.

Tips for Fitting Earplugs and Semi-Inserts

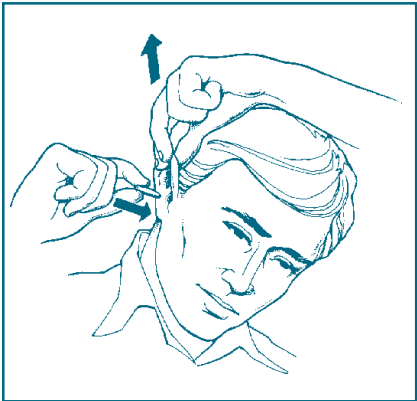
Before fitting earplugs or semi-insert HPDs, examine the employee's earcanals to determine whether any obvious indications of possible medical problems are present. Also check for excess cerumen (ear wax) that might be pushed further into the canal by the insertion of an earplug (in a few instances complete blockage of the

earcanal may have occurred). If these conditions exist, then the employee should wear earmuffs until the problem is corrected.

Examining the ear also enables the fitter to give the employee two additional

vital pieces of information: the orientation of the earcanal (so the wearer will know which direction to start inserting the plug) and which way (if any) to pull the pinna (outer ear) to straighten the earcanal for easier insertion of an earplug (see figure).

The fitter may find it helpful to use a sizing tool to estimate the size of earplug needed. Although an experienced fitter can "eyeball" canal size, manipulating the tool may also help the employee understand which way the earcanal goes.



How Do I Know If It's Working?

Use these field tests to check fitting:

The Tug Test

The fitter can very gently tug back and forth on the handle of the plug. If there is resistance and if the employee feels a sensation of gentle suction on the eardrum, then the earplug has probably achieved a seal. In contrast, if the plug pulls out easily, an adequate seal was not achieved.

The Hum Test

After the fitter has inserted just one earplug, ask the employee to hum or "say ahhh". If one ear is properly sealed (creating the occlusion effect), then the sound of the user's voice will seem louder in the sealed ear. If the employee does not get this sensation, then the earcanal is probably not adequately sealed. Sealing both canals at the same time will cause the voice to be perceived equally in both ears, or in the center of the head.

The Loudness Test

While in a noisy environment with plugs inserted in both ears, cup both hands over the ears. If there is a perceptible difference in the noise level, the HPDs are probably not properly fitted; the HPDs should be blocking enough noise so that putting hands over the ears should not result in a significant difference. Conversely, the perceived noise level should increase markedly as the user breaks the seal of each earplug or raises each cup of an earmuff when in noise.

Tips for Fitting Earmuffs

Although earmuffs can successfully fit a large percentage of hearing protector wearers, the fitter must still check the fit of each individual.

- Does the headband extend or retract enough to position the earmuff cups securely over the pinnas (outer ears)?
- Can the entire pinna comfortably fit inside the earmuff cup?
- Does the cup's cushion seal against the head all the way around the ear, or are there excessive gaps caused by bone structure, bulky eyeglass temples or facial hair?

If significant gaps or leaks are present, then wearing earmuffs can actually increase the level of noise reaching the eardrum. This resonance effect may occur in noise environments with dominant tones in the range of 125-250 Hz from sound sources such as large heating or air conditioning fans. To increase success when issuing earmuffs, be sure to stock models with easily adjustable headbands, adequately

large cup openings, and good cushioning. Check earmuff condition regularly, since cracking and hardening of cushions can cause leaks.

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