**Hearing Protective Device (HPD) Attenuation**

1. This Appendix provides information on how to determine the adequacy of hearing protector attenuation using the noise reduction rating (NRR) of a given hearing protector.
2. Personal Hearing Protection Devices (HPDs) are worn to attenuate occupational noise exposures of employees to within the permissible occupational exposure limits. It is important to carefully assess the protective capability of HPDs before issuing them to noise exposed employees, to ensure they provide sufficient protection, without over-protecting. HPD manufacturers evaluate their products under rigorous laboratory conditions, specified by the American National Standards Institute (ANSI), and products are then labeled with a Noise Reduction Rating (NRR). However, laboratory-obtained real ear attenuation for hearing protectors can seldom be achieved in the workplace. Field use of HPDs does not afford the same degree of protection that is achieved in the laboratory using well-trained subjects under ideal test conditions. The actual effectiveness of an individual hearing protector in the workplace can be closely estimated through a simple calculation process.
3. Field attenuation of HPDs. To estimate the attenuation afforded to a noise-exposed person in an actual work environment by muffs, plugs, or a combination of both, proceed as follows:
4. For plugs or muffs:
   1. Obtain the NRR from the packaging of the HPD.
   2. Subtract 7dB from the NRR to correct for using A-weighted measurements. For C-weighted measurements and peak measurements, no correction is needed here.
5. For dual protection (e.g., plugs and muffs):
   1. Obtain the NRR from the packaging of the HPD.
   2. Subtract 7dB from the NRR to correct for using A-weighted measurements. For C-weighted measurements and peak measurements, no correction is needed.
   3. Then add 5 dB to the field-adjusted NRR to account for the use of the second hearing protector.