

The Value of Ear Plug Fit Testing

Real world results, real world differences

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About Howard Leight®

Howard Leight/Sperian Hearing Protection, LLC, is a leading global provider of passive and intelligent hearing protection solutions, and the founder of the HearForever™ initiative. For over 30 years, Howard Leight has pursued the prevention of occupational hearing loss through innovation in hearing protection design, technology, performance, and comfort, and the promotion of progressive Hearing Conservation Programs. Leading solutions include the highest-attenuating Max® single-use ear plug; patented Air Flow Control™ technology for optimal ear-muff attenuation; QuietDose™ personal in-ear dosimetry; and the industry-changing VeriPRO® ear plug fit testing system.

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Introduction

Although prevention has been the mantra in occupational Hearing Conservation programs over the years, the hoped-for results have not been realized. Despite years of regulation, hours of training, and billions of dispensed ear plugs, the incidence of noise-induced hearing loss (NIHL) in the workplace continues to rise worldwide. In the European Union, NIHL is the most commonly reported occupational injury. Twenty percent of EU workers are exposed to hazardous noise half their working time, and 10% are exposed full time.¹

Safety professionals have a universal challenge in protecting the hearing of their noise-exposed employees: how much protection do their employees actually achieve with their ear plugs?

As rating methods are based upon idealized laboratory conditions, designed to test the capability of the hearing protector, published attenuation ratings like the Single Number Rating (SNR) in Europe have been criticized for being too generous in their estimation of noise reduction (attenuation). Studies indicate that while some workers in real-world worksites achieve the published attenuation on the package, many workers do not. This has led to a variety of inappropriate de-rating methods applied to hearing protection around the world, and has contributed to much confusion in knowing how to accurately estimate a hearing protector's attenuation in real-world use.

Thus, determining if a worker has optimal real-world attenuation for their noise environment is critical to the success of an occupational hearing conservation program.

¹ EU OSHA "Prevention of risks from occupational noise in practice."
<http://osha.europa.eu/en/publications/reports/6905812>

Ear Plug Fit Testing Technology

Through new earplug fit testing technologies, safety managers and workers now have an accurate, real-world picture of hearing protector effectiveness, providing a starting benchmark on which to build their Hearing Conservation practices. First and perhaps foremost, fit testing provides a formal metric from which one can determine whether your employees are receiving optimal protection for their noise environment, require additional training on how to fit their ear plugs, or need to try a different model.

Earplug fit testing benefits both safety managers and employees alike. For the safety manager, it fulfills regulatory requirements for training with documented results. For employees, it demonstrates the importance of proper protection in the workplace, and helps them select and compare protectors to find the best choice for their ears and specific applications.

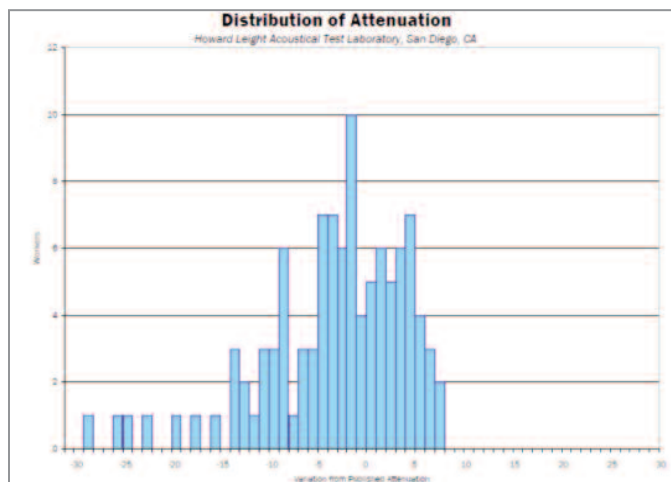
In a recent evaluation, INSPEC International Limited (UK) stated that “the VeriPRO system (from Howard Leight®) appeared to have the potential to aid correct fitting and selection of ear plugs.” Further, INSPEC validated that VeriPRO’s “data demonstrated that it would be a useful tool for ensuring Hearing Conservation within the workplace.”²

Field Attenuation Study

The value of fit testing was evident in a field attenuation study conducted by the Howard Leight Acoustical Laboratory on the performance of hearing protection devices. Conducted on over 100 workers at eight different facilities, the study showed that one-third of workers achieved attenuation higher than the published attenuation for their ear plugs, and that another third achieved attenuation within 5 dB of the published rating. But the lowest one-third of workers had attenuation that was more than 5 dB below published attenuation.³

The study then interviewed the workers who obtained high attenuation values to determine the common factors that contribute to good earplug fit, and hence, good attenuation in use. Only one factor was found to be a consistent predictor of good fit: one-on-one training. That is, the more often a worker had received individual training in the proper use of hearing protectors, the higher the probability of a good fit. The same was not true for group training, such as watching annual training videos or passing out brochures.

The importance of fit testing as a critical element of one-on-one employee training cannot be overstated. No generalized rating scheme for hearing protectors can be effective without knowing how much attenuation individual workers actually attain. If a safety manager were to supply ear plugs based on the assumption that all ear plugs only achieve half



Factors in Achieving Good Attenuation from an Ear Plug

Personal Factors

- Gender
- Age
- Years in Noise
- Ear Canal Size
- Familiarity with Ear Plug
- Model of Ear Plug

Program

- Group Training
- Individual Training

2 INSPEC Report www.hearforever.org/veriproinspecreport

3 Witt, Brad. “Fit Testing of Hearing Protectors.” Occupational Health & Safety, 2 October 2007. <http://ohsonline.com/articles/2007/10/fit-testing-of-hearing-protectors.aspx>

of their published attenuation in the field, then clearly two-thirds of the 100 workers in the study would be seriously overprotected, since they are achieving much higher protection than 50%. Fit testing of hearing protectors bridges the gap between the laboratory estimates of attenuation and the real-world attenuation achieved by workers as they normally wear their protectors.

The National Hearing Conservation Association (NHCA) and the United States Occupational Safety and Health Administration (OSHA) have also endorsed fit testing as a recommended best practice in reducing occupational hearing loss as well as a metric to assess a Hearing Conservation Program's overall effectiveness.⁴

Additionally, fit testing can be an invaluable tool in reducing compensation claims for noise-induced hearing loss at the workplace. Fit testing records can help document that effective steps were taken to select appropriate hearing protectors, train workers in their proper use, and to document a proper fit with a particular protector. This level of powerful documentation has been unavailable to Hearing Conservation programs in the past.

Conclusion

While many occupational Hearing Conservation programs have the best intentions to ensure that workers are using hearing protectors, the ultimate goal is to ensure that workers wear them *properly 100% of the time when exposed to hazardous noise*. Earplug fit testing technology better enables and empowers workers to achieve this goal — and facilitate a life of healthy hearing.

4 OSHA/NHCA Alliance. "Best Practices Bulletin: Hearing Protection — Emerging Trends: Individual Fit Testing."
http://nhca.affiniscap.com/associations/10915/files/AllianceRecommendationForFitTesting_Final.pdf

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Sperian Hearing Protection, LLC, recommends all users of its products undergo thorough training and that all warnings and instructions provided with the products be thoroughly read and understood prior to use. It is necessary to assess hazards in the work environment and to match the appropriate personal protective equipment to particular hazards that may exist. At a minimum, a complete and thorough hazard assessment must be conducted to properly identify the appropriate personal protective equipment to be used in a particular work environment.

 FAILURE TO READ AND FOLLOW ALL PRODUCT WARNINGS AND INSTRUCTIONS AND TO PROPERLY PERFORM A HAZARD ASSESSMENT MAY RESULT IN SERIOUS PERSONAL INJURY, ILLNESS OR DEATH.

For further information on Hearing Conservation topics, contact Sperian Hearing Protection at: 877-937-4776.

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