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Impulse noise reduction for hearing protectors.

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William Murphy

View Affiliations

ABSTRACT

In 2009, the United States Environmental Protection Agency will propose a revision to the federal regulation for the labeling of hearing protection devices, 40 CFR 211 Subpart B. One of the new features of the proposed rule was the measurement of an impulse noise reduction rating for hearing protection devices. Measurement of impulsive sounds is challenging technically from an acoustics perspective. This paper will report on the performance of an acoustic shock tube used to generate impulses between 140 and 170 dB peak sound pressure level. The calibration methods for the microphones will be discussed and the measurements for a variety of hearing protectors will be presented. Typical earmuffs are capable of impulsive noise reduction ratings of between 20 and 35 dB. Earplugs provide similar range of performance. Combinations of earmuff and earplug

have yielded impulse peak reductions of more than 50 dB. The reduction of the impulse peak level should provide a means to predict exposure at the ear when a hearing protector is worn in an impulsive noise environment.