



## Testing Effectiveness of Earmuffs during Construction Tasks while wearing Eye Protection

### Effects of Selected Eyewear on the Noise Insertion Loss of Selected Earmuffs

*Sergio A. Caporali Filho. CPWR Report, January 2015; 41st issue of the Brazilian Occupational Hygiene Journal, Oct-Dec 2015.*

#### Overview

Noise induced hearing loss is a major construction occupational hazard, and OSHA requires the use of hearing protection for workers exposed to hazardous noise levels. In construction, many loud tasks like drilling, cutting and grinding also require that workers don eye protection. Previous studies suggest that the combination of eye protection and earmuffs can reduce the effectiveness of earmuffs by breaking their “seal” around the ear. Researchers measured earmuff performance (Noise Insertion Loss or NIL) provided by three different commercially available earmuffs when study participants were exposed to noise coming from four different power tools, while wearing six different models of eye protection and assuming five different neck postures.

#### Key Findings

- While some earmuff/eye protection combinations showed no statistical reduction in earmuff performance, others combinations reduced earmuff performance by up to 10 dBA.
- Of the six different brands and models of protective eyewear evaluated in this study, the 3M GoggleGear™ Safety Goggle with headband showed the smallest impact on earmuff performance.
- Of the three different brands and models of earmuffs evaluated in this study, the 3M Peltor Optime 98™ over-the-head earmuff was found to provide the highest performance when wearing eye protection.
- Current OSHA standards on hearing protection, based on standardized Noise Reduction Ratings assigned to hearing protection devices, may not provide sufficient information to assess noise exposure risk when workers are wearing eye protection in combination with earmuffs.

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