

effect of non-noise source industrial chemical exposures. This study aimed to evaluate hazardous effects of occupational noise across various exposure levels, additionally in combination with ototoxic chemicals exposure, on hearing disability among workers in Korea.

**Methods** We examined 79,221 employees in 2,770 industries from national health surveillance 2009 on occupational audiological disorders collected by Korea Ministry of Labor. Air-conduction hearing thresholds were computed as a pure-tone average (PTA) of 2, 3, 4 kHz. Occupational noise exposures were measured for every industry. Occupational non-noise exposures (eg heavy metals, organics) were controlled as exposure vs. non-exposure.

**Results** After controlling for potential confounding factors, 10dB increase in occupational noise was associated with a 0.57dB (95% Confidence Interval; 0.41-0.73) elevation of PTA. We found a statistically significant interaction between occupational noise exposure and occupational ototoxic chemicals exposures on PTA ( $p$  for interaction with heavy metals  $<0.0001$ , organics=0.0475).

**Conclusions** Our findings provide the evidence for the association between occupational noise exposure and hearing disability from on-site measurement data across various occupations/industries. This study also suggests that occupational chemical exposures increase the risk of hearing loss, and their ototoxic effects should be considered for establishing the occupational environment monitoring and management plan.

## Poster-discussion: Noise and hearing

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### EFFECTS OF OCCUPATIONAL EXPOSURE TO NOISE AND OTOTOXIC CHEMICALS ON HEARING

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**Objectives** Occupational noise exposure is one of the most common risk factors of irreversible sensorineural hearing loss. With noise exposure, recent studies have introduced ototoxic