

Years in construction workforce, noise, solvents and smoking linked to hearing loss

Hearing loss among older construction workers: Updated analyses

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Overview

Researchers reviewed audiometric data for 19,127 participants in the Building Trades Medical Screening Program (BTMed) for construction workers formerly employed at DOE nuclear energy sites. Using work history interview data, the team developed exposure metrics for noise and solvents, then tested associations between hearing loss, noise and solvent exposure, and other demographic and risk factors.

Key Findings

- Fifty-eight percent (58%) of the study population experienced hearing loss.
- Duration of construction trade work was strongly predictive of hearing loss: workers with more than 30 years in the trade were nearly four times more likely to experience hearing loss than those with less than 10 years.
- Workers who reported workplace exposure to loud or very loud noise 90% of the time were 20% more likely to experience hearing loss than those reporting it less than 50% of the time.
- Workers in the highest quartile of organic solvent exposure were 15% more likely to experience hearing loss than those in the lowest quartile.
- Smokers were 18% more likely to experience hearing loss than nonsmokers.

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See abstract:

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Hearing loss among older construction workers: Updated analyses

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Background: A prior study of this construction worker population found significant noise-associated hearing loss. This follow-up study included a much larger study population and consideration of additional risk factors.

Methods: Data included audiometry, clinical chemistry, personal history, and work history. Qualitative exposure metrics for noise and solvents were developed. Analyses compared construction workers to an internal reference group with lower exposures and an external worker population with low noise exposure.

Results: Among participants ($n = 19\,127$) an overall prevalence of hearing loss of 58% was observed, with significantly increased prevalence across all construction trades. Construction workers had significantly increased risk of hearing loss compared to reference populations, with increasing risk by work duration. Noise exposure, solvent exposure, hypertension, and smoking were significant risk factors in multivariate models.

Conclusions: Results support a causal relationship between construction trades work and hearing loss. Prevention should focus on reducing exposure to noise, solvents, and cigarette smoke.

KEYWORDS

construction trades, hypertension, noise induced hearing loss, smoking, solvents

1 | INTRODUCTION

Excess noise exposure among construction workers and high rates of noise induced hearing loss among these workers is well documented.^{1,2} Studies in Washington State found that excessive noise exposures are common in the construction trades^{3,4} and the rate of hearing loss claims is approximately five times higher than the average rate for all industries combined.⁵ In the past decade research has been conducted that also supports a link between organic solvents and hearing loss as well.⁶

The Building Trades Medical Screening Program (BTMed) has previously reported on audiometric testing results among program participants.⁷ The prior report covered 3510 BTMed hearing evaluations through March 31, 2003 at three Department of Energy (DOE) nuclear weapons facilities (Hanford Nuclear Reservation, Oak Ridge (X10, Y12, and K25), and the Savannah River Site). The BTMed program has been expanded to cover 34 DOE sites since the prior report.

This report updates our previous analyses by inclusion of many additional sites and hearing evaluations. Additionally, a qualitative measure of worker exposures to organic solvents was developed based on exposure assessments developed for a case-control study of COPD among this worker population.⁸

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