

Surveillance of Hearing Loss Among Older Construction and Trade Workers at Department of Energy Nuclear Sites

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Background Medical screening programs at three Departments of Energy (DOE) nuclear weapons facilities (Hanford Nuclear Reservation, Oak Ridge, and the Savannah River Site) have included audiometric testing since approximately 1996. This report summarizes hearing evaluations through March 31, 2003.

Methods Occupational examinations included a medical history, limited physical examination, and tests for medical effects from specific hazards, including audiometric testing. Hearing thresholds by frequency for DOE workers were compared to age-standardized thresholds among an external comparison population of industrial workers with noise exposures <80 dBA. Multivariate analyses were used to explore the risk of hearing impairment by duration of construction trade work and self-reported noise exposure, while controlling for potential confounders such as age, race, sex, smoking, elevated serum cholesterol, hypertension, solvent exposures, and recreational noise exposures.

Results Hearing thresholds among DOE workers were much higher than observed in a comparison population of industrial workers with low noise exposures. Overall, 59.7% of workers examined were found to have material hearing impairment by NIOSH criteria. Age, duration of construction work, smoking, and self-reported noise exposure increased the risk of hearing loss. The risk of material hearing impairment was significantly elevated for construction trade workers compared to the external comparison population (odds-ratio = 1.6, 95% CI = 1.3–2.1) and increased with the duration of trade work.

Conclusions These medical screening programs confirm worker concerns about risks for hearing loss and the need for hearing conservation programs for construction workers, with emphasis on the prevention of noise exposures. Am. J. Ind. Med. 48:348–358, 2005. © 2005 Wiley-Liss, Inc.

KEY WORDS: DOE; Hanford; Oak Ridge; Savannah River; noise; construction; trades; hearing loss; audiometry; surveillance

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Contract grant sponsor: U.S. Department of Energy through cooperative agreement; Contract grant numbers: DE-FC03-96SF21262, DE-FC03-97SF21514, DE-FC03-96SF21263.

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Accepted 26 July 2005

DOI 10.1002/ajim.20217. Published online in Wiley InterScience (www.interscience.wiley.com)