## Screening for Beryllium Disease Among Construction Trade Workers at Department of Energy Nuclear Sites

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**Background** To determine whether current and former construction workers are at significant risk for occupational illnesses from work at the Department of Energy's (DOE) nuclear weapons facilities, screening programs were undertaken at the Hanford Nuclear Reservation, Oak Ridge Reservation, and the Savannah River Site.

**Methods** Medical examination for beryllium disease used a medical history and a beryllium blood lymphocyte proliferation test (BeLPT). Stratified and multivariate logistic regression analyses were used to explore the risk of disease by age, race, sex, trade, duration of DOE employment, reported work in buildings where beryllium was used, and time since last DOE site employment.

**Results** Of the 3,842 workers included in this study, 34% reported exposure to beryllium. Overall, 2.2% of workers had at least one abnormal BeLPT test, and 1.4% were also abnormal on a second test. Regression analyses demonstrated increased risk of having at least one abnormal BeLPT to be associated with ever working in a site building where beryllium activities had taken place.

**Conclusions** The prevalence of beryllium sensitivity and chronic beryllium disease (CBD) in construction workers is described and the positive predictive value of the BeLPT in a population with less intense exposure to beryllium than other populations that have been screened is discussed. The BeLPT findings and finding of cases of CBD demonstrate that some of these workers had significant exposure, most likely, during maintenance, repair, renovation, or demolition in facilities where beryllium was used. Am. J. Ind. Med. 46:207–218, 2004. © 2004 Wiley-Liss, Inc.

KEY WORDS: DOE; Hanford; Oak Ridge; Savannah River; beryllium; construction trades; chronic beryllium disease; blood lymphocyte proliferation test; surveillance

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## BACKGROUND

In 1993, Congress added Section 3162 to the Defense Authorization Act, calling for the Department of Energy (DOE) to determine whether workers within the nuclear weapons facilities were at "significant risk" for work-related illnesses and if so, to provide them with medical surveillance. DOE initially established six pilot programs, including three programs directed at construction workers at the Hanford Nuclear Reservation in Richland, WA; the Oak Ridge Reservation in Oak Ridge, TN; and the Savannah River Site (SRS) in Aiken, SC.