

Indoor radon and lung cancer risk in connecticut and utah.

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Abstract

Radon is a well-established cause of lung cancer in miners. Residents of homes with high levels of radon are potentially also at risk. Although most individual studies of indoor radon have failed to demonstrate significant risks, results have generally been consistent with estimates from studies of miners. We studied 1474 incident lung cancer cases aged 40-79 yr in Connecticut, Utah, and southern Idaho. Population controls (n = 1811) were identified by random telephone screening and from lists of Medicare recipients, and were selected to be similar to cases on age, gender, and smoking 10 yr before diagnosis/interview using randomized recruitment. Complete residential histories and information on known lung cancer risk factors were obtained by in-person and telephone interviews. Radon was measured on multiple levels of past and current homes using 12-mo alpha-track etch detectors. Missing data were imputed using mean radon concentrations for informative subgroups of controls. Average radon exposures were lower than anticipated, with median values of 23 Bq/m³ in Connecticut and 45 Bq/m³ in Utah/southern Idaho. Overall, there was little association between time-weighted average radon exposures 5 to 25 yr prior to diagnosis/interview and lung cancer risk. The excess relative risk (ERR) associated with a 100-Bq/m³ increase in radon level was 0.002 (95% CI -0.21, 0.21) in the overall population, 0.134 (95% CI -0.23, 0.50) in Connecticut, and -0.112 (95% CI -0.34, 0.11) in Utah/Idaho. ERRs were higher for some subgroups less prone to misclassification, but there was no group with a statistically significant linear increase in risk. While results were consistent with the estimates from studies of miners, this study provides no evidence of an increased risk for lung cancer at the exposure levels observed.