

Occupational exposure to crystalline silica and the risk of lung cancer in Canadian men

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Crystalline silica is a recognized carcinogen, but the association with lung cancer at lower levels of exposure has not been well characterized. This study investigated the relationship between occupational silica exposure and lung cancer and the combined effects of cigarette smoking and silica exposure on lung cancer risk. A population-based case-control study was conducted in eight Canadian provinces between 1994 and 1997. Self-reported questionnaires were used to obtain a lifetime occupational history and information on other risk factors. Occupational hygienists assigned silica exposures to each job based on concentration, frequency and reliability. Data from 1681 incident lung cancer cases and 2053 controls were analyzed using logistic regression to estimate odds ratios (OR) and their 95% confidence intervals (CI). Models included adjustments for cigarette smoking, lifetime residential second-hand smoke and occupational exposure to diesel and gasoline engine emissions. Relative to the unexposed, increasing duration of silica exposure at any concentration was associated with a significant trend in lung cancer risk (OR ≥ 30 years: 1.67, 1.21–2.24; $p_{\text{trend}} = 0.002$). The highest tertile of cumulative silica exposure