

EXPOSURE TO METALWORKING FLUIDS AND RISK OF BLADDER CANCER

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Background and Aims: Many studies have observed an excess bladder cancer risk among metalworkers that is thought to be due to metalworking fluid (MWF) exposure. We used data from a large population-based case-control study in New England to examine the association between MWF exposure and bladder cancer risk.

Methods: Lifetime occupational histories were obtained from 1,158 patients (895 men, 263 women) newly diagnosed with bladder cancer in 2001-2004 in Maine, New Hampshire, and Vermont, and from 1,402 population controls (1,031 men, 371 women). Participants who reported jobs titles or tasks suggesting metalworking activities were administered detailed questionnaires. An industrial hygienist blinded to case/control status used this information to assess the probabilities of exposure (certain [probability=1], probable [>0.5 - <1.0], possible [>0 - <0.5]) to straight, soluble, and synthetic MWFs. Unconditional logistic regression was used to calculate odds ratios (ORs) and 95% confidence intervals (CIs), adjusted for demographic factors, smoking, and employment in other high-risk occupations.

Results: Compared to men never exposed to MWF, those with certain exposure to MWF (67 cases, 52 controls) had a significantly increased bladder cancer risk (OR=1.7, CI=1.1-2.6). The OR decreased to 1.3 (CI=0.9-2.0) if the exposure was probable (55 cases, 59 controls), and to 1.1 (CI=0.8-1.6) for possible exposure (108 cases, 125 controls). Men with certain exposure to straight MWF had a significant two-fold risk compared to men with no MWF exposure (CI=1.3-3.3); the OR decreased to 1.3 (OR=0.6-2.9) for probable exposure and 1.2 (CI=0.9-1.5) for possible exposure. For soluble MWF, the ORs were 1.5 (CI=0.9-2.4), 1.5 (CI=0.98-2.3), and 1.1 (CI=0.8-1.5) for certain, probable, and possible exposure, respectively.

Conclusions: Use of MWF, particularly straight MWF, was associated with a significantly increased risk of bladder cancer among men. Ongoing assessments of the probability, intensity, frequency, and duration of exposure to straight, soluble, and synthetic MWF will further inform this analysis.