

however, such as for female textile workers and cleaners, where we observed an increased risk of mesothelioma without evidence of exposure to asbestos.

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276 OCCUPATION, INDUSTRY, AND THE RISK OF PROSTATE CANCER: A CASE-CONTROL STUDY IN MONTRÉAL, CANADA

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Introduction Prostate cancer (PCa) is the most common cancer among Canadian men. Age, a family history of PCa and ancestry are the only recognised risk factors, but a role for environmental influences is suspected.

Objective To explore the relationship between occupational and industry titles, and PCa risk.

Methods PROtEuS (*Prostate cancer & Environment Study*) is a case-control study of PCa in Montréal, Canada including some 2000 cases and 2000 population controls aged 40–75 years. Detailed occupational histories were elicited through in-person interviews. Unconditional logistic regression was used to estimate odds ratios (OR) and 95% confidence intervals (CI) for the association between PCa and employment in 98 occupations and 74 industries. Models were adjusted for age, ancestry, family history of PCa, PCa screening, income and physical activity.

Results Elevated PCa risks were found for social sciences workers (OR 1.9; 95% CI 1.1–3.4) and metal product fabricators (OR 3.4; 95%CI 1.3–9.3) employed \geq 10 years, and for non-construction painters (OR 3.4; 95% CI 1.3–9.0) and plumbers and steamfitters (OR 2.4; 95%CI 1.1–5.4) employed < 10 years. Reduced risks were observed for farmers (OR 0.6; 95%CI 0.4–0.9) and food services workers (OR 0.6; 95% CI 0.4–0.9) employed < 10 years, and for physical scientists employed \geq 10 years (OR 0.6; 95% CI 0.5–0.9). Workers in public service, wood products, and jewellery industries had excess PCa risks. Those in agriculture, miscellaneous food, accommodation and food, air transport, and retail trade industries had reduced risks. Analyses including all subjects, or stratified according to white or blue collar status generated consistent findings.

Conclusions Our findings suggest excess PCa risks in some metal-related occupations, as well as in white-collar occupations such as in public service and social sciences. Farmers and food services workers had reduced risks. Specific occupational exposures possibly underlying these associations will be explored.

277 THRESHOLD VALUE ESTIMATION FOR RESPIRABLE QUARTZ DUST EXPOSURE AND SILICOSIS INCIDENCE IN THE GERMAN PORCELAIN WORKER COHORT

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Objectives To estimate a threshold value tau for the respirable quartz dust concentration and silicosis incidence (1/1, ILO 1980/

2000) in the German porcelain worker cohort (Birk *et al* 2009, 2010, Mundt *et al* 2011).

Methods 17,144 porcelain workers (128,688 person-yrs) were followed for silicosis incidence (40 cases). Respirable quartz dust exposure was determined by combining detailed individual employment histories with a job exposure matrix based on 8,000 historical industrial hygiene measurements. Cox regression with age as the time variable was used to evaluate silicosis morbidity by log (cumulative quartz dust exposure + 0.01 mg/m³-yrs) time-dependently, controlling for sex and smoking status. Curvature of the relationship was explored by restricted cubic splines (RCS, \leq 7 knots) and fractional polynomials (FP, degrees \leq 5). Estimation of tau was performed by subtracting a series of candidate values from the annual concentration data (setting the result to zero if negative) and recalculation of the time-dependent cumulative exposures. The partial likelihood profile was used to derive point and 95%-confidence interval (CI) estimates. Non-nested models were compared by information criteria (AIC). Lagging exposures by 10 years, using different offsets in the log-function (0, 0.1, 1 mg/m³-yrs) and varying sets of covariates were explored.

Results We estimated tau = 0.25 mg/m³ (0.95-CI: 0.15 mg/m³, 0.30 mg/m³). Applying this estimated concentration threshold led to lower degree optimal FPs and returned pronounced better fits (AIC > 5) in log-linear Cox models, 5-knots RCS Cox models and 2-degree FP Cox models. The overall exposure-response could be appropriately described by a Cox model on log (unlagged cumulative exposure + 0.01 mg/m³-yrs) after applying tau = 0.25 mg/m³.

Conclusions A threshold Cox model fitted the data significantly better than a non-threshold model and summarised the cohort information without a loss in extracted information and much more simply than the curvilinear procedures (RCS, FP).

278 MORTALITY PATTERNS IN A COHORT OF 70,000 WORKERS WITH BLOOD LEAD MEASUREMENTS

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Objectives To determine whether adult lead exposure is associated with cause-specific mortality in a cohort with measured blood leads

Methods We studied 70,000 US adults from 11 states with blood lead levels measured between 1980–2005. Most were exposed occupationally. One-third had a single blood lead; the remainder had a median of 3 blood leads. Subjects were divided into four groups by highest blood lead (0–5, 6–24, 25–39, 40 + mg/dl; 16%, 33%, 34%, and 17% respectively).

Results Analyses were restricted to males (96% of deaths). There was a strong healthy worker effect in this young cohort (SMR all causes 0.73, 3561 deaths, US referent). Most cause-specific SMRs were unremarkable. The male lung cancer SMR showed a trend of increase across lead categories (SMRs 0.49, 0.61, 0.80, 1.21, 394 deaths, test for trend p = 0.003). With the lowest lead category as referent in Poisson regression, lung RRs were 1.00, 1.27, 1.80, and 2.85 by increasing lead category (test for trend p = <0.0001). Other smoking-related causes of death did not show consistent trends (eg., male COPD male SRRs 1.00, 0.21, 0.44, 0.63 (n = 129), male esophageal cancer SRRs 1.00, 1.29, 0.98, 1.43 (n = 40). There was a marked excess of ALS in