

Poster Presentation

Cancer

0140 BREAST CANCER INCIDENCE AND METALWORKING FLUID EXPOSURE IN A COHORT OF FEMALE AUTOWORKERS

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Breast cancer is the leading cancer diagnosed among women and environmental studies have produced few leads on modifiable risk factors. Following an Institute of Medicine recommendation for occupational studies of highly exposed women, we took advantage of an existing cohort of 4503 female hourly autoworkers exposed to metalworking fluid (MWF), complex mixtures of oils and chemicals widely used in metal manufacturing worldwide. Cox proportional hazards models were fit to estimate hazard ratios (HR) for incident breast cancer and cumulative exposure (20 year lag) to straight mineral oils (a known human carcinogen), and water-based soluble and synthetic MWF. Because the state cancer registry began in 1985, decades after the cohort was defined, we restricted analyses to sub-cohorts hired closer to the start of cancer follow-up. Among those hired after 1969, the HR associated with an increase of one interquartile range in straight MWF exposure was 1.13 (95% confidence interval: 1.03, 1.23). In separate analyses of premenopausal breast cancer, as defined by age at diagnosis, the HR was elevated for exposure to synthetic MWF, chemical lubricants with no oil content, suggesting a different mechanism for the younger cases. This study adds to the limited literature regarding quantitative chemical exposures and breast cancer risk.

Oral Presentation

Specific Occupations

0142 LONGER TERM PHYSICAL HEALTH AND WELLBEING IN AUSTRALIAN GULF WAR VETERANS, 20 YEARS AFTER DEPLOYMENT

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Background Ten years after the 1990–1991 Gulf War (GW), Australian veterans were found to have significantly poorer psychological health and some indicators of poorer physical health.

Methods A cohort of GW veterans and matched military comparison group were assessed at baseline (2000–2002) and follow-up (2011–2012), including a 63-item symptom checklist, modified CDC definition of multisymptom illness (MSI), doctor-diagnosed medical conditions since 2001, chronic fatigue and neurological symptom questionnaires. Additional measures e.g. irritable bowel syndrome (IBS) were included at follow-up.

Results From baseline, 715/1,330 veterans (54%) and 675/1,449 comparison group (47%) participated at follow-up. Relative to comparison group, GW veterans reported a higher average number of symptoms (ratio of means 1.36, 95% CI 1.24–1.48), higher prevalence of MSI (risk ratio RR 1.60; 1.31–1.95), chronic fatigue RR 1.41 (1.02–1.96), IBS RR 1.64 (1.18–2.27) and 6/40 medical conditions. GW veterans were significantly more likely to report ≥ 1 RR 1.13 (1.03–1.25) or ≥ 4 RR 1.32 (1.07–1.64) neuropathic symptoms. From baseline to follow-up, overall, symptom prevalence and MSI increased and remained higher in GW veterans; the gap between GW veterans' and comparison group symptomatology remained unchanged; chronic fatigue prevalence more than doubled in both groups, and there was a non-significantly greater incidence of chronic fatigue in GW veterans.

Conclusions These findings indicate enduring increased health symptoms and longer term adverse physical health outcomes associated with GW service, and highlight the importance of effective detection and management of chronic physical conditions and improved awareness among health practitioners of conditions occurring more commonly in veterans.

Poster Presentation

Exposure Assessment

0143 A 10 YEAR PROSPECTIVE STUDY OF TONER HANDLING WORKERS

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Purpose To measure the risk of pulmonary disease due to toner dust exposure, in a 10 year prospective cohort study among toner handling workers.

Methods Subjects that were included in the analysis of this study were 260 male employees of a Japanese photocopier, printer and toner production company. Onset of pneumoconiosis, pulmonary fibrosis, granulomatous pneumonia and lung cancer were assumed as endpoints of the investigation, and blood markers (KL-6, SP-D), respiratory function index and the chest CT shadow reading were used as substitute end-points for before the onset of these diseases. Disease onset was determined via a self-administered questionnaire, blood tests and respiratory function tests were conducted once a year, while Chest CT examinations were conducted in the 1st, 5th and 10th year of the study. Subjects were classified by duration of toner handling work into four groups - long-exposure (>20 years): n=65 (mean 40 years, smoking rate 35%); medium-exposure (10–20 years): n=71 (mean age 31.9 years, smoking rate 47.9%), and short-exposure (<10 years): n=50 (mean age 31.6 years, smoking rate 46%). The average dust levels in the environment of the toner handling work decreased well below the ACGIH allowable concentrations through the period of the study.

Results None of the endpoint diseases developed in any of the four groups. Annual percent change for blood marker and respiratory function levels, and chest CT parameters were compared across the four groups but no statistical significance was seen.