

number of flights per day (adjusted OR 2.0, 95% CI 1.2–3.3 for 3+ versus 1 flights/day, p trend = 0.007) and fewer time zones crossed per flight (adjusted OR 2.0, 95% CI 1.0–3.7 for 0 vs. 2 + time zones/flight, p trend = 0.04) were associated with a higher rate of endometriosis.

Conclusions The rate of endometriosis increased with number of flights and decreased with time zones crossed, which might be surrogates for exposures specific to flying a series of short flights during the workday.

0117 **NONMALIGNANT DISEASE MORTALITY AMONG STYRENE, FIBREGLASS, AND WOOD DUST EXPOSED WORKERS IN THE REINFORCED PLASTIC BOATBUILDING INDUSTRY**

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Objectives To further evaluate the association of styrene, fibre-glass, and wood dust exposure with non-malignant diseases, we extended follow-up through 2008 for 5203 workers exposed to styrene, fibre-glass, and wood dust between 1959 and 1978 at two boat building plants.

Method We used a person-years analysis program, LTAS.NET to compute standardised mortality ratios (SMRs) using Washington State and U.S. rates, standardised rate ratios (SRRs), and 95% confidence intervals. SMRs were stratified by exposure category (low or high) and duration of employment category (≤ 1 year, 1+ years).

Results Overall, 1206 nonmalignant deaths occurred (WA SMR 1.14, CI 1.08–1.21), with excess mortality for chronic obstructive pulmonary disease (COPD) overall ($n = 112$, WA SMR 1.61, CI 1.32–1.93), and among 2063 workers highly exposed to styrene and fibre-glass ($n = 39$, WA SMR 2.37, CI 1.69–3.25). Results were similar using U.S. mortality rates. Workers employed for less than one year had statistically significant increased mortality from several lifestyle-related outcomes (alcoholism, ischaemic heart disease, cirrhosis, accidental poisoning and homicide).

Conclusions The excess COPD mortality in this cohort is difficult to interpret. Recent reports associate styrene/fibre-glass reinforced plastic manufacturing with another respiratory disease - bronchiolitis obliterans. Based on a review of COPD death certificates, bronchiolitis obliterans does not appear to be a contributing factor for excess COPD mortality. The COPD excess in this study points to a need for an in-depth investigation of respiratory disease and occupational styrene exposure. Short term worker results are consistent with other occupational cohort studies.

0119 **SHIFT WORK, LONG WORKING HOURS, AND PHYSICAL LABOUR IN RELATION TO MENSTRUAL FUNCTION: THE NURSES' HEALTH STUDY 3**

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Objectives We investigated associations between nursing occupational exposures and menstrual cycle regularity and cycle length.

Method Cross-sectional data were collected in 2010–2012 from 6309 nurses aged 21 to 45 from the Nurses' Health Study 3. We used multivariable regression modelling to analyse the associations between occupational exposures and prevalence of irregular cycles and long and short cycle lengths.

Results Cycle length was recorded as <21 days (1.5%), 21–25 days (15.6%), 26–31 days (69.7%), and 32–50 days (13.2%). In addition, 19% of participants reported irregular cycles. Working more than 41 h/week was associated with a 16% [95% confidence interval (CI): 4–29%] higher prevalence of irregular cycles and a higher prevalence of very short (<21 day) cycles [prevalence odds ratio (OR) 1.93, 95% CI: 1.24–3.01]. Irregular menstrual cycles were more prevalent among women working nights only (32% higher) or rotating nights (27% higher), and their prevalence was associated with the number of night shifts per month (p for trend <0.0001). Rotating night shift was also associated with long (32–50 day) cycles (OR 1.28, 95% CI 1.03–1.61). In addition, heavy lifting was associated with a higher prevalence of irregular cycles (34% higher), and the prevalence of cycles <21 days and 21–25 day cycles increased with increasing amount of heavy lifting at work (p for trend <0.02 for each endpoint).

Conclusions Night work, long working hours, and occupational physical labour might play a role in menstrual function disturbances.

0120 **CLEANING TASKS AND RESPIRATORY, DERMATOLOGICAL AND MUSCULOSKELETAL SYMPTOMS AMONG CUSTODIANS USING TRADITIONAL AND GREEN CLEANERS**

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Objectives As part of a larger study investigating the transition from traditional to green cleaners, we sought to investigate the relationships between cleaning tasks and respiratory, dermatological and musculoskeletal symptoms among a population of custodians.

Method State-employed custodians completed a questionnaire to assess cleaning tasks and health symptoms using standardised questions when available. Associations between health outcomes and cleaning tasks were investigated using logistic regression after controlling for age, gender, and smoking status. Each health outcome was modelled individually and trends with increasing exposures are reported.

Results Questionnaires were completed by 329 custodians from three universities and one university health centre. Participants were 59% female, 53% reported English as their primary language, and 18% were current smokers. Health symptoms within the last month included dermatitis (26%), lower-respiratory complaints (30%), upper-respiratory complaints (43%), pain or discomfort in back (32%) and pain or discomfort in neck, shoulders or arms (44%). An increasing number of toilets cleaned was associated with increased odds of dermatitis (p for trend = 0.0005), lower-respiratory symptoms ($p = 0.007$), and pain or discomfort in shoulders ($p = 0.04$). Increasing daily hours spent floor stripping was associated with increased odds of dermatitis ($p = 0.02$), lower- ($p = 0.01$) and upper- ($p = 0.01$) respiratory symptoms as well as pain or discomfort in back