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MATERNAL OCCUPATION AND ORAL CLEFTS IN NORWAY. *R H N Nguyen, A J Wilcox, B E Moen, D R McConnaughey, R T Lie. (NIEHS/NIH, Durham, NC; University of Bergen, Norway)

The incidence of oral clefts in Norway is 2.2/1000 live births, one of the highest rates in the world. Risk factors for oral clefts include both genetic and environmental/ occupational factors. We used data from a population-based case-control study to investigate occupational effects on the estimated risk of oral clefts. Cases were all Norwegian infants with clefts born in 1996–2001 and requiring surgery. We enrolled 88% of eligible cases (196 with cleft palate only (CPO) and 377 with cleft lip with or without cleft palate (CLP)). Controls (763) were chosen randomly from all Norwegian live births during the same time-period (76% of those eligible). Mothers' questionnaire asked about employment during the first trimester of pregnancy. We coded employment using the Nordic occupational codes and the International Standard Classification of Occupations. 646 (85%) of control mothers were employed during pregnancy. Women not employed had a higher odds of clefts (OR=1.4; 95% CI=1.1–1.9). Adjustment for smoking, folate intake, income, year, and maternal education attenuated this risk slightly (adjusted OR (aOR)=1.3; 95% CI=0.96, 1.9). Previous studies have found increased risk among offspring of mothers working in agriculture, beauty care, and manufacturing. We found little evidence of risk with agri-

work, compared with other employment. Among full-time beauty kers in our study, the aOR for CLP was 5.3 (95% CI: 0.85, 32.8). who worked in manufacturing had a higher odds of CPO 9, 95% CI: 0.82–4.2) but not for CLP (1.0; 0.45–2.2). Restricting me workers, the aOR for CPO among manufacturers was 2.7 (95% CI: 0.85–7.8). Specific exposures in manufacturing include chemicals, shift d extreme noise; we had too few exposed women for more detailed Stratification by part-time or full-time work may help to identify s during pregnancy.

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DECREASES IN OCCUPATIONAL EXPOSURE TO IONIZING RADIATION AMONG CANADIAN DENTAL WORKERS. J M Zielinski, *M J Garner, D Krewski, J P Ashmore, P R Band, M E Fair, H Jiang, E G Letourneau, R Semenciw, and W N Sont (University of Ottawa, Ottawa, ONT Canada)

Data from the National Dose Registry (NDR) of Canada were used to determine occupational exposures to ionizing radiation among Canadian dental workers, and to estimate potential cancer risks associated with such exposures. The NDR cohort includes 42,175 people classified as dental workers. Subjects followed by the NDR were linked to both the Canadian Mortality Database and the Canadian Cancer Database to ascertain cause of death and cancer incidence, respectively. There were 656 incident cases of cancer and 558 deaths within the cohort over the follow up period. The standardized mortality ratio for all-cause mortality was 0.53 (90% confidence interval [CI] 0.49–0.57). The incidence of cancer among dental workers was lower than that of the Canadian population for all cancers except melanoma (standardized incidence ratio was 1.46 [90% CI 1.14–1.85]). Occupational doses of ionizing radiation among dental workers have decreased markedly since the 1950s when the NDR was established. Dental workers now receive very low doses of ionizing radiation, are not associated with a detectable increase in cancer incidence; the increased incidence of melanoma is likely related to other risk factors such as exposure to ultraviolet radiation from sunlight. Continued adherence to established guidelines for occupational radiation exposure is recommended as a means of protecting dental workers from the harmful effects of ionizing radiation.

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OCCUPATIONAL EXPOSURES AND HAND GRIP STRENGTH: THE HONOLULU-ASIA AGING STUDY (HAAS). *L E Charles, C M Burchfiel, D Fekedulegn, M L Kashon, G W Ross, W T Sanderson, H Petrovitch (CDC, NIOSH, Morgantown, WV 26505)

Measurement of hand grip strength is a useful method for identifying neurotoxic effects of occupational exposures. The authors studied 3,522 participants of the Honolulu Heart Program and the HAAS who were free of stroke and Parkinson's disease to determine whether occupational exposures to pesticides, solvents, and metals assessed at exam I (1965–1968) were associated with hand grip strength 25 years later at exam IV (1991–1993). Three industrial hygienists independently assessed likelihood of exposure for reported usual occupations (0=none, 1=low, 2=medium, 3=high), and assigned a value by consensus. Exposure intensity scores were created as the product of exposure level and number of years exposed. Correlation, analysis of variance and covariance, and linear regression were used to assess these associations. At exam IV, participants ranged in age from 71–93 years. Participant's mean grip strength was 39.6 kg at exam I and 30.3 kg at exam IV. Significant but small increases in mean grip strength were observed with increasing levels of metal (30.3, 30.5, 30.9, 31.4 kg; p_{trend} =0.015) and manganese (30.4, 31.0, 31.0, 31.8 kg; p_{trend} =0.005) exposures after adjustment for age, physical activity, BMI, blood glucose, cognitive function score, education, and hemoglobin. Mean grip strength levels decreased with increasing pesticide exposure (30.3, 31.2, 29.4, 27.6 kg; p_{trend} <0.001), and with increasing solvent exposure (30.3, 30.5, 29.9, 29.4 kg; p_{trend} =0.014). These associations disappeared after risk factor adjustment. Occupational exposures to pesticides, solvents, and metals do not appear to have an adverse independent effect on grip strength in this population.

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REDUCING RISK OF EXPOSURE TO BLOODBORNE PATHOGENS AMONG HEALTHCARE WORKERS EMPLOYED IN CORRECTIONAL FACILITIES. *E J Lehman, A Gomaa, J Huy (National Institute for Occupational Safety and Health, Cincinnati OH 45226)

The risk of exposure to bloodborne pathogens (BBP) among healthcare workers (HCWs) employed in the hospital setting has been well-documented. Current risk reduction methodologies are targeted to workers in that work setting. However, many HCWs employed outside of hospitals are also at risk of BBP exposure and the methodologies are not consistently applicable to other work settings. We examined one set of non-hospital HCWs, those employed in correctional facilities, to determine adherence to, and the effectiveness of, current BBP risk reduction policies. We considered all existing data and obtained an assessment report from a working group of correctional healthcare "opinion leaders" that we assembled. With this background, we conducted site visits to a sample of correctional facilities in three states. Though the sample was small (n=8), we attempted to maximize geographic diversity and observe facilities of different size, security levels, and organizational structure. We conducted limited industrial hygiene surveys at each site and conducted interviews (n=50) with CHCWs and management about BBP-related issues. No instances of actual BBP infection were reported during the interviews. No significant violations of BBP-related methodologies were detected during the industrial hygiene surveys. However, reports of true exposure incidents were common. Also, several key BBP risk reduction elements were ignored or found to be inadequate: annually updated exposure control plans were found in 50% of the facilities; adequate, annual training of employees at risk of BBP exposure was conducted in 37%; the managerial involvement of front-line workers in identifying, evaluating, and selecting effective engineering and work practice controls occurred in 12%. Our future research will examine why existing methodologies are not followed and evaluate health communication approaches to overcome identified barriers.

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