

Mortality and incidence studies have suggested that agricultural workers may be at an increased risk for some cancers including non-Hodgkin's lymphoma (NHL). We used a death certificate-based case-control study design to investigate whether farmers in Taiwan had an increased risk of dying from NHL (ICD-9 codes 200 and 202). Data on all deaths of Taiwan residents were obtained from the Taiwan Death Certification Registry. Cases were deaths from NHL that occurred between 1997 and 2009 who were at least 50 years of age at death. Controls were deaths from all causes other than cancers. From each death certificate we extracted information on sex, marital status, year of birth, year of death, cause of death, county of residence, and usual occupation. The mortality odds ratio (MOR) and their 95% confidence interval (CI) were calculated using logistic regression models. From 1997 to 2009, a total of 32 456 deceased farmers were identified. Of these 32 456 decedents, 205 deaths were coded as NHL. Farmers were at a slightly but statistically non-significant excess risk of NHL (aMOR=1.11, 95% CI=0.96–1.29) compared to nonfarmers. The MOR for NHL among farmers was higher among those who died at ages 65 or older (aMOR=1.25, 95% CI=1.06–1.48) than those who died at younger ages (aMOR=0.81, 95% CI=0.60–1.10). Further investigation of NHL among farmers is warranted.

Oral Presentation

Dusts and Fibres

0104 CURRENT AND FUTURE ASBESTOS EXPOSURE RISKS IN AUSTRALIA

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To be presented in an accepted mini-symposium.

Background Australia mined, and manufactured asbestos and imported asbestos products. More than 90% of this asbestos was used in the form of asbestos cement, which was used in the construction of private, public and residential properties, including fencing. Today there is a legacy of *in situ* asbestos throughout the built environment. The aim of this study was to identify possible sources of current and future asbestos exposure from the built environment.

Methods A review of the literature and telephone interviews with environmental health officers, asbestos removalists and assessors across the country, sought information about common exposure scenarios encountered.

Results Substantial amounts of asbestos remain *in situ* throughout the Australian built environment. Potential current and future sources of exposure risk to the public are from asbestos-cement containing roofs and fences, unsafe asbestos removal practices, illegal dumping and do-it-yourself home renovations.

Conclusion Consistent approaches in the regulation and enforcement of safe practice for the management and removal of asbestos is needed across all states, to ensure that *in situ* asbestos in the built environment is managed safely.

Oral Presentation

Working Conditions

0106 ASSOCIATION BETWEEN HIGH TEMPERATURE AND WORK-RELATED INJURIES IN GUANGZHOU, CHINA

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Background Despite increasing concerns about the health effects of climate change, the extent to which workers are affected by temperature increases is not well documented. This study aims to investigate the association between high temperatures and work-related injuries in Guangzhou, China.

Methods We used workers' compensation claims to identify work-related injuries occurred in Guangzhou, China during 2011–2012. A time-stratified case-crossover study design was used to examine the association between temperatures and work-related injuries. Workers' compensation claims data were transformed into time series format, merged with meteorological data and analysed using conditional Poisson regression models.

Results Overall, a 1°C increase in minimum temperature was associated with a 0.9% increase in daily injury claims. Specifically, the incidence rate ratio (IRR) for male workers and workers aged 25–45 were (1.011, 95% CI 1.002 to 1.006), and (1.018, 95% CI 1.014 to 1.022), respectively. Significant associations were also found between daily minimum temperature and risk of injury for fractures injuries, lower degrees of disability, manufacture, outdoor industries combined and small-sized enterprises, and between maximum temperature and injury for workers aged 25–45 and indoor industries combined. Larger effects were observed in the warm season for Guangzhou (1 June–31 October).

Conclusions There is a significant association between injury claims and temperature in Guangzhou, China, for certain industries and groups. This study provides valuable epidemiological evidence for policy-makers and relevant stakeholders for reducing potential effects of the projected increase in global average temperature due to climate change.

Poster Presentation

Policy/Impact

0107 EUROPEAN SURVEY OF NATIONAL HEPATITIS B VACCINATION POLICIES FOR HEALTHCARE WORKERS

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Background The risk of transmission of blood-borne pathogens, including hepatitis B virus (HBV) to healthcare workers (HCWs) is well known. Under current European Union (EU)

legislation, all employers have to perform a risk assessment to identify workers exposed to HBV and offer them vaccination. Immunisation should be done as early as possible after the start of their career to avoid HBV infection and the development of a carrier status.

Methods We performed a cross-sectional survey of representatives from the Occupational Medicine section of the European Union of Medical Specialists (UEMS), to find out how policies have been put into practice in the European countries.

Results Answers were received from 21 countries, representing 78% of the population in the EU-28. HBV vaccination was mandatory for medical and nursing staff in 10 countries, mandatory for other paramedical staff, medical and nursing students in nine countries, for paramedical students in eight countries. It was recommended in all other participating countries. Serotesting before vaccination was done in eight countries. The vaccination schedule most often used was 0, 1, 6 months (18 countries). Serotesting after vaccination was done in 18 countries, boosters were recommended in 14 countries. A non-responder policy, including testing for carrier state, was present in 18 countries.

Discussion More consultation between key actors from MS at EU level could help to optimise the way this matter is dealt with in different MS in order to contribute to further reducing HBV transmission to HCWs

Oral Presentation

Shift Work

0108

SHIFT WORK AND SLEEP-RELATED PROBLEMS: A NATIONWIDE SURVEY IN TAIWAN

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Objective 1) To estimate the prevalence of insufficient sleep and poor sleep quality by different shiftwork status in a representative sample of the Taiwan working population. 2) To estimate PARs of sleep-related problems as related to shiftwork.

Methods The data of 22 600 workers aged 20 to 65 years were retrieved from the Survey of Perceptions of Safety and Health in the Work Environment, a nationwide cross-sectional survey conducted in 2010. Insufficient sleep was defined as self-reported short sleep duration interfering with life or work activity. Sleep quality was categorised into very good, good, poor and very poor. Work shifts were classified into fixed daytime, evening, or night, rotating night shift, rotating shift not including night, and irregular. Multivariate logistic regression was used to calculate the ORs and then estimated PARs of sleep-related problems.

Results Among all workers, shift status were as follows: fixed daytime shift 74.7%, fixed evening 10.6%, fixed night 2.3%, rotating night shift 5.3%, rotating shift not including night 2.0%, and irregular 5.2%. The highest prevalence of sleep-related problems was observed among fixed night workers

with insufficient sleep of 12.1% and poor sleep quality 3.5%. Fixed night shift was associated with the highest risk of both insufficient sleep (OR=3.20, 95% CI 2.41–4.18, $p<0.0001$) and poor sleep quality (OR=3.51, 95% CI 2.07–5.62, $p<0.0001$). The estimated PARs of insufficient sleep and poor sleep quality related to rotating night shift were 9.0% and 8.9%, respectively.

Conclusions Night shiftwork was significantly associated with increased risk of insufficient sleep and poor sleep quality among Taiwanese workers.

Oral Presentation

Chemicals

0109

HEALTH EFFECTS OF EXPOSURE TO ARSENIC: A 39 YEARS COHORT STUDY IN MANFREDONIA, ITALY

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Background On September 26th 1976 an accident occurred in a chemical plant located in Manfredonia (Apulia region, Italy) where Caprolactam (plastic) and Urea (fertilisers) were produced. More than 12 tons of arsenic compounds, used in the production of Urea, were released in the atmosphere, contaminating the plant and surrounding areas. Our study investigates late effects of arsenic exposure among workers present on the day of the accident and during the site clearance.

Methods We performed a historical cohort study including 1467 workers (39 females). Follow-up was performed by contacting municipalities of residence in Italy. Death certificates were collected. End of follow-up was either date of death, lost to follow-up or 15th March 2016. Cause specific mortality rates for the period 1976–2015 and 5 year age group were obtained for Apulia region and Foggia Province. Standardised Mortality Ratios will be calculated. Additionally, we will analyse data with Cox regression models by assigning workers to job category (white-collars, blue-collars and contract workers) and work area (fertiliser/plastic).

Results In the analysis restricted to men, we observed a total number of 51 102 person-years, 32 609 for 923 workers directly employed in the plant and 18 415 for 544 contract workers. We observed 307 deaths; 161 among contract workers. Highest mortality rate (8.7 deaths per 1000 person-year) was observed among contract workers. Higher values were observed among workers of the fertiliser work area.

Conclusions The results suggest an increased mortality for all causes among contract workers and employees in the fertiliser area. Cause-specific analysis will be presented.