

Oral Presentation

Cancer

0323 OCCUPATIONAL EXPOSURE TO BENZENE, TOLUENE, XYLENE AND STYRENE, AND RISK OF PROSTATE CANCER

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Little data exist on prostate cancer (PCa) risk associated with exposure to monocyclic aromatic hydrocarbons (MAHs), although several of them are classified as definite or possible carcinogens to humans. We examined PCa risk in relation to lifetime occupational exposure to benzene, toluene, xylene and styrene in a population-based case-control study in Montreal, Canada.

Incident cases diagnosed with PCa between 2005 and 2009 (n=1902, aged ≤ 75 years) and population controls frequency-matched on age (n=1958) provided detailed work histories during in-person interviews. Chemists evaluated the certainty, frequency and concentration of exposure to chemical agents in each job held using semi-quantitative indicators. Logistic regression was used to estimate odds ratios (OR) and 95% confidence intervals (CI) for PCa risk, adjusting for several potential confounders.

Applying a 5 year lag, the proportions of subjects ever exposed to MAHs (any), benzene, toluene, xylene and styrene were 31%, 11%, 12%, 10% and 2%, respectively. The risk of aggressive PCa (Gleason score >7 or $[4+3]$) was not increased with greater duration of exposure or with cumulative exposure to any of the MAHs. However, the risk of non-aggressive PCa was increased with ≥ 25 years of exposure to any (OR=1.59, 95% CI:1.09–2.34) or substantial (OR=2.34, 95% CI:1.22–4.50) level of benzene, to substantial level of styrene (OR=2.44, 95% CI:1.16–5.13), and with high cumulative exposure to benzene (OR=1.68, 95% CI:1.16–2.44) or xylene (OR=1.51, 95% CI:1.01–2.25). Similar results were observed in the subset of subjects recently screened for PCa.

Our results suggest that high duration and level of exposure to benzene, xylene or styrene may increase the risk of non-aggressive PCa.

Poster Presentation

Injuries

0324 MISCLASSIFICATION OF ANIMAL HANDLING INJURIES TO SWINE WORKERS

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Background Injuries resulting from animal handling are the most frequent, serious, and costly injuries to swine workers. Characterising injury burden related to animal handling and developing and evaluating appropriate prevention measures

requires correct identification of injury cause. We examined the occurrence and consequences of animal handling injury misclassification in two large swine production companies in the U.S.

Methods Records for all potential animal related injuries and the injury event narratives were reviewed and independently coded based on the Occupational Injury and Illness Classification System (OIICS) coding tree. The original and re-coded data were evaluated for agreement in source and injury event for all injuries caused by animals. The resulting frequency of misclassified injuries and the potential cost burden were summarised based on medical and indemnity payments.

Results From a total of 1573 reported injuries, 331 were reported to be caused by animals. The re-coded data increased the number to 435. Re-coded data from companies accounted for an additional 104 injuries. It was more common for companies to under-ascertain animals as the source of injury (26%, 114/435) than it was to incorrectly assign animals as the source of injury (2%, 8/435). Costs related to the originally reported animal handling injuries totaled \$1,537,163, and an additional \$1 82 580 (12%) was added to the total with the re-classified injuries.

Conclusion Misclassification of cause of injury may result in an underestimate of total injury burden from animal related injuries and would hamper evaluation of the evaluation of strategies to prevent animal handling injuries.

Oral Presentation

Neurological Effects

0325 FUTURE DIRECTIONS FOR OCCUPATIONAL EPIDEMIOLOGICAL RESEARCH ON NEURODEGENERATIVE DISORDERS

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Associations between occupational exposures and neurodegenerative disorders (including amyotrophic lateral sclerosis (ALS), Parkinson's and Alzheimer's diseases) have not been studied as extensively as cancer and respiratory diseases and their causes remain largely unknown.

Due to complicated clinical diagnosis and lack of registries, case ascertainment is a limiting factor when studying neurodegenerative disorders. Case-control studies are best suited for inclusion of incident cases, but prone to recall bias. Studies on neurodegenerative disorders may additionally suffer from lack of recall because of disease characteristics. Cohort studies are free from recall bias and offer opportunities to study associations with occupational exposures. Moreover, baseline blood may be informative about exposures (e.g. lead) well before disease onset. Although occupational information collected in most cohorts is limited, successful studies in cancer and respiratory epidemiology have shown that occupational studies in general populations can be informative.

For ALS, several efforts are being conducted to tackle the aforementioned challenges. Examples are: an ongoing nationwide case-control study in the Netherlands (PAN: