Poster Presentation

Other

0409

INDUSTRY, OCCUPATION AND SEX DIFFERENCES IN WORKERS' EXPOSURE TO ENDOCRINE DISRUPTING METALS IN AN AMERICAN AND A CANADIAN SURVEY

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These analyses explore whether a gradient of exposure to four potential endocrine disrupting metals can be detected in workers of different occupational groups and industries, in two national population surveys.

Blood levels of lead (PbB), cadmium (CdB) and mercury (HgB), as well as urinary levels of arsenic (AsU) were measured in the National Health And Nutrition Examination Survey (NHANES) 2003–2010 and the Canadian Health Measures Survey (CHMS) 2007–2013. Data from participants aged 16–65 were analysed to identify industries and occupational groups with higher levels. T-tests and one-way ANOVAs were performed to explore differences in the biomarkers' levels according to industry, occupation and sex.

Geometric means (GMs) in NHANES and CHMS were respectively 1.24 and 1.13 µg/dL for PbB, 0.32 and 0.34 µg/L for CdB, 0.96 and 0.78 µg/L for HgB, and 9.96 and 10.61 µg/L for AsU. In NHANES, men had higher levels of PbB (mean difference (MD)=0.75 µg/L, 95% CI:0.70–0.81) and HgB (MD=0.27; 95% CI:0.18–0.36), and there were no differences between men and women for CdB and AsU. In both surveys, the Utilities and Construction industry group had higher GMs of PbB (NHANES: 1.98 µg/dL; CHMS: 1.54 µg/dL) and CdB (NHANES: 0.35 µg/L; CHMS: 0.45 µg/L), and occupations in Health Care and Social Services had the highest HgB GMs (NHANES: 1.16 µg/L; CHMS: 0.97 µg/L).

Results show that certain occupational groups may incur higher exposures to potential endocrine disrupting metals. This should raise attention on workers, considering increasing evidence on the possible effects of such exposures in the general population.

Oral Presentation

Pesticides

0410

OCCUPATIONAL EXPOSURE TO PESTICIDES AND HEALTH EFFECTS IN MALE BANANA PLANTATION WORKERS IN ECUADOR

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Introduction Intensive agrochemical application in banana production has been documented in Ecuador, world's largest exporter of bananas. This study assessed working conditions, wellbeing and health of farmworkers in conventional farming using biocides and in organic farming.

Methods In a cross-sectional epidemiological study exposed and non-exposed male farmworkers were interviewed based on standardised questionnaires about, inter alia, exposure history, pesticide application practices, health and wellbeing. Furthermore, swab samples of buccal cells were taken (Buccal Micronucleus Cytome Assay, BMCA), fixed, stained and later in the laboratory blindly evaluated for nuclear anomalies indicative of cytotoxic and genotoxic effects, according to standard protocols.

Results In total, 68 farmworker participated (provinces Los Rios, El Oro). 87% resp. 78% of the pesticide exposed respondents did not use masks/gloves at all; 10% resp. 19% used masks/gloves all the time. Pesticide workers (n=31) showed significantly more often symptoms such as dizziness (OR=4.80), nausea/vomiting (OR=7.50), diarrhoea (OR=6.43), burning eyes (OR=4.10), skin irritation (OR=3.58). Furthermore, eight out of nine biomarkers of the BMCA were significantly more frequent among exposed workers (p<0.001) (micronucleated cells: OR=2.55; total micronuclei: OR=2.45; nuclear buds: OR=1.84; binucleated cells: OR=1.33; condensed chromatin: OR=1.38; karyorrhectic cells: OR=1.30; karyolytic cells: OR=1.19; broken eggs: OR=1.20).

Discussion Our findings indicate that the impact of pesticide use is not restricted to acute effects on health and wellbeing, but also point to long-term health risks. BMCA results suggest that pesticide users have a higher risk of developing cancer. There is an urgent need for safety training and minimising application of pesticides.

Poster Presentation

Neurological Effects

0411

EXPOSURE TO DIESEL ENGINE EXHAUST AND THE RISK OF ALS

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Background Only few risk factors have been identified for amyotrophic lateral sclerosis (ALS). Higher risks were reported for various occupations (e.g. farmers, construction workers), but responsible exposures remain largely unknown. We investigated the association between occupational exposure to diesel engine exhaust and sporadic ALS in a population-based study with detailed information on possible confounders.

Methods An ongoing ALS case-control study is being conducted in the Netherlands since 2006, and we here present data for 2006–2014. Lifetime occupational histories and lifestyle factors were collected via questionnaires. A general population job-exposure matrix was assigned to estimate exposure to diesel engine exhaust. All exposure variables were estimated up to two years before survey to account for any changes due