

Oral Presentation

Pesticides

0441 EXPOSURE TO DINITROANILINES AND RISK OF LUNG CANCER (LC) BY SUBTYPES: RESULTS FROM THE AGRICAN COHORT

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Introduction 2,6-Dinitroanilines included 15 herbicides, some of which are still used on a wide range of crops worldwide and in France, especially pendimethalin which was given special attention by the IARC. The aim of our analyses was to estimate the associations between LC and exposure to pendimethalin, benfluralin, butralin, ethalfluralin, nitratin, oryzalin, trifluralin -all once or still authorised in France-, in the French AGRICulture and CANcer (AGRICAN) cohort.

Methods More than 1 80 000 people affiliated for at least 3 years to the agricultural health insurance scheme were enrolled between 2005 and 2007. A total of 563 incident LC were identified from enrollment to 2011. Data on crop exposure during lifetime (13 crops, specific tasks including pesticide use) were collected. The evaluation of potential exposure to each dinitroaniline relied on a specific crop-exposure matrix, PESTIMAT. Analyses were adjusted on smoking history, involvement in cattle and horse breeding, peas growing, exposure to farming activities during childhood.

Results In the population, 16 533 people (11.2% of the cohort) were potentially exposed to one or more dinitroanilines. Pendimethalin and trifluralin were the most frequently used, but not associated to any increased risk of LC, nor was exposure to dinitroanilines in general. We observed an increased risk of adenocarcinoma for oryzalin exposure (HR=2.93[1.13–7.59], n=5 exposed cases), but with no linear effect with duration.

Conclusion We did not find any increased risk of LC among pendimethalin users. Our results suggest a possible association of lung adenocarcinoma with oryzalin, currently authorised in France, especially on the vineyard.

Poster Presentation

Neurological Effects

0442 OCCUPATIONAL EXPOSURES AND PARKINSONISM AMONG WOMEN TEXTILE WORKERS IN SHANGHAI, CHINA

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Objective To examine the association of endotoxin and other occupational exposures with parkinsonism (PS) severity and progression of PS signs.

Methods Movement disorder specialists examined 823 retired female textile workers ages 51–86 in Shanghai, China for PS prevalence and assessment of Unified Parkinson Disease Rating Scale motor subsection part 3 (UPDRS3). Most (n=669) were re-evaluated two years later. Occupational exposures to endotoxin, metals, solvents, magnetic fields, and shiftwork during a mean of 24 years working in the textile industry were assessed from detailed work histories and a job exposure matrix. We examined the association between each exposure and PS, severity (UPDRS3 score), and progression (annual change in UPDRS3) with multivariable regression models adjusting for age, smoking, and examiner.

Results We observed 39 prevalent PS cases and 784 non-cases. No association was observed between endotoxin and PS prevalence, disease severity, or disease progression. The other chemical occupational exposures and magnetic fields also had no associations with PS prevalence or disease severity. Shiftwork was marginally positively associated with disease progression. For each year of shiftwork as of the baseline exam, UPDRS3 score increased annually by an additional 0.047 (95% CI: -0.003, 0.097).

Conclusions We observed little evidence for an association between endotoxin and other occupational exposures with PS in this cohort of textile industry workers, although we are unable to rule out the possibility of clinically modest increases in progression among workers who had experienced several years of shiftwork.

Poster Presentation

Respiratory

0443 SANDSTONE MINING: PERIL OF SILICOSIS

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Approximately 25 000 workers are engaged in mining of sandstone in a small district of Madhya Pradesh, in the centre of India. Most of the quarry are small, unregistered, and unorganised, mining soft stone where silica content can be as high as 70%. 88 workers of average age of 25 years, minimum age being 13 years and maximum being 70 years were examined during a screening camp. 77 male workers and 11 female workers are engaged in the process of stone breaking, cutting, cleaning, loading and unloading for an average of 8 years of work, with minimum 1 month of work to 30 year of maximum work. These workers work under precarious conditions of high silica exposure and high risk of accidents and injuries. These workers, mostly malnourished live in very unhygienic conditions. 50% of the workers have normal pulmonary function test, and rest of the 50% workers have varying degrees of abnormal pulmonary function test, the most common being mild obstruction in 15 workers. Only one female out of 11 female workers have normal pulmonary function test. Based on detailed occupational history, clinical examination and X-ray reading as per ILO standards and their pulmonary function test outcome, 19 workers were diagnosed of Silicosis, 6 of Silico-tuberculosis. These 25 workers have a varying degrees of respiratory disability based on pulmonary function test recordings, mainly 12 having 20%, 3 having 30% disability, maximum being 100% in one of the 14 year old female worker of 1 year working history in stone quarry.

Poster Presentation

Burden of Disease

0445 A REVIEW OF AUDIOMETRIC CRITERIA FOR IDENTIFYING NOISE-INDUCED HEARING LOSS AMONG WORKING ADULT POPULATIONS

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Objectives Noise-induced hearing loss (NIHL) remains one of the most prevalent occupational diseases worldwide, despite widely adopted workplace hearing conservation efforts. There are no universally accepted criteria for NIHL, hampering epidemiologic comparisons. The primary objective of this review was to characterise audiometric criteria for NIHL in occupational health literature.

Method We searched Medline, Embase, Scopus, and ProQuest's Environmental Science and Pollution Management and Biological Sciences databases for primary studies published through to March 2017 that described NIHL in working adult populations using audiometric measures. Titles and abstracts

were screened against eligibility criteria. From the eligible studies, we extracted NIHL definitions, country/region, population/setting, and study purpose (e.g., surveillance, compensation adjudication).

Results Our search resulted in 1303 unique citations. After title and abstract review 461 studies were deemed potentially relevant, including 137 published in languages other than English. A total of 129 English studies were eligible and included in the final synthesis. Generally, history of work-related noise exposure and either hearing loss at high frequencies or an audiometric notch at 4 kHz constituted NIHL in the included studies. However, the specific threshold in decibels for "hearing loss" and "notch" varied across studies, as did the range of sound frequencies used to calculate pure-tone averages to indicate NIHL.

Conclusions NIHL is a major global occupational health issue of our time. Our review of occupational literature highlights the variability in definitions of NIHL. Without a common definition of NIHL, comparisons between different populations will remain a challenge and inhibit progress in this area of research.

Oral Presentation

Cancer

0446 RISK OF CANCER IN A PROSPECTIVE COHORT OF DANISH METAL WELDERS

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Objectives Over 110 million workers are worldwide estimated as exposed to welding fumes, including a complex mixture of nano-sized particles with a carcinogenic potential. The aim of the present study is to investigate cancer risks with a special focus on lung cancer in a large group of Danish welders.

Methods In 1986, 5866 welders completed a comprehensive questionnaire on lifetime exposures, including years with different types of welding. Information on employments after baseline (1986) was obtained from the Supplementary Pension Fund. Life-long exposure to welding particles was estimated based on a Danish job-exposure matrix based on p1200 welding specific measurements of welding particles. Based on the unique central person number assigned to all residents in Denmark welders were followed-up for cancer (1987–2015) in the nationwide Danish Cancer Registry. Similarly, information on vital status was obtained from the Central Person Register. Relative risks were estimated both by comparison with cancer incidence in the standardised general population and by internal analyses by use of Cox-regression.

Results Overall, significantly increased relative risks were seen for cancer of the pharynx (1.8; 1.0–3.0), lung (1.7; 1.4–2.2), testis (2.5; 1.2–4.9) and multiple myeloma (2.1; 1.0–4.4). Trends with increasing relative risk of lung cancer by increasing cumulative exposure to particles was observed ($p < 0.01$) after adjustments for exposure to asbestos and tobacco smoking.

Conclusion This study supports that exposure to welding processed particles increases the risk for lung cancer. The increased of testicular cancer and multiple myeloma warrants further attention