

exposure on autoimmune diseases like inflammatory bowel disease and type one diabetes have also been suggested. The impact of timing of organic exposure as well as the relation between occupational and environmental exposure to organic dust (levels as well as diversity of microorganisms) and the human microbiome will be discussed as possible explanations for the dual effects of organic dust exposure.

1633b ASTHMA IN SERICULTURE WORKERS DUE TO ORGANIC DUST EXPOSURE

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Occupational Asthma in employees is attributable to exposure to biological or inorganic agents at workplace. Sericulture is an agro-cottage industry under informal sector. Silk manufacturing involves several steps. Workers are exposed to aerosols generated when silkworm cocoons are placed in boiling water to dissolve 'sericin' from outer layer. Silk thread reeled from cocoon is rolled, twisted into yarn and dyed before weaving. Workers employed in grainages where cocoons are stored and in cocoon trading centres are exposed to epithelial dust from silkworm moths and cocoons. Workers in farms producing mulberry leaves for silkworm rearing centres and dyeing units are also at risk of developing asthma as they are exposed to pesticides, disinfectants and chemical dyes. Previous studies showed that some sericulture workers develop sensitisation to silkworm allergens over a period. Objective of this study was to detect prevalence of asthma among sericulture workers, as many cases of asthma were observed in places where there are many sericulture industries in South India. 100 workers engaged in sericulture for more than 10 years and 100 persons from general population as control, who volunteered for this study, were enrolled. Clinical history and examination of enrolled persons was done. All participants underwent pulmonary function test and asthmatics among them underwent bronchial reversibility test. Results showed 14% of workers had occupational asthma and in control group 6% had allergic bronchitis. Mechanisation and installation of barriers to prevent manual handling and aerosol exposure is recommended, but not possible being a cottage industry with many small filature units. Quitting job is not practical due to workers financial status. Hence awareness programmes on prevention, personal protective equipments and early treatment is required. In conclusion, sericulture workers are at risk of developing asthma and continued exposure to allergens can progress to chronic obstructive pulmonary disease in some workers.

1633c DETERMINANTS FOR ASTHMA IN FARMERS WITH SPECIAL REFERENCE TO ODTS (ORGANIC DUST TOXIC SYNDROME)

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Organic dust toxic syndrome (ODTS) is an acute, febrile, non-infectious, flu-like, short-term reaction that can be seen in a

range of situations after inhalation of substances that give rise to an inflammatory reaction in the lungs. There are anecdotal reports suggesting that ODTS is a risk factor for asthma in farmers. In a cross-sectional study, questionnaires were mailed to farmers in middle Sweden and southern Sweden. Sixty percent of the farmers (1004 men and 129 women) responded to the questionnaire. The mean age was 51 years. Nine percent were smokers and 24 percent ex-smokers. The female farmers had a significantly higher prevalence of doctor-diagnosed asthma compared to the males, 8.3 percent compared to 4.5 percent ($p < 0.05$) and worked significantly more often in all productions involving animals. Regression analysis of male farmers showed that ODTS was a risk factor for respiratory symptoms such as wheeze, work related wheeze, nightly breathlessness and chronic bronchitis. Long time in agricultural work was another risk factor for wheeze, work related wheeze, doctor-diagnosed asthma and chronic bronchitis. Swine farming was a risk factor for chronic bronchitis. Possible mechanism behind these findings and prevention strategies will be discussed.

1633d AGRICULTURAL RISK FACTORS FOR LYMPHOMA – CONTACT WITH LIVESTOCK AND EXPOSURE TO ORGANIC DUST

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Introduction Farming occupations have been reported at risk of developing non Hodgkin lymphoma. Within the EPI-LYMPH multicentre European case-control study on the aetiology of lymphoma, we explored the association of risk of the major lymphoma subtypes with exposure to specific classes of pesticides, contact with livestock, and exposure to organic dust.

Methods In 1998–2003, 2348 cases of lymphoma (all subtypes), and 2462 controls participated in the EPI-LYMPH case-control study in several centres six European countries. A detailed occupational history was collected in cases and controls. Information on contact with breeding animals, exposure to five organic dusts, and to specific classes of pesticides was obtained through personal interviews. Local agronomists and occupational experts assessed likelihood, frequency and intensity of specific exposures based on the questionnaire information. Risk of the major lymphoma subtypes associated with contact with the most frequently represented species of livestock, organic dusts, and classes of pesticides was calculated with unconditional logistic regression analysis adjusting by age, gender, education, and centre.

Result Exposure to organophosphate insecticides was significantly associated with an increase in risk of chronic lymphocytic leukaemia; risk of DLBCL, was significantly lower amongst subjects who started occupational contact with any species of livestock before or at age 12 (OR=0.5, 95% CI: 0.2 to 0.9), but not at older ages. A significant heterogeneity in risk of B cell lymphoma by age at first contact was detected for contact with cattle, poultry and swine. We did not find an association with exposure to any of the organic dust exposures.

Discussion Agricultural exposures are numerous, and difficult to disentangle; also, the use of agrochemicals varies with time,

type of crop, and location. Some exposures might be etiologically relevant, others might protect against lymphomas depending on age at first exposure, possibly in relation to the different type of immune response elicited.

1633e IS PAPER DUST IN SOFT TISSUE MILLS A PROBLEM?

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More dust is generated in the production of soft tissue paper than in production of other paper products. In earlier days 10 and even up to 30 mg/m³ total dust was not unusual in this industry. We updated an earlier cohort of soft tissue mill workers and included more mills 2006. Inclusion criteria was >1 years work 1960–2006, 8353 were included, 40% females. We did more dust measurements and obtained mill measurements and information on production changes. A mill-specific job exposure matrix for paper dust was developed on department level and sometimes also job-specific. That allowed us to assess every mill year for each subject with an estimated mean level of total dust (mg/m³) into one of seven exposure categories. Our main exposure metric in this presentation is worked years with exposure to >5 mg/m³ total dust. Those working from 1970 and alive 2007 got a questionnaire which 56% answered. As earlier studies on paper dust exposure and lung function have been inconclusive we made spirometry tests in one of the mills (n=198). Every year exposed to >5 mg/m³ total dust gave 0.9% loss in predicted FEV1% and 0.6% loss in predicted FVC, a significantly decrease adjusted for pack-years, gender, atopy and body mass index compared to workers never exposed one year or more to >5 mg/m³ total dust. Cohort mortality 1960–2013 has now been analysed compared to the general population in Sweden. Mortality in asthma and chronic obstructive pulmonary disease was increased in workers with ≥5 years exposure to >5 mg/m³ total dust both among males and females.

1663 USE, MISUSE, ABUSE OF PESTICIDE USE IN AGRICULTURE. WHICH INTERVENTIONS ARE NEEDED TO PROMOTE SAFETY AND HEALTH OF WORKERS?

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Aim of special session Pesticides are necessary in the modern agriculture and their use is unavoidable. However, very often misuse and abuse bring about unacceptable risk to agricultural workers and the environment. How to promote a safe use of these compounds? Worldwide known field experts will discuss this topic. Since it will be a round table with an open discussion among speakers and of speakers with public, no title of presentation has been asked to the persons invited to contribute

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1663a PESTICIDE POISONINGS ARE NOT RESTRICTED TO FARMERS AND VECTOR SPRAY-MEN!

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Acute pesticide poisonings are not restricted to professional users such as farmers and vector spray-men. The serious poisonings most often seen in health facilities are due to self-harm or accidental. Even consumers are in danger of suffering from both acute and chronic poisonings. In this presentation we focus on our findings from cross-sectional studies from Bolivia, Nepal and Uganda on pesticide poisonings due to self-harm, accidents and consumers eating pesticide residues in vegetables. Our findings shows that self-harm with pesticides are quite common and they are the poisonings most often seen in the hospitals. This is probably due to the easy access of very toxic pesticides sold in the streets and shops in most low-income countries. Female self-harm is more often seen among teen-agers, whereas males dominate the older age classes. Among children accidental poisonings predominates especially among boys. Consumers are in danger of chronic poisonings and diseases due to the consumption of pesticide residues in vegetables. Residue levels in tomato samples and other vegetables from Bolivia and Uganda are often shown to exceed the recommended maximum residue levels. This seems to be due to farmers spraying close to harvest or in some cases even after harvest to make the vegetables maintain themselves fresh for a longer period. In Uganda some consumers even says they prefer vegetables with pesticide stains on them, because then they think they are grown with modern agricultural methods and thus are healthier for consumers. To minimise pesticide exposure among professional pesticide users, consumers and others, awareness rising, training of users and banning of pesticides belonging to the WHO toxic class I and some class II is recommended. The access to pesticides in stores and at home should be restricted by only authorised selling pesticides and by locking up pesticides out of reach for children and others. These interventions has proven effective but are only implemented to a limited degree.