

SP-05 CHALLENGES AND OPPORTUNITIES IN CONTEMPORARY OCCUPATIONAL EPIDEMIOLOGY RESEARCH

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Occupational epidemiology has traditionally relied on large records-based studies of workers to examine the association between an industrial exposure and a chronic disease outcome. These studies are highly informative for worker protection and environmental standards. However, establishing and maintaining large occupational cohorts has always been time and resource intensive. These studies are becoming increasingly challenging to initiate. Furthermore, the nature of work is changing; industrial cohort data cannot always address complex exposures and working conditions or the social and organizational factors that affect contemporary workers.

In this symposium, I will present current efforts to develop a cohort of workers exposed to carbon nanomaterials, and discuss the challenges and opportunities associated with this ongoing effort. I will also discuss emerging themes in occupational epidemiology which can be used to address contemporary challenges in research development, including methodological developments, legal epidemiology, open-source software, occupational health equity, and social and structural determinants of occupational health.

SP-06 THE SICURPEST COMPUTATIONAL MODEL FOR ESTIMATION OF RETROSPECTIVE PESTICIDE EXPOSURE IN EPIDEMIOLOGICAL STUDIES

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Introduction The widespread use of pesticides in agriculture entails unavoidable exposure of different groups of the general population, who accumulate pesticide residues over lifetime and may develop pesticide-related health conditions. Major concern is for cancer and long-term degenerative conditions, such as neurobehavioral impairment of children, earlier onset and higher prevalence of Parkinson and Alzheimer diseases. Within wide national epidemiological surveys, volunteer participants share questionnaires, sanitary records and biological specimens for measurement of biochemical, genetic and, whenever possible, exposure biomarkers. Sub-projects target the agricultural population. While adverse effects can come to observation and clinical diagnosis through the health system, exposure assessment is usually retrospective and biased from lack of accurate records. This is a field of epidemiological method research in a strong need of improvement.

Material and Methods The EU developed models for operator risk assessment starting in the 1990s that now include scenarios such as exposure of bystanders (persons dwelling close to treated fields, during and after pesticide application). Adaptation of these models allows conjecturing past exposure for epidemiological studies. Among these developments, our SICURPEST project introduces a platform-

based IT tool with a user-friendly interface for grassroots users.

Results and Conclusions The key to reliable modelling is assigning realistic values to the transfer coefficients that describe exposure of the workers during pesticide application and efficacy of protective equipment. SICURPEST considers local modalities of activity: machinery, equipment, protections and clothing, to estimate exposure during application, according to the type of cultivation, landscape, climate, operator training and awareness, available equipment and personal protection devices. Even under the broad level of uncertainty inherent in the lack of a detailed description of agricultural practices for pesticide use, model estimation of exposure to key pesticides allows inferring lifetime dose for epidemiological investigation of long-term adverse health effects in the population.

SP-07 EPIDEMIOLOGY AS A TOOL FOR OCCUPATIONAL HEALTH RISK REDUCTION AT WORKPLACE – A CASE STUDY AND LEARNING

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Epidemiological methods can be used to identify and measure the extent of health-related states or events, and to evaluate the effectiveness of interventions designed to prevent or control them. The same approach can be used at the industry to identify workplace health risks, evaluate them and take steps to reduce the same with an ultimate objective of protecting and promoting occupational health at the workplace.

Project CASH (Change Agents for Safety and Health) is an initiative with an overall objective to identify and reduce the workplace health risks. It was introduced and implemented at a large refinery and petrochemical industry on a pilot basis in 2003. The project also had specific objectives to reduce identified hazards. Exposure to high noise, dust and heat were identified as major issues for action. The outcome of the actions was evaluated at the close of one year of the project.

The project met with resounding success. Specific objectives to reduce exposure to noise, dust, and heat, were achieved. The major success of the project was on the human resources front. Project CASH resulted in a "cultural change" which ensured employee and management involvement on an unprecedented scale resulting in change in attitude towards occupational safety & health across levels. While the objectives of the project were restricted to reducing health risks to employees, many actions resulted in financial savings and increase in profitability.

Factors which contributed to the success of the project were identified as commitment of the top management, empowerment of line managers, recognition of CASH agents, involvement of all levels of workforce ensuring participatory approach and change through people-oriented projects.

CASH continues as an ongoing program at all manufacturing sites and has resulted in more than 2000 projects focusing on work environment improvement, health risk reduction and healthy behaviour among employees.