Oral Presentation

Pesticides

0493 IMPROVING EXPOSURE ASSESSMENT METHODOLOGIES FOR OCCUPATIONAL EPIDEMIOLOGICAL STUDIES ON PESTICIDES

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10.1136/oemed-2017-104636.405

Retrospective assessment of occupational exposure to pesticides in epidemiological studies is challenging. The exposures are complex and may occur by skin contact, inadvertent ingestion and by inhalation. There is considerable variation in exposure within and between persons from use of pesticides, with weather, season and crops all affecting use. Product formulation and the type of application equipment may change over time. The use of personal protective equipment, which may have variable efficacy, has also changes over time. The general lack of historic environmental and biological monitoring measurements forces epidemiological researchers to rely on self-reports and exposure models. This presentation will briefly introduce the topics for discussion along with the questions for the panel and delegates so that they can consider these during the session presentations.

These questions are as follows:

- What methods have you successfully used epidemiological studies?
- What were the difficulties/weaknesses you encountered?
- What improvements could be made, both in methodologies and in data availability?
- How should the planned research best interact with the occupational epidemiology community?

* Authors reserve the right to update the discussion questions

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0494 A REGULATORY PERSPECTIVE ON THE NEED FOR IMPROVING EXPOSURE ASSESSMENT FOR EPIDEMIOLOGICAL STUDIES ON PESTICIDES

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10.1136/oemed-2017-104636.406

Manufacturers intending to market pesticides are required to perform and submit extensive toxicology studies in animals to support risk assessments which demonstrate an absence of harm to human health in order to gain authorisation to supply their products. While such data provides necessary reassurance it is acknowledged that there are uncertainties in extrapolating from animal models to humans and in addition some human diseases lack appropriate models.

Epidemiological studies therefore are regarded as an important alternative source of information that may either support

animal data based risk assessments or indicate potential concerns not previously identified. For this reason within the UK the epidemiological literature has for some time been routinely considered with the aim of identifying any emerging concerns. More recently EU data requirements for pesticides have been amended to require applicants to conduct literature searches and to formally evaluate relevant epidemiology data. An additional recent action by the EFSA has been the commissioning of a systematic review of pesticide epidemiology published 2006–2012.

A large and growing database of epidemiology relating to pesticides exists. However, despite the regulatory efforts mentioned above the impact of such data on regulatory outcomes is negligible. Identification of specific pesticides and levels of exposure are often cited as significant limitations of studies. The regulatory requirements, limitations in the existing data, and suggestions for potential improvements will be discussed.

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0495 OVERVIEW OF THE EXPOSURE ASSESSMENT METHODOLOGICAL ISSUES FOR EPIDEMIOLOGICAL STUDIES ON PESTICIDES

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10.1136/oemed-2017-104636.407

Accurate assessment of (occupational) exposure to pesticides is hard to achieve. Applicators often apply multiple products and active ingredients over the course of a growing season. Which active ingredient is applied will also depend heavily about the pest at hand. Exposure to pesticides is therefore often to a mixture of active ingredients when assessed at annual or lifetime scale. Recollection of this information can become rather problematic when it covers multiple decades especially in the absence of spraying calendars or other recorded data. Also, applicators might have reasonable knowledge of tradenames and active ingredients, but farmworkers exposed via re-entry tasks like harvesting, pruning etc. in treated crops might only remember a pungent smell of a particular active ingredient or the crop they worked in. In middle- and low-income countries this might even become more problematic given that considerable proportions of applied pesticides may originate from unauthorised sources and sometimes reach local retailers via illegal cross-country trade. Re-packaging, lack of information in local languages and illiteracy will enhance these problems. In epidemiological studies several exposure assessment approaches have been applied including self-reports by farmers and applicators, crop-exposure matrices, semi-quantitative algorithms based on detailed information provided by study subjects and less frequently by measuring exposure and biomonitoring. In this presentation an overview of and trends in methods for assessment of exposure to pesticides in agricultural cohort and cross-sectional studies as well as community-based (case-control) studies will be presented. The (lack of) validity of different methods and approaches will be considered.