# A study for improving exposure methodologies for occupational epidemiological studies on pesticides

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## Background

In occupational epidemiological studies of health effects associated with pesticides, assessment of historical exposures is most frequently based on surrogate measures. These may include: self-reported job title (e.g. applicator vs. non-applicator), employment duration, whether/ever exposed (yes/no) or semi-quantitative classifications derived from hybrid methods (e.g. job- and crop-exposure matrices).

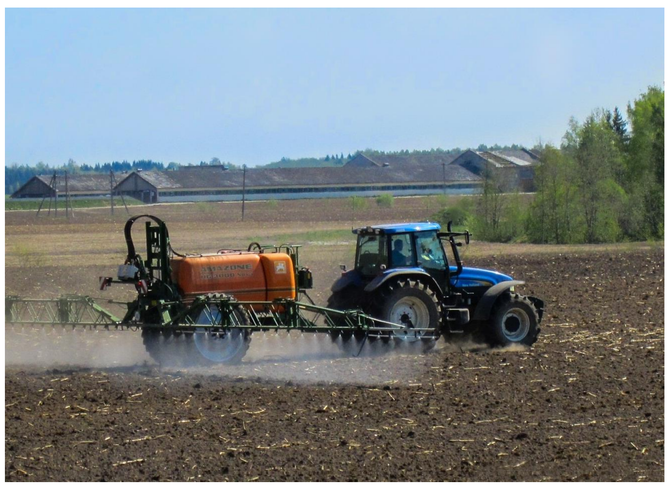
Subjective exposure measures and models based on a variety of data sources might be prone to misclassification that may bias study findings.

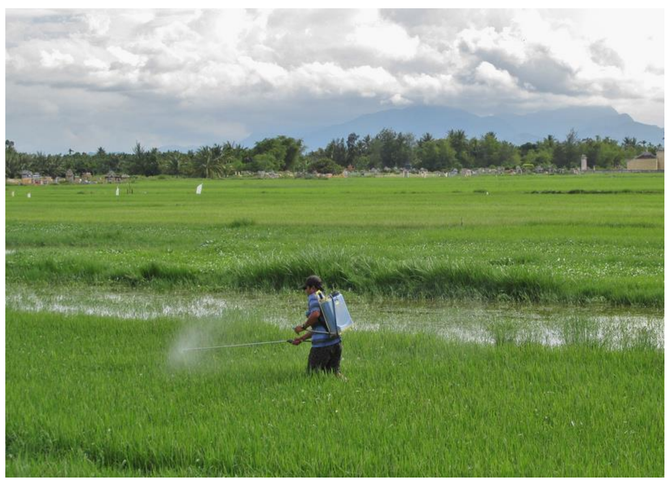
## Aims and objectives of IMPRESS

- Better understand the reliability and performance of the main methods used to assess exposure to pesticides in occupational epidemiological studies
- Evaluate reproducibility of self-reported information on pesticide use and application
- Assess reliability and external validity of surrogate measures used to assign exposure within individuals and groups of individuals
- Recommend improvements for future studies

## How will we do that

- By re-administering exposure questionnaires used within existing cohort populations and comparing responses with those originally provided.
- By measuring current exposure via biomonitoring methods and comparing the measurement results with exposures estimated by surrogate methods (e.g. exposure algorithms and self reports)
- By comparing and contrasting the performance of different exposure assessment methods using the same job histories within existing epidemiological studies







## Current status

- Reviewing of exposure assessment methods used in occupational epidemiology (WP1) is in progress
- Protocol for assessment reproducibility of self-reported information (WP2) has been completed
- Protocol for assessment of reliability and validity (WP3) has been completed
- Establishing the Ethiopian and Malaysian study cohorts, preparing filed work in the UK cohorts

## Timeline

- Project duration: 3 years
- Project start: 1st September 2017

## Independent Advisory Board

- Prof Aaron Blair (Chair), National Cancer Institute (USA)
- Prof Len Levy, Cranfield University (UK)
- Dr Mark Montforts, RIVM (The Netherlands)
- Prof Silvia Fustinoni, University of Milan (Italy)

## For more information

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## Funding

By the European Crop Protection Agency (ECPA)

**WP6: Project Management**

**WP1: Review the methods of exposure assessment (EA) used in occupational epidemiology**

- Inventory of exposure assessment/assignment methods
- Inventory of determinants of PPP exposure

**WP2: Recall of past PPP exposure and determinants**

- Compare agreement between the original data and those from the reliability questionnaires/interviews
- Review the available measurement data and, if resources and quality allow, evaluate the reliability of self-reports against measurement data in WP3 and 4.

**WP3: Assess the reliability and validity of individual-based EA methods**

- Assess the performance of the individual-based EA methods across different populations and farming settings in comparisons with bio-monitoring results

**WP4: Compare performance of EA methods in existing epi studies**

- Compare the congruence in assigned exposure using different group-based EA methods using the same job history information
- Apply alternative group & individual-based exposure classifications in existing epidemiological studies to impact on exposure-response associations and examine potential for improvements

**Original data** Questionnaire/ job history + **New data** Reliability questionnaire

**Original data** Questionnaires + **New data** BM samples + contextual info

**Original data** Questionnaire/ job history

**Existing epidemiological studies:**

- Current UK workers (Prospective Investigation of Pesticide Applicators' Health )
- Historical UK workers (Study of Health in Agricultural Work)
- Ethiopian farm workers
- Malaysian farm workers

**WP5: Project dissemination**