PERFORMANCE OF SELF-REPORTED AND URINARY BIOMARKER-BASED MEASURES OF EXPOSURE TO GLYPHOSATE AND MANCOZEB IN A STUDY ON SLEEP PROBLEMS AMONG SMALLHOLDER FARMERS IN UGANDA

Introduction We aim to showcase the impact of applying self-reported and biomarker-based exposure measures for glyphosate and mancozeb on the association with sleep problems in a study among 253 smallholder farmers in Uganda.

Methods The questionnaire-based exposure measures included: (1) application days of any pesticide last 7 days (never, 1–2, >2 days) and four glyphosate and mancozeb-specific measures: (2) applicator status last 12 months (yes/no), (3) recent applicator status (never, last 7 days and last 12 months), (4) number of application days last 12 months, (5) average exposure-intensity scores (EIS) derived from a semi-quantitative exposure algorithm and (6) EIS-weighted number of application days in last 12 months. Based on 384 repeatedly collected urinary samples of ETU and glyphosate biomarkers from 85 farmers, we also used (7) estimated biomarker levels.

Multivariable logistic regression models to assess the association between the different exposure measures and three selected Medical Outcomes Study Sleep Scale (MOS-SS) indices (6-item sleep inadequacy and snoring) indicate sleep problems in the preceding week.

Results We observed statistically significant relationships between (1) any pesticide application days in last 7 days and all three sleep problem indices. Glyphosate application in last 7 days (4) and mancozeb application in last 12 months (2) were significantly associated with the 6-item sleep problem index. For the other glyphosate and mancozeb exposure measures based on self-reports, no significant associations were observed. For estimated biomarker levels exposure-response trends pointing in the same direction (p-value < 0.1) with associations with the 6-item sleep problem index and sleep inadequacy was seen with the measures based on self-report.

Conclusion Our results suggest that different pesticide-active ingredient-specific short and long-term exposure measures are relevant when studying the association with (acute) sleep problems.

O-31 SYNTHESIS OF EVIDENCE FROM THE PROTECT UK NATIONAL CORE STUDY: EXPLORING OCCUPATIONAL RISKS OF SARS-CoV-2 INFECTION AND COVID-19 MORTALITY

Introduction The PROTECT National Core Study was funded by the UK Health and Safety Executive (HSE) to investigate how SARS-CoV-2 is transmitted from person to person, and how this varies in different settings.

One area of research aimed to compare relative differences between occupational groups and sectors in SARS-CoV-2 infection and COVID-19 mortality over time and explore the likely reasons.

Methods We brought together evidence from nine published epidemiological studies supported by PROTECT relating to four data sets, plus new analyses relating to the Omicron period. We organised these studies into the following categories: those that specifically compared risks of infection mortality; and those that looked at risk factors for SARS-CoV-2 infection and/or COVID-19 mortality. We extracted descriptive study level data and results. We investigated risk across four pandemic waves using forest plots for key occupational groups by time. A workshop was organised in Oct 2022 with authors from each study to discuss and document key strengths and expected biases.

Results Healthcare and social care sectors saw elevated risks of SARS-CoV-2 infection and COVID-19 mortality early in the pandemic but thereafter these declined and varied by specific occupational subgroup. The education sector saw sustained elevated risks of infection after the initial lockdown period with little evidence of elevated mortality. Results were largely consistent across different studies with differing expected biases, although unmeasured confounding cannot be ruled out.

Conclusion Differences between occupations and sectors in the UK in terms of COVID-19 risks that were observed in the early stages of the pandemic largely dissipated over time. Studies investigating risk factors suggest that reasons could include vaccination roll out, introduction of risk mitigation within high risk sectors, changes in patterns of home-working and lifting of restriction on social mixing (thereby reducing the relative effect of work).

Respiratory effects/Diseases

O-32 THE EXPOSURE-RESPONSE RELATION BETWEEN OCCUPATIONAL EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA AND INCIDENT INTERSTITIAL LUNG DISEASES: A PROSPECTIVE FOLLOW-UP STUDY

Introduction Occupational exposure to respirable crystalline silica is a well-known cause of silicosis, but studies have indicated that silica exposure is also associated with increased risk of other types of interstitial lung disease (ILD). Our objective was to examine the risk of different types of ILD following occupational silica exposure.
Material and Methods The study population includes the total Danish working population of 5,478,664 workers, followed 1979–2015. Annual individual exposure to respirable crystalline silica was estimated using a quantitative job exposure matrix. Cases of ILD were identified in the National Patient Register. We conducted adjusted analyses of exposure-response relations between cumulative silica exposure and different types of ILD. Register studies in Denmark without biological materials do not need approval from the National Committee of Health Research Ethics. This study is approved by the Danish Data Protection Agency.

Results The risk of silicosis increased with increasing cumulative exposure with an incidence rate ratio (IRR) of 3.07 (95% CI 2.40–3.93) in the highest exposure group (the highest tertile among the silica exposed) compared to the non-exposed group. The risk of other pneumoconioses was also increased with an IRR of 1.18 (95% CI 1.05–1.33) for the highest exposed compared to the non-exposed. For idiopathic ILD, ILD associated with connective tissue disease and other ILD the risks were increased in the highest exposure group compared to the non-exposed, but the analyses did not show clear exposure-response patterns.

Conclusion This study confirms an exposure response relation for occupational silica exposure and silicosis and indicates increased risks for other types of ILD. This warrants further examination of the specific risk patterns for different types of ILD.

Respiratory effects/Diseases

0-33 POTENTIAL OCCUPATIONAL SENSITIZING EXPOSURES AND DEVELOPMENT OF ASTHMA: AN OVERVIEW OF SYSTEMATIC REVIEWS

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Introduction and Aim Several hundred occupational agents are suspected to be able to cause asthma. However, the amount and type of evidence for these agents is not clear. As a first step, we aimed to identify, appraise, and synthesise the scientific evidence in systematic reviews of the relation between potential occupational sensitizing exposures and development of asthma.

Material and Methods We conducted a systematic literature search where the study criteria included persons in or above working age, potential occupational sensitizing exposures, outcome defined as asthma, and study design restricted to systematic reviews. Potential occupational sensitizing exposures were divided into 23 main groups comprising both subgroups and specific exposures. Two of the authors independently selected studies and extracted study data. Assessment of study quality and evaluation of the confidence in each systematic reviews level of evidence was performed using AMSTAR 2.