

LIVING NEAR AGRICULTURAL PESTICIDE APPLICATIONS AND THE RISK OF ADVERSE REPRODUCTIVE OUTCOMES: A REVIEW OF THE LITERATURE

Adeleh Shirangi, *The University of Western Australia, Australia*

Mark Nieuwenhuijsen, *Center for Research in Environmental Epidemiology (CREAL), SPAIN*

Danielle Vienneau, *Imperial College London, UK*

C.D'Arcy J Holman, *The University of Western Australia, Australia*

Background and Aims: Over the last decade, there has been growing concern about the possible health effects, including a number of adverse reproductive outcomes, from pesticides exposure of people living near agricultural fields. This systematic review evaluates the current epidemiological evidence on the association between living near agricultural pesticide applications and adverse reproductive outcomes, including congenital malformations, stillbirth, intrauterine growth retardation (IUGR), low birthweight, preterm birth and spontaneous abortions.

Methods: We identified and reviewed 25 studies from a systematic search of the main scientific databases and other sources published in 1950 to 2007. Study methods and main results were summarised and tabulated according to the year of study, design and type of adverse reproductive outcome. The levels of evidence for reproductive toxicity in humans contributed by each study were assessed and the main limitations associated with these studies discussed.

Results: Overall, there was evidence of a relationship between living near agricultural fields and adverse reproductive outcomes, but the strength of evidence varied between outcomes. The evidence suggested an association for the congenital malformations, but due to methodological limitations, such as poor exposure measurement and potentially inadequate control of confounding, a firm conclusion remains beyond reach. For the other outcomes (stillbirth, IUGR, low birthweight, preterm birth and spontaneous abortion) the evidence for any associations was equivocal at best, but some leads warrant further investigation.

Conclusion: Residential proximity to agricultural pesticide applications may be an important source of ambient environmental exposure, but due to the underlying methodological difficulties the evidence for its relationship with adverse reproductive outcomes is generally weak and varied between outcomes. Improved exposure assessment methods are needed to obtain a more reliable assessment of any risks.

Shirangi A, Nieuwenhuijsen M, Vienneau, D. Holman CDJ. Living near agricultural pesticides applications and the risk of adverse reproductive outcomes: A review of the literature. *Paediatric and Prenatal Epidemiology*. 2011; 25(2):172-91