

Biological monitoring of pesticides exposure in residents living near agricultural land

Autumn 2015



Hello and thank you!

Welcome to the final newsletter for our research project '*Biological monitoring of pesticide exposures in residents living near agricultural land*'.

It has been some time since I was last in touch. Since then the project team have been going through the time consuming and challenging task of analyzing and interpreting our data. We very much appreciated your understanding and patience as we completed our work.

I am pleased to tell you that the project is now finished. This newsletter shares our findings, which I hope you will find interesting. Details of where you can obtain a copy of the scientific report are also included.

Thank you once again for your participation and continued interest in this research.

Best wishes

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Background

In Britain, the use of pesticides is carefully regulated to protect human health and the environment. Before a pesticide can be used, it has to be approved by the UK government. During this approval process, it must be demonstrated that the human exposure levels to the pesticide are sufficiently low that it does not cause toxicity.

Pesticide exposure is estimated using a series of mathematical equations during the approval process. Previous research has shown that the methods used for assessing pesticide exposure during the approval process are appropriate for farm workers however, there is little research supporting these methods for estimating residents' exposure.

What were the aims of the research?

The project aimed to measure real-life pesticide exposure for adults and children (living within 100m of agricultural land) and to investigate if those exposures increased following the spraying of pesticides. The project also aimed to check whether the methods used in the current British pesticides approval process are appropriate for assessing exposure of residents living near fields.

We did not investigate whether exposure to pesticides is associated with any adverse health effects.

Who funded the research?

This project was funded by DEFRA (Department for Environment, Food & Rural Affairs).

Who has reviewed the research?

The NHS South East Scotland Research Ethics Committee (SESREC) 3 (study number 10/S1103/63) approved our study.

An independent Advisory Group provided feedback and guidance on all the elements of the project throughout its duration, as well as reviewing the report and other outputs.

What did the research involve?

We measured exposure to pesticides of residents living near treated fields and orchards. The study did not change participating farmers' normal pesticide usage or alter potential exposure of residents.

We measured pesticide exposure by analysing urine samples collected from the residents. Residents provided urine samples both during and outwith the spraying season. Farmers provided details of their spray events.

We compared the pesticide levels in urine samples collected after spray events with the levels in urine provided when no spraying had occurred (background samples).

Separately, we used information provided by the farmers on their pesticide spray events to predict the levels of pesticide expected to be present in the urine.

We then compared the measured and predicted pesticide levels in urine to determine whether the exposure assessment methods used for regulatory approvals are appropriate and that they do not underestimate the actual exposure.

Who participated in the research and how much data was collected?

Recruitment, data and sample collection took place during 2011 and 2012 in three regions, East Lothian, Kent and Norfolk. Twenty-one farms participated in the study and 156 households including 296 residents were recruited. We collected 3,275 urine samples and used data from 1,587 urine samples from 149 residents in the final data analysis.

What are the conclusions of the research?

The results showed that the exposure to pesticides for the residents living close to the sprayed fields and orchards was no higher following spraying events than during other days when no spray activities took place. Background levels of some pesticides were higher during the spraying season than outside the spraying season.

Overall, the levels of pesticide exposure were low and probably mostly due to dietary intakes.

This research provides evidence that the exposure assessment carried out as part of the approval process for pesticides does not underestimate the actual exposure.

Where can I obtain further information?

The scientific report is available from the DEFRA website:

<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=17319&FromSearch=Y&Publisher=1&SearchText=PS2620&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description>

Publications and presentation details are available from our project website:

www.pesticidebiomonitoring.org