

PRESS RELEASE



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FOR RELEASE:

Exposure study focuses on farm families

Spouses and children who live on farms where pesticides were applied generally did not have appreciable increased exposure to those pesticides, according to the results of a new study conducted by the University of Minnesota.

The biomonitoring study is the most comprehensive assessment to date of pesticide exposure for farm spouses and children. Ninety-five farm families in Minnesota and South Carolina provided urine samples 24 hours a day for four days after pesticides were applied on their farms. They also provided a baseline 24-hour sample the day before application.

Biomonitoring studies, which scientifically analyze urine, blood or tissue, are considered the most accurate way to measure the amount of a substance that enters the body. By determining the pesticide concentration in urine in the farm families, scientists were able to estimate the participants' internal exposure. Much of the health research that previously has been conducted with farm families and pesticides has used questionnaire-type surveys.

"While questionnaire-type studies may determine if someone was present when pesticides were used, the amount of pesticide actually absorbed is the only measure that is important in determining potential health effects," said Dr. Jack Mandel, professor of epidemiology at Emory University, who was the chief investigator for the study. "For the types of pesticide scenarios we observed, the Farm Family Exposure Study shows that it can be erroneous to assume appreciable pesticide exposure based on participants' presence on the farm."

Children and spouses typically had pesticide exposure levels comparable to exposure levels measured in people who do not live on farms, Mandel said.

The study was initiated while Mandel was on staff at the University of Minnesota. Field research was conducted during 2000 and 2001, and analysis of urine samples was completed during the past year. The analytical techniques used in the study were capable of detecting pesticide traces in urine as low as 1 part per billion. Three pesticides were studied – the herbicides glyphosate (the active ingredient in Roundup agricultural herbicides) and 2,4-D and the insecticide chlorpyrifos (the active ingredient in Lorsban).



The analysis showed that 95 percent of the children and spouses in the study had very low or no detectable increase in urine pesticide concentration after a pesticide application on their farms. Increases in excess of 10 parts per billion typically were linked to some event, such as children being in the immediate application area or teenagers assisting in the pesticide application process.

The study also measured the amount of exposure for the farmers who applied the pesticides. "The amount of exposure an applicator gets depends on the particular pesticide and specific activities during handling and applying pesticides," said Dr. Bruce Alexander, a co-investigator and an assistant professor of environmental and occupational health at the University of Minnesota. "In some cases applicators can apply pesticides and have limited or even no detectable exposure. The more appreciable exposures occurred in relation to an event that resulted in direct skin contact, such as spills or repairing equipment."

The link between certain activities and exposures will be communicated throughout the agricultural community to reinforce the importance of good handling and application practices in accordance with label instructions.

The pesticide applications represented situations that allowed for the highest potential for exposure. For example, applications had to be made within one mile of the house, and in fact 40 percent of the houses were within 100 yards of treated fields.

Dr. Harris Pastides, Dean of the University of South Carolina Norman J. Arnold School of Public Health, chaired an advisory panel, which helped to establish the protocol for the \$2 million study. The panel included experts in exposure assessment and epidemiology from U.S. and Canadian universities and the U.S. Environmental Protection Agency.

A task force of epidemiologists from leading pesticide manufacturers conceived the study. Their companies funded the study to assess real-world exposure among farm families. Independent consultants worked with the University of Minnesota to observe and record activities on the farms and collect the urine samples.

"The quality of the research was excellent," Pastides said. "The study will provide important information about pesticide exposure for epidemiologic studies that rely on methods other than biomonitoring to assess pesticide exposure."