Insecticide Linked to Brain Abnormalities in Kids

But study doesn’t prove exposure caused the differences

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By Randy Dotinga

HealthDay Reporter

MONDAY, April 30 (HealthDay News) -- A new, small study links maternal exposure to a commonly used insecticide to unusual changes in the brain structures of young children, although the research doesn't definitely prove that the pesticide is at fault.

The findings raise more questions about the safety of the insecticide, known as chlorpyrifos, which is used to treat farm products in the United States but has been almost entirely banned in homes. The U.S. Environmental Protection Agency says exposure to the insecticide in children through food is "below the level of concern."

"People should wash their fruits and vegetables very carefully before eating, and pregnant women should not be working in agricultural settings where there might be an occupational exposure," said study lead author Virginia Rauh, deputy director of the Columbia Center for Children's Environmental Health at Columbia University.

Chlorpyrifos is widely used to kill insects on farms. "It is used on corn, many types of fruits, many types of leafy green vegetables and cotton," Rauh said. "It's also used for a variety of other commercial purposes -- as a spray to control pests on golf courses, road medians, Christmas tree farms and at various other places." People are often exposed through insecticide residue on fruits and vegetables, Rauh said.

Previous research has linked indoor residential exposure in pregnant mothers to lower birth weights. "We found evidence that there was poorer cognitive [mental] development and potentially more behavior problems in kids who were exposed," Rauh said.

In the new study, the researchers used MRI machines to scan the brains of 40 children aged 5 to 11 years. The mothers of 20 of them had high levels of exposure to the insecticide while they were pregnant with the children.

The mothers of the other 20 kids had low levels of exposure. The brains of the kids with high exposure were more likely to have certain enlarged structures in the brain. They also had thinning in some parts of the brain.

Rauh acknowledged that the study doesn't prove a direct cause-and-effect link between the insecticide and the differences in the brains between the children. One possibility is that the mothers of the children had different diets or were exposed to other chemicals in their homes or workplaces, but Rauh said they share one similarity: Most came from a low-income section of Manhattan and almost all were poor.

The findings are worrisome because the differences in brain structure appear to be harmful, she said. "An abnormal enlargement would not necessarily be a good thing."

In addition, there are links between the sizes of parts of the brain and problems with behavior and thinking, she said.

At the moment, Rauh said, she and her colleagues are studying whether they can link exposure to the insecticide to long-lasting changes in behavior in kids at ages 9 and 10.

Dr. Bruce Lanphear, a professor of health sciences who studies environmental risks at Simon Fraser University in Vancouver, British Columbia, praised the study but acknowledged it doesn't prove the insecticide is harmful. However, he said, "even though this paper is not the final word, it builds on existing studies that basically say [author] Rachel Carson was right: Widespread exposure to toxins is likely to cause fairly severe disease."

He asked: "Are we willing to sacrifice our children's brains for profits? That's the choice we're making, whether we know it or not."

Study lead author Rauh said one way to avoid pesticides is to eat organic food, but it's expensive. It's smart to wash produce carefully, she said, and use less-toxic ways to control pests around the house, such as bait traps.

Stephanie Engel, an associate professor of epidemiology at the University of North Carolina at Chapel Hill, put it this way: "The general lesson here is that the dangers that chemicals pose to child development are not always understood. These children were exposed during a period when chlorpyrifos was deemed safe for residential use. So it just makes good sense for pregnant women to be cautious about the chemicals they use during pregnancy. Even ones that we are told are 'safe' may later turn out to be harmful."
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