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Exposure to Pesticides in Pregnancy Can Lower Children's IQ

By ALICE PARK Thursday, April 21, 2011

Moms-to-be have a lot to worry about while they're expecting, especially since everything they're exposed to has a chance of affecting their developing baby.

And that includes pesticides, from the kind that farmers spray on fruit and vegetable crops to the bug-killers that we use in our homes. In three separate studies published in the journal *Environmental Health Perspectives*, researchers document that a mother's prenatal exposure to these chemicals can affect the cognitive development of her child, in some cases up to nine years later.

(More on TIME.com: [Pregnant Women Awash in Chemicals. Is That Bad for Baby?](#))

In one [study](#) by Columbia University researchers, which involved African American and Dominican mothers, children born to women who had the highest levels of an organophosphate pesticide known as chlorpyrifos in the cord blood during delivery scored three points lower on IQ tests at age 7, compared with children born to mothers with the lowest levels of the pesticide.

In another [study](#) by University of California, Berkeley, researchers, which looked at levels of a breakdown product of organophosphate pesticides in the mother's urine, the difference in IQ in children born to mothers with the highest versus the lowest levels of the metabolites was even greater at age 7 — seven points.

And in the third [study](#), conducted at Mt. Sinai Medical Center in New York City, children born to mothers with higher levels of pesticide metabolites in their urine scored lower on cognitive tests beginning at 12 months, with continued deficits in reasoning throughout childhood.

(More on TIME.com: [Study: Preterm Birth Raises the Risk of Childhood ADHD](#))

The studies, say one of the authors, are important because while others have linked pesticide exposure to potential developmental effects, these are the first to follow groups of mothers and their offspring over time and document changes in the children's cognitive development. Even after accounting for other factors that could explain differences in IQ, such as maternal education, the home environment, and possible underlying attention or development disorders, the relationship persisted. "These studies are unusual in that they are the first to look at prenatal exposure at a low level — at levels that would occur in everyday life, and not levels that would poison us — and followed the children prospectively," says Brenda Eskenazi, director of the center for environmental research and children's health at U. C. Berkeley.

How concerned should expectant mothers be about their exposure? First, the authors note that the levels of pesticides found in their participants, while slightly higher than the national average, still fell within the range of exposure considered acceptable in the U.S. What's more, in the Berkeley study, the participants came from an agricultural community in California, where they were likely to have been exposed to more agricultural pesticides than the average

American. And the Columbia study was started in 1997, four years before the U.S. Environmental Protection Agency (EPA) banned the use of chlorpyrifos indoors.

Still, there are ways pregnant women may be exposed to potentially hazardous levels of pesticides: through the food they eat, for example, particularly fruits and vegetables that have been sprayed with bug-killing chemicals (many have been banned for residential use but not for use on crops). In one study of children who were put on organic diets, scientists found that levels of chlorpyrifos in their urine dropped after their diet was changed, but went back up when they started eating conventionally grown produce again.

(More on TIME.com: [Can a Mother's Pregnancy Diet Influence Her Child's Future Weight?](#))

That supports the idea that it's possible to reduce your exposure to pesticides by avoiding crops treated with the chemicals. But if you can't afford to buy organic, what should you do? "You can wash fruits and vegetables thoroughly, with a brush, which does remove some of the residue," says Virginia Rauh, deputy director of the Columbia University Center for Children's Environmental Health and an author of one of the papers.

The last thing the authors want to see is expectant women avoiding fresh produce, which contains nutrients that are essential for mom and growing baby. "The important message here is to wash fruits and vegetables well, not to avoid them," says Eskenazi.

Instead, mothers-to-be can reduce exposure to pesticides in other ways — by using different methods of pest control inside the home, for instance, such as baits and traps rather than sprays. Research shows that such strategies work. In studies of chlorpyrifos levels in the blood of expectant women, researchers found that levels dropped significantly following the ban on indoor use of the pesticide. And in California, where organic crops are on the rise, use of chlorpyrifos and other organophosphates are now on the decline.

(More on TIME.com: [When Mom Exercises in Pregnancy, Her Baby's Heart Benefits](#))

The findings, say Rauh, should be enough to prompt the EPA to tighten its restrictions on pesticide use for food crops, given that certain populations who work in agriculture, as well as everyone who consumes produce, may potentially be exposed to levels that can lead to developmental problems. "The differences we found are potentially educationally meaningful," says Rauh. "The differences could affect reading comprehension and learning in young children, and affect academic success in school. We don't think anyone will suggest this type of exposure can result in extreme retardation. But we're talking on average about slightly lower scores of intellectual development that aren't trivial, and could mean a lot to a child."

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