

A Mother's Exposure to Pesticides During Pregnancy May Raise Children's Autism Risk

In one of the largest studies looking at the potential effects of pesticide exposure on still-developing fetuses and newborns, scientists found that exposure to the most commonly used pesticides was linked to higher risk of [autism spectrum disorder](#).

Led by Ondine von Ehrenstein, associate professor in the Fielding School of Public Health at the University of California, Los Angeles, the researchers analyzed autism registry data in California along with data on pesticide spraying in the state. They published their findings in the [BMJ](#).

Overall, the study included nearly 38,000 people, with 2,961 cases of autism. The scientists found that women who were pregnant and who lived within a 2,000 meter radius of a highly sprayed area were anywhere from 10% to 16% more likely to have children diagnosed with autism than women who lived in places farther away from sprayed areas. The researchers reviewed spraying of 11 popular pesticides, including chlorpyrifos, diazinon and permethrin (often used to control ticks). When they looked at diagnoses of autism spectrum disorder that also came with intellectual disabilities, they found on average 30% higher rates among children who were exposed to the pesticides while in utero. Exposure in the first year of life increased the risk of autism by up to 50% compared to those not exposed to certain pesticides.

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Von Ehrenstein selected 11 pesticides to study because previous research in

animals have linked them to potentially harmful effects on development and brain development, including on animals still in the womb. Studies on human populations have also linked these chemicals to harm, but most of this research involved smaller groups than the cohort in the current study.

Von Ehrenstein says that the results point to two possible periods during which developing babies might be vulnerable to the neurotoxic effects of pesticides: while in utero and after birth. She and her team controlled for the effect of prenatal exposure when they measured risk among infants in their first year of life, and they similarly also adjusted for the effect of exposure after birth when they calculated the risk for exposure while the mothers were pregnant. Babies exposed in their first year of life seemed to be at higher risk of developing autism with accompanying intellectual disabilities, she says. "Both prenatal and postnatal periods are vulnerable periods. And it doesn't stop at birth."



It's possible that something else about the women living in areas with heavy pesticide spraying sets them apart from those who live in areas with little or no exposure, but von Ehrenstein and her colleagues also adjusted for potential confounders by adjusting for [air pollution](#), whether the mothers lived in urban or rural settings and their socioeconomic status. Even after taking these factors into account, the link remained robust.

The problem is that unlike behaviors such as smoking or drinking alcohol, exposure to pesticides is usually not in people's control, she says, and



pregnant women often aren't aware that they are exposed to the chemicals. People may be exposed to pesticides not just through spraying but also by eating produce that's been treated with the chemicals, so avoiding these fruits and vegetables may be another way to lower risk.

The Environmental Working Group recently published its [annual list](#) of the most pesticide-heavy produce, as well as [those](#) that have fewer pesticide residues. Choosing organic produce can help, too.

More broadly, von Ehrenstein hopes that results like hers will improve public awareness and lead policy makers to change policies about pest control and start looking for alternatives with less of an impact on human health. "I would hope that these findings would make some policy makers think about effective public health policy measures to protect populations who may be vulnerable and living in areas that could put them at higher risk," she says. "Raising awareness in the public may be the way to eventually change practices and agricultural policies."

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