



- Page One
- Features
- News
- Investigation
- Slices
- Energy
- Security
- Analysis
- Arts
- Travel
- Resources
- Opinion
- Letters
- Society
- Sci-Tech
- Action Line
- Editorial
- Support Us

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[Back to Society](#)

Air in Expectant Moms' Homes Contains Pesticides

Will Sansom

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University of Texas San Antonio



Air samples from homes of Hispanic mothers-to-be along the Texas-Mexico border contained multiple pesticides in a majority of the houses, according to a study conducted by the School of Medicine at The University of Texas Health Science Center San Antonio.

All the women were in the third trimester of pregnancy, when the fetal brain undergoes a growth spurt. Several studies have reported that pesticide exposure may adversely affect mental and motor development during infancy and childhood. The new report is in the summer issue of the Texas Public Health Journal sent to members this week.

Two-thirds of the families surveyed said they used pest control methods to kill cockroaches, rodents and other pests. Pregnant women and infants often spend 90 percent of their day indoors. "There is a lack of education in our communities regarding the health hazards of these toxic pest control methods," said lead author Beatriz Tapia, M.D., M.P.H., lecturer at the UT Health Science Center — Regional Academic Health Center campus in Harlingen, located 10 miles from the border. "We should concentrate on trying to educate families about low-cost methods that prevent infestations and use the least toxic pest control methods first."

Integrated pest management (IPM) is a low-cost strategy to replace the use of residential pesticides, Dr. Tapia said. IPM focuses on installing screens and caulking doors and windows to keep out pests, putting away food and placing boric acid, a low-impact alternative, in walls.

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"Once we educate our women of childbearing age about how they can safely and in a healthy manner diminish pests in their homes, they will feel empowered that they can make a difference in their family's life," Dr. Tapia said. She is a faculty associate in the university's Department of Family and Community Medicine and serves as environmental medicine training coordinator for the South Texas Environmental Education and Research Center (STEER). She co-coordinates a 30-day Harlingen student elective in environmental and occupational medicine.

The team sampled air in 25 households, finding at least five pesticides in 60 percent of the dwellings. Nine other pesticides were identified in less than one-third of the homes. Ninety-two percent of the air samples contained o-phenylphenol, which is used as a fungicide, germicide and household disinfectant, while 80 percent included chlorpyrifos, employed in agriculture to kill mosquitoes and other pests. Propoxur, present in granular baits, pet collars and other products, showed up in 76 percent of samples, along with the insecticide diazinon in 72 percent. The herbicide trifluralin turned up in 60 percent of samples.

The U.S. Environmental Protection Agency (EPA) in June 2000 entered into an agreement to eliminate virtually all homeowner uses of chlorpyrifos, except ant and roach baits in child-resistant packaging. The EPA banned residential use of diazinon as of Dec. 31, 2004.

"Increasingly, pesticide exposures are being linked to neurodevelopmental disorders such as autism and attention deficit hyperactivity disorder (ADHD)," said co-author and STEER Director Claudia S. Miller, M.D., M.S., professor in environmental and occupational medicine with the Department of Family and Community Medicine. "Planning for pregnancy today should include not only prenatal vitamins and a good diet, but also avoiding potentially hazardous pesticides. Instead, use non-toxic approaches for pest control and IPM."

Environmental medicine researchers at the Harlingen campus modeled the pilot project on studies conducted by the Columbia Center for Children's Environmental Health. These studies, which sampled air in homes of mother/newborn pairs in northern Manhattan or South Bronx, showed that fetal and childhood exposure to pesticides can be measured in indoor air and can adversely affect fetal growth in a minority population.

The Harlingen researchers recruited pregnant Hispanic women from two maternity clinics in Hidalgo County. Enrolled women were 18-35 years old, had no serious medical conditions and had reached 30-34 weeks of gestation. The team asked the women questions about pesticide use and exposure, proximity to agricultural fields, and how often they saw spraying operations or detected pesticide or other odors drifting from fields.

Air samples were measured for multiple pesticides used in agriculture, given the close proximity of the fields to participant homes. These pesticides turned up in 12 percent of the homes, not as high a number as expected. "The reality is, when these pesticides are used outdoors, the sun and soil do their part and eliminate them from the environment," Dr. Tapia said. "Indoors you don't have nature helping you."

Outdoor and indoor exposures are measured differently. "Agricultural spraying tends to result in shorter-term bursts, so-called acute exposures that may not be captured in a study like ours," Dr. Miller said. "This is a limitation of most pesticide exposure studies in agricultural areas."

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