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ESF Study Links Lead, Soil

A second survey is under way to confirm researchers' findings in Syracuse.

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By Luis Perez Staff writer

Soil contamination plays a larger role in the lead poisoning of children than health officials previously thought, according to a study conducted in Syracuse by a researcher at the State University College of Environmental Science and Forestry.

Nationwide, most programs that monitor lead poisoning do not address lead in soil. The Onondaga County Health Department, the agency that tests local children for lead, does not routinely examine soil as a primary factor, and considers it only if others are ruled out.

If a three-year follow-up study currently under way confirms the findings about soil, there could be implications across the country in the battle against childhood lead poisoning.

David L. Johnson, an ESF chemistry professor, presented his findings last month to a group from the county Health Department's Lead Poisoning Control Program. The study, "Soil Lead and Children's Blood Lead Levels in Syracuse, NY, USA," is scheduled to be published in the December issue of Environmental Geochemistry and Health, a peer-reviewed journal.

For his study, Johnson measured the level of lead in samples of Syracuse soil and compared that with data from the county health department on poisoned children.

Soil has always been considered a source of lead, said Dr. Lloyd Novick, Onondaga County's health commissioner. But what Johnson found in his initial study - and what he and fellow researcher Daniel Griffith are trying to confirm - is that soil has been underestimated as a source.

In his study's conclusion, Johnson writes: "... strong associations are observed between blood lead values and soil lead values. This supports soil lead

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exposure as an important driving force for the seasonal dynamics of blood lead levels in Syracuse."

Griffith, a geography professor at Syracuse University's Maxwell School of Citizenship and Public Affairs, is working with Johnson on the larger follow-up study, which will focus again on Syracuse. The health department is collaborating with the researchers, providing them with data.

"At the health department, we think that this an important area of study," Novick said.

Last year, 1,261 Onondaga County children had lead levels considered dangerous by federal standards, Novick said Wednesday. Earlier this year, county health officials reported that number as 891 children. It was unclear Friday why there was a discrepancy in the numbers and county health officials could not be reached for clarification.

Lead damages a child's central nervous system and stunts development. High lead levels can lead to learning disabilities and behavioral problems. The heavy metal damages the brain, kidneys and reproductive systems of small children. Even low levels of the toxin are linked to lower IQs, juvenile delinquency and impaired hearing.

Federal officials consider lead the country's top environmental health hazard for children under 6.

The present focus of fighting childhood lead poisoning does not include protecting children from lead in soil. When a child is found to have elevated levels of lead, county health inspectors are dispatched to find the source. The primary focus is on dust in older homes that are coated in lead-based paint. If inspectors don't find lead in the paint, then they'll look for it in the soil, Novick said.

In the vast majority of cases, however, lead is found in layers of paint. Health department officials then order property owners to fix the problem, usually by painting over trouble spots. They also require owners to take precautions so not to make the problem worse by creating more lead dust.

"We see a second component that is overlooked most everywhere," Griffith said. "The lead in the soil outside the home."

Johnson's work replicates the findings of a study in New Orleans that showed a clear correlation between lead in soil and blood lead levels, he said.

The researchers say lead-laced soil in poorer neighborhoods, which tend to have more bare dirt, is tracked indoors. Higher concentration of cars in urban areas that once used leaded gasoline left a huge reservoir of the toxin, they said. That adds to the dust created by the leaded paint in homes.

Removing all of the contaminated soil is not practical, Johnson and Griffith said. But health officials may be able to find creative ways to create barriers so children do not have direct access to the poison in the dirt. Plantings, growing grass or even mulching contaminated soil could protect children, they said.

Dr. Novick said the findings of Johnson and Griffith's second study are needed to confirm their theory. Then interventions need to be studied to see which work best, he said.

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