

Swabs not reliable for detecting lead dust in homes

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The quick, inexpensive test kits used by homeowners nationwide to detect lead-laced dust are prone to high error rates, according to a University of Rochester study.

Researchers found that 64 percent of the locations that LeadCheck Swabs indicated were safe, actually had hazardous concentrations of lead in dust, according to federal standards. Katrina Korfmacher, Ph.D., an expert on lead poisoning at the University of Rochester Medical Center and first author of the study, warns that people should be aware of the tool's lack of sensitivity and how it might impact the health of children.

"We're very interested in promoting low-cost ways to detect lead at the low levels we now know to be dangerous to children. That's why it was important to evaluate the test," Korfmacher said. "Our concern is that parents or property owners might use these tests and be falsely assured."

Childhood lead poisoning is irreversible. It results from ingesting lead-based paint, lead dust, or contaminated soil.

Some county health departments across the nation use LeadCheck Swabs as an educational tool, recommending the kits to mothers bringing home infants from the hospital. The swabs are sold at many retailers; they cost about \$1.30 each when purchased in bulk. They are popular among community groups, landlords and other consumers seeking an inexpensive way to get precise results.

In Rochester, N.Y., several community groups wanted to begin using the tests but agreed to wait until Korfmacher's evaluation was complete. The research was conducted as part of a community "Get The Lead Out" (GLO) project, a collaborative effort between the University and several community groups to prevent lead poisoning. The GLO project is one example of the University's long history in developing innovative approaches to public health problems.

Korfmacher and co-author Sherry Dixon, Ph.D., of the National Center for Healthy Housing in Columbia, Md., report in the June edition of the journal *Environmental Research* that they tested the LeadCheck Swabs in typical field conditions in Rochester houses, using the manufacturer's instructions. Researchers compared the swabs to standard dust wipes, which are approved by the U.S. Environmental Protection Agency, used by trained risk assessors, and analyzed at certified laboratories. Dust wipes give accurate information, but the required laboratory fees, waiting time, and labor costs that may be prohibitive for some consumers.

The swabs work a little like a home-pregnancy test. According to the instructions, a person rubs the swab onto a small patch of a floor to collect a dust sample. The yellow tip will turn pink or red if lead is present. The instructions say the swabs will instantly detect lead in dust at levels that exceed the EPA standard of 40 micrograms per square foot for floors.

It is not clear why the swabs are failing to detect hazardous levels of lead in dust. Sometimes, the LeadCheck Swabs turned from yellow to shades of brown, which might be confusing to consumers because the instructions do not guide consumers on how to interpret a brown result. The brown tip might result from dirt hiding a red chemical reaction. Another explanation is that household dirt could interfere with the reaction between the dye in the swabs and reactive lead in the dust,

researchers noted.

Yet even when results were interpreted conservatively – that is, every swab that did not stay purely yellow was counted as a positive lead result -- the LeadCheck Swabs' probability of correctly identifying dust lead levels above the federal standard for floors was only 72 percent, the study concluded.

LeadCheck Swabs were originally developed to test for lead in paint, Korfmacher said, but more recently they have been promoted for dust, and include instructions for dust testing.

"It's clear from our study that LeadCheck Swabs shouldn't be used to determine if house dust contains lead in excess of the EPA standards, " said Korfmacher, community outreach coordinator for the Medical Center's Department of Environmental Medicine. "However, this test could be a good pre-test for getting professional clearance using dust wipes. If the swab test comes up positive, then you know you have lead and you should clean more before paying for a professional clearance test. But you should never be reassured by a negative test that dust lead levels are safe."

Source: University of Rochester Medical Center

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