

Children at risk for ingestion of PAHs from pavement sealant, study finds

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Children living near coal-tar-sealed pavement are likely to receive a far higher dose of carcinogenic polycyclic aromatic hydrocarbons (PAHs) from incidental ingestion of house dust than do children living near unsealed pavement, and that dose is more than two times higher than the PAH dose children are estimated to receive from food.

In a paper published in the journal [Environmental Pollution](#), researchers at Baylor University in Waco, Texas, and the U.S. Geological Survey (USGS) in Austin, Texas, reported that the calculated non-dietary dose of B2 (carcinogenic) PAHs for children in residences adjacent to coal-tar-sealed pavement is 14 times that for children in residences adjacent to unsealed pavement.

The results are an important step in evaluating the human-health risk associated with use of coal-tar-sealcoat products.

"Our study indicates that house dust in residences adjacent to coal-tar-sealed pavement might represent a primary and biologically relevant exposure to B2 PAHs, especially in young children. This is of particular interest because of the widespread use of coal-tar-based sealant on [parking lots](#) and residential driveways in the U.S.," said E. Spencer Williams., Ph.D., principal author of the study and Baylor University assistant research scientist at the Center for Reservoir and Aquatic Systems Research in the College of Arts & Sciences.

Coal-tar-based [pavement](#) sealant, a product applied to many parking lots,

driveways, and even playgrounds primarily in the Central, Southern, and Eastern U.S., has PAH concentrations 100 to 1,000 times greater than most other PAH sources. An earlier study documented that house dust in residences adjacent to coal-tar-sealed parking lots had [PAH](#) concentrations 25 times higher than in house dust in residences adjacent to parking lots with other types of surfaces.

Humans regularly are exposed to PAHs through [ingestion](#) of cooked and uncooked foods, incidental ingestion of soil and dust, inhalation of ambient air and absorption through skin. While some previous studies have indicated that diet is the most important source of PAHs to humans, those studies did not consider house dust contaminated with PAHs from coal-tar-based sealcoat.

"Until now, common knowledge held that dietary ingestion was the most important way that children are exposed to PAHs, but these dose calculations challenge that assumption for some settings," added Barbara Mahler, also an author of the exposure study and a researcher with the USGS.

More information: Access the full study through this link:
<http://www.sciencedirect.com/science/article/pii/S0269749112000279>

Provided by Baylor University

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