



HUMAN HEALTH RESEARCH PROGRAM

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RESEARCH MODELS ESTIMATE EXPOSURE TO CHROMATED COPPER ARSENATE (CCA) FROM PLAYSETS AND DECKS

Issue:

Little is known about the potential health risks to young children who play on or around wooden structures treated with a chemical preservative known as Chromated Copper Arsenate (CCA). CCA-treated wood is most commonly used in outdoor settings for decks, walkways, fences, gazebos, boat docks, and playground equipment to protect wood from dry rot, fungi, molds, termites, and other pests. The compound contains chromium, copper, and arsenic. Arsenic is a known carcinogen that has been shown to increase the risk of certain types of cancer. However, information is needed on real-world exposures to estimate potential health risks.

Science Objective:

To understand the extent to which children are exposed to arsenic and chromium while playing on or around CCA-treated playground equipment and residential decks, scientists from the U.S. Environmental Protection Agency's Office of Research and Development used a simulation model to predict human exposure. The Stochastic Human Exposure and Dose Simulation model for wood preservatives (SHEDS-Wood) is a probabilistic computer

model which allows researchers to estimate exposure from skin contact with treated wood and nearby soil, and from ingesting wood residues and soil around playsets and decks.

The results have shown that children are exposed to CCA chemicals the most when they put their hands in their mouths after playing on CCA-treated wood. The research also showed that there are several variables that impact exposure the most including: 1) the ease with which residue on the wood surface can be transferred to children's skin, 2) the amount of residue on the wood, 3) the surface area of the child's hands that are mouthed, 4) the amount of time a child plays on or around treated playsets, and 5) how often the child's hands are washed.

Application and Impact:

The SHEDS-Wood model exposure estimates are being used in EPA's risk assessment for CCA. As a result of this research, EPA has the data needed to advise the public on how to limit children's exposure. In addition, the findings are informing overall risk management strategies and providing the science needed to make decisions

regarding re-registration eligibility for CCA.

ORD is conducting additional studies to evaluate the effectiveness of different wood sealants on reducing arsenic residues in treated wood and surrounding soil.

REFERENCES:

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