

A New Cigarette Hazard: 'Third-Hand Smoke'

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Parents who smoke often open a window or turn on a fan to clear the air for their children, but experts now have identified a related threat to children's health that isn't as easy to get rid of: third-hand smoke.

That's the term being used to describe the invisible yet toxic brew of gases and particles clinging to smokers' hair and clothing, not to mention cushions and carpeting, that lingers long after second-hand smoke has cleared from a room. The residue includes heavy metals, carcinogens and even radioactive materials that young children can get on their hands and ingest, especially if they're crawling or playing on the floor.

Doctors from MassGeneral Hospital for Children in Boston coined the term "third-hand smoke" to describe these chemicals in a new study that focused on the risks they pose to infants and children. The study was published in this month's issue of the journal *Pediatrics*.

"Everyone knows that second-hand smoke is bad, but they don't know about this," said Dr. Jonathan P. Winickoff, the lead author of the study and an assistant professor of pediatrics at Harvard Medical School.

"When their kids are out of the house, they might smoke. Or they smoke in the car. Or they strap the kid in the car seat in the back and crack the window and smoke, and they think it's okay because the second-hand smoke isn't getting to their kids," Dr. Winickoff continued. "We needed a term to describe these tobacco toxins that aren't visible."

Third-hand smoke is what one smells when a smoker gets in an elevator after going outside for a cigarette, he said, or in a hotel room where people were smoking. "Your nose isn't lying," he said. "The stuff is so toxic that your brain is telling you: 'Get away.'"

The study reported on attitudes toward smoking in 1,500 households across the United States. It found that the vast majority of both smokers and nonsmokers were aware that second-hand smoke is harmful to children. Some 95 percent of nonsmokers and 84 percent of smokers agreed with the statement that "inhaling smoke from a parent's cigarette can harm the health of infants and children."

But far fewer of those surveyed were aware of the risks of third-hand smoke. Since the term is so new, the researchers asked people if they agreed with the statement that "breathing air in a room today where people smoked yesterday can harm the health of infants and children." Only 65 percent of nonsmokers and 43 percent of smokers agreed with that statement, which researchers interpreted as acknowledgement of the risks of third-hand smoke.

The belief that second-hand smoke harms children's health was not independently associated with strict smoking bans in homes and cars, the researchers found. On the other hand, the belief that third-hand smoke was harmful greatly increased the likelihood the respondent also would enforce a strict smoking ban at home, Dr. Winickoff said.

"That tells us we're onto an important new health message here," he said. "What we heard in focus group after focus group was, 'I turn on the fan and the smoke disappears.' It made us realize how many people think about second-hand smoke — they're telling us they know it's bad but they've figured out a way to do it."

The data was collected in a national random-digit-dial telephone survey done between September and November 2005. The sample was weighted by race and gender, based on census information.

Dr. Philip Landrigan, a pediatrician who heads the Children's Environmental Health Center at Mount Sinai School of Medicine in New York, said the phrase third-hand smoke is a brand-new term that has implications for behavior.

"The central message here is that simply closing the kitchen door to take a smoke is not protecting the kids from the effects of that smoke," he said. "There are carcinogens in this third-hand smoke, and they are a cancer risk for anybody of any age who comes into contact with them."

Among the substances in third-hand smoke are hydrogen cyanide, used in chemical weapons; butane, which is used in lighter fluid; toluene, found in paint thinners; arsenic; lead; carbon monoxide; and even polonium-210, the highly radioactive carcinogen that was used to murder former Russian spy Alexander V. Litvinenko in 2006. Eleven of the compounds are highly carcinogenic.