Thirdhand SMOKE
A new worry for families of smokers

By Carmen Heredia Rodriguez
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Michael Miller, 44, does what most smokers do to protect their children from the fumes: He takes it outside. After his 7 a.m. coffee, he walks out of his home in Cincinnati to smoke his first cigarette of the day. Then, as a branch manager of a road safety construction company, he smokes dozens more on street curbs.

“I see nothing wrong with smoking on the sidewalk, if he's not creating inappropriate smoke pollution in my area,” said Anwer Mujeeb, a tobacco-researcher program officer for the Tobacco-Related Disease Registry.

They discovered the average level of nicotine on the hands of children’s hands was more than three times higher than the level of nicotine found on the hands of non-smoking adults who live with smokers. They said nicotine on the skin of a nonsmoker is a good proxy to measure exposure to thirdhand smoke.

“Because nicotine is specific to tobacco, its presence on children’s hands may serve as a proxy of tobacco smoke pollution in their immediate environment,” the researchers wrote.

They also found that all but one of the children had detectable levels in their saliva of cotinine, a biomarker for exposure to nicotine. All of the children in the study had parents who smoked but did not smoke themselves.

The high nicotine readings on the kids’ hands, coupled with the “lightGREEENhooking” habits of the majority of their parents, signaled to lead author E. Melinda Mahabee-Gittens, an emergency room physician at Cincinnati Children’s Hospital Medical Center.

Children face a higher risk of developing health complications from thirdhand smoke than adults. Infants tend to spend more time indoors and can be surrounded by contaminated objects like rugs and blankets, according to a 2004 study written by Georg Matt, a professor of psychology at San Diego State University who co-authored the study and has researched thirdhand smoke.

Thirdhand smoke can linger on a surface, and affect his kids: “thirdhand smoke is a good proxy to measure exposure to thirdhand smoke.”

Melinda Mahabee-Gittens, an emergency room physician at Cincinnati Children’s Hospital Medical Center.

According to Bo Hang, a scientist at the Lawrence Berkeley National Laboratory who works on the toxic effects of thirdhand smoke, the best way to get rid of thirdhand smoke is by removing affected items, such as sofas and carpeting. Vacuuming and washing clothes, curtains and bedding can also help, as well as sealing and repainting walls or even removing and replacing contaminated wallboard.

“Tobacco smoke doesn’t go up in the air and it disappears and it’s gone,” Matt said. “That’s the illusion.”

The negative health consequences of secondhand smoke are well-established. But research at the U.S. Centers for Disease Control and Prevention estimates that since 1964 at least 2.5 million nonsmokers have died of diseases linked to their exposure to cigarette smoke.

In contrast, research on thirdhand smoke gained popularity only a decade ago, but multiple studies suggest the mix of toxins can lead to adverse health outcomes. An animal model simulating thirdhand-smoke-contaminated homes found it had biological harm to mice’s livers, lungs and healing abilities. A separate 2010 study showed thirdhand smoke mixed with nitrosic acid can form cancer-causing chemical compounds.

“All in all, I think the evidence that we've gathered is basically pointing to potentially high levels of risk to young children and toddlers, and also expectant mothers,” Anwer Mujeeb, program officer for the Tobacco-Related Disease Research Program.