Babies and toddlers at greater risk from second-hand smoke than previously thought, study finds

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Infants and toddlers in low-income communities may be even more at risk from second- and third-hand smoke exposure than has been believed, according to new federally supported research.

In testing that included more than 1,200 children, researchers found that

up to 15 percent of them had levels of cotinine, a byproduct of the body's breakdown of nicotine, comparable with what would be found in an adult smoker.

Overall, about 63 percent of the babies and young children in the study had discernible levels of cotinine, evidence of significant exposure to second- and third-hand smoke, according to the study, published last week in the journal *Nicotine & Tobacco Research*. Previous similar research, focused on older children, detected cotinine in less than half of the children studied or did not document levels of cotinine.

For those who remain skeptical about the body's susceptibility to passive smoke exposure, the study may serve as a wake-up call.

"We're finding (as much as) 15 percent of the babies have levels as if they were smokers themselves," said Clancy Blair, senior study author and a professor of cognitive psychology at New York University.

"It was definitely more than we expected, and it's scary," said Lisa M. Gatzke-Kopp, the study's lead author and a professor of human development and family studies at Pennsylvania State University. "Smoke continues on in the environment even after the cigarette is out."

The study, which also included researchers from other universities, sought to find if infants and very young children are at increased risk from passive tobacco smoke exposure given their higher respiration rates and likely contact with surface residues. The exposure included second-hand smoke from being around a smoking adult or third-hand smoke from residue on surfaces like toys, floors, or clothing.

"I think some parents are trying to reduce their children's exposure," said Gatzke-Kopp. "They're making a good effort. They go outside, or they don't smoke around their child, but they may not know it's all over them,

and when they pick the baby up and cuddle the baby, the baby's getting it through their clothes, their hair."

The study was part of the Environmental Influences on Child Health Outcomes (ECHO) program, a nationwide research effort with funding from the National Institutes of Health. Its aim is to learn about the effects of a broad range of environmental influences on child health and development.

The cotinine study focused on mostly low-income children in rural communities in central Pennsylvania and North Carolina. Saliva samples were taken from children ages 6 months, 12 months, 15 months, and 2 and 4 years.

Certain factors that often coincide with poverty also tended to coincide with higher cotinine levels—more residential moves, unstable households with adults coming and going, low educational attainment by adults in the household, and low income. Children who spent time in center-based day care were less likely to have high cotinine levels.

The majority of the children's mothers did not profess to be smokers. According to Gatzke-Kopp, about a quarter of the mothers said they smoked while pregnant, and about 30 percent said they smoked after their children were born.

And while the children tested for the study lived in rural communities, the researchers said it's unlikely children in urban communities are any less at risk.

"It might be even more worrisome, in that kids in urban environments are operating in more of a toxic chemical soup than kids in a more rural environment," Blair said.

Gatzke-Kopp said the researchers plan to use the data to learn if increased exposure to second- and third-hand smoke is related to later health problems, including learning deficits.

"It's definitely true that nicotine binds in the brain in special receptors that affect things like cognition and attention, and there's every reason to believe all brains are equally vulnerable," she said.