**Early Exposure to Air Pollution Tied to Higher Risk of Hyperactivity in Children**

By [Bonnie Rochman](http://healthland.time.com/author/brochman/)May 21, 2013



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Breathing in pollutants released into the air isn’t healthy for developing lungs, but a new study says it’s harmful for developing brains too.

Kids exposed to higher levels of traffic-related [air pollution](http://topics.time.com/air-pollution/) in childhood scored higher on measures of hyperactivity at age 7, according to a new study published in *Environmental Health Perspectives*. The researchers say it’s believed to be the most comprehensive study to date on the effect of traffic-related air pollution on children’s behavior.

“It appears that air pollution is part of the story of childhood behavior, but it’s not the whole story,” says the study’s lead author Nicholas Newman, director of the Pediatric Environmental Health and Lead Clinic at Cincinnati Children’s Hospital Medical Center. “We don’t know if air pollution is causing this or if it’s something else that people who live near main roads are also being exposed to.”

Researchers followed 576 children from the time they were born in the Cincinnati metro area until they reached the age of 7. The children were separated into two groups — those who lived near a major highway or bus route — defined as less than four [football](http://topics.time.com/football/) fields away — and those who lived more than a mile away from heavily trafficked areas. Cincinnati, it turned out was an ideal location to study the long-term effects of exposure to air pollution since it sees a relatively high amount of truck traffic and has many hills and valleys that encourage pollution to linger in the area.

Previous research suggested that the effect of traffic-related air pollution is greatest within a few hundred meters — a football field, for example — of the source of the pollution. About 11% of Americans live within a football field’s length of a four-lane highway, and 40% of U.S. children go to school within four football fields of a bustling highway.

When the children were 7, their parents were asked to fill out a questionnaire about their kids’ behavior, including symptoms that could indicate attention-deficit/hyperactivity disorder (ADHD) and other problems with attention or conduct.

Based on the results, the scientists concluded that kids exposed to the most traffic-related air pollution before their first birthday were more likely to have hyperactivity scores that put them at risk of ADHD. They controlled for many factors that could have skewed the results, including children’s cigarette exposure and family-income levels, which can affect prevalence of ADHD symptoms. But even after adjusting for these factors, the relationship between exposure to air pollution and ADHD remained. “When we corrected for other things that we thought could influence hyperactivity, we still found that kids exposed to the highest levels of traffic-related air pollution were more likely to have symptoms high enough to warrant monitoring,” says Newman. The study was not designed to diagnose the children definitively, however, so the researchers couldn’t say whether some of the children actually developed the disorder.

How does air pollution affect brain development? Based on previous studies, it’s possible that the pollutants could have caused blood vessels to constrict or caused some level of toxic buildup in the brain. Some researchers found that children born to mothers who were exposed to higher levels of car exhaust during pregnancy were more likely to have [behavior problems](http://healthland.time.com/2012/03/23/moms-exposure-to-air-pollution-can-increase-kids-behavior-problems/), and in adults, air pollution has been linked to [hardening of the arteries](http://healthland.time.com/2013/04/26/air-pollution-and-hardening-arteries/) and increased risk of [heart disease](http://topics.time.com/heart-disease/).

However pollution may be influencing children’s behavior, the latest results suggest that cleaner air could be an important factor in improving health — not just for the lungs, but for our brains as well.