

Study: Children exposed to high levels of pollution five times more likely to have ADHD

By Ariana Eunjung Cha

More than 11 percent of school-age children in the United States have been diagnosed with Attention Deficit Hyperactivity Disorder, a rate markedly higher than a decade ago. Could air pollution be a cause?

A study, published in PLoS One this week and conducted by researchers at Columbia University's Center for Children's Environmental Health, of 233 non-smoking pregnant women in New York City found that children exposed to high levels of air pollution during pregnancy were five times more likely to have ADHD by age 9.

The researchers measured levels of a common pollutant called polycyclic aromatic hydrocarbons or PAHs in maternal and cord blood shortly after delivery and in the children's urine at age 3 or 5. The team followed the children until 9 years of age and administered two tests which are the standard for diagnosing ADHD. Of the 33 who had high levels of exposure as measured by maternal blood, 13 were diagnosed as having the ADHD hyperactive-impulsive subtype, seven the inattentive subtype and 13 both.

PAHs are a group of chemicals that are used in making dyes, plastics, pesticides and even medicines and in modern life they are pretty much unavoidable. Practically everyone in an urban environment is exposed every day through the air we breathe and food we ingest. However, as the researchers noted, "urban, minority populations in the U.S. often have disproportionate exposure to air pollution and are at greater risk for adverse health and developmental outcomes from this exposure."

Scientists have previously linked high exposure to PAHs in the womb with a number of other childhood problems, including developmental delays, reduced IQ and symptoms of anxiety and depression. It has also been linked to cancer.

"During the fetal period and early childhood years, the brain is rapidly developing and vulnerable to neurotoxic insults that may manifest as adverse outcomes in childhood and adulthood," the researchers wrote.

The rise in ADHD diagnosis has been one of the most controversial issues in pediatric medicine. Some have said they worry about overdiagnosis and how it has led many parents to medicate children as young as 4 years of age.

If the Columbia study is confirmed, it could help solve the mystery of what causes ADHD -- whether it's more genetic or more environmental -- which could eventually lead to ways to prevent it.

"Fortunately," the authors noted, "it is possible to reduce airborne PAH concentrations using currently available pollution controls, greater energy efficiency, the use of alternative energy sources, and regulatory intervention to control polluting sources."