New Study Links BPA and Childhood Asthma

Kids exposed to a commonplace chemical early in life are more likely to have asthma, according to a study published today.

The study, which tested 568 children and their mothers in New York City, is the first to link early childhood exposure to bisphenol A (BPA) with asthma. Studies with lab mice, however, have found a similar link.

A Columbia University research team reported that children with higher levels of BPA at ages 3, 5 and 7 had increased odds of developing the respiratory disease when they were between 5 and 12. The children studied had roughly the same concentrations of BPA as the average for U.S. kids.

“We saw increased risk of asthma at fairly routine, low doses of BPA,” said Dr. Kathleen Donohue, an instructor in clinical medicine at Columbia University Medical Center and lead author of the study, which was published online in the Journal of Allergy and Clinical Immunology today.

BPA is used to make polycarbonate plastics and is found in some canned foods and beverages, paper receipts and dental sealants. More than 90 percent of Americans have traces in their bodies.

Medical experts for decades have been trying to figure out what has caused asthma rates to skyrocket in children throughout much of the world, beginning in the 1980s. Many suspect that it might have something to do with early-life exposures and changes in immune systems causing inflammation.

One out of every 10 U.S. children has been diagnosed with asthma, and the rate is even higher for black children – one out of every six, according to 2011 data from the Centers For Disease Control and Prevention.

The study doesn’t mean BPA causes asthma or wheezing. But “it’s an important study because we don’t know a lot right now about how BPA affects immune response and asthma,” said Kim Harley, an associate professor at the University of California, Berkeley, who studies environmental chemicals and children’s health but did not participate in the new research.

“They measured BPA at different ages, measured asthma and wheeze at multiple points, and still found consistent associations,” she said.

The researchers measured BPA in the women’s urine toward the end of their pregnancies. Once born, their children were then tested for BPA at ages 3, 5 and 7. Then they were tested for asthma and wheezing between the ages of 5 and 12.

Even though the researchers took BPA measurements at multiple times, it’s tricky to pin down exposure levels.
“BPA has a short half life, so whatever we take in today will be gone in about 24 hours,” said Joe Braun, an epidemiology professor at Brown University who was not involved with the research.

Braun said the testing was “as good as we’re going to get for this type of study.” Still, he said, “we’re still not accurately capturing exposure.”

Chemical industry representatives assert that there is no clear evidence of any human health effects from BPA exposure.

“The increasing rate of asthma among children is an important public health issue, but there is no scientific consensus on what is causing the increase and this study adds little relevant information to the debate,” Steven Hentges, a representative at the American Chemistry Council, said in a prepared statement.

“Because of the limited study design based on single samples to monitor exposure, it is difficult to draw any meaningful conclusions from this report,” he said.

Sixty-five percent of the mothers were Dominican – the rest were black women – and mostly low income. This group of women and children has been studied for more than a decade by researchers at the Columbia Center for Children’s Environmental Health at the Mailman School of Public Health. They’ve been tested for a variety of potential effects related to consumer chemicals, air pollutants and pesticides.

BPA levels in the mother’s urine were not associated with their children's asthma. Mothers with higher levels of BPA were actually less likely to have children that developed wheeze.

That finding is surprising, because the only other human study on BPA and respiratory problems did find a link between the mothers’ levels and increased risk of their child wheezing before age 3. In that study, published last year, Penn State researchers measured the mothers’ BPA levels earlier in their pregnancy.

The different outcomes may be because Donohue’s team measured BPA later in fetal development, during the third trimester, Braun said.

BPA also was linked to allergic diseases in mice in a 2003 study by Japan researchers.

Asthma is a chronic disease that occurs when airways are inflamed and constricted, causing shortness of breath. Nearly 25 million Americans have asthma, and more than 3,300 people die of it every year.

While air pollution, pet dander, mold and dust can trigger asthma attacks, it is “poorly understood” what causes the disease in the first place, said Dr. Elizabeth Matsui, a professor at the John Hopkins School of Medicine, in an email. She said exposures to tobacco, pollutants and allergens in the womb and as a young child, combined with genes, appear to be risk factors.

Black and Dominican children – the same study group used in Donohue’s research – living in poor, industrial neighborhoods with a lot of traffic in New York City had increased risk of developing asthma, according to a 2011 study by researchers at Columbia University.

Donohue did not factor in any pollutants but did take into account race, tobacco smoke exposure and family history when calculating the increased risks.

Because it’s the first study of its kind, it’s too early to blame BPA for asthma, Harley said. But the chemical is increasingly linked to more and more children’s health problems.

“This is another study showing an association between health outcomes and early life exposure with BPA,” she said. “Several studies look at children’s behavior, development, thyroid hormones, now an association with asthma. There’s really starting to be accumulation of evidence.”