

Exposure to 'forever chemicals' during pregnancy linked to increased risk of obesity in kids

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The risks of exposure to "forever chemicals" start even before birth, a new study confirms, potentially setting up children for future health

issues.

Exposure to per- and polyfluoroalkyl substances (PFAS) during pregnancy was linked to slightly higher body mass indices and an increased risk of obesity in children, according to a new *Environmental Health Perspectives* study led by Brown University researchers.

While this link has been suggested in previous research, the data has been inconclusive. The new study involves a much broader data set with research sites across the country, said lead author Yun "Jamie" Liu, a postdoctoral research associate in epidemiology at the Brown University School of Public Health.

"The findings were based on eight research cohorts located in different parts of the U.S. as well as with different demographics," Liu said. "This makes our study findings more generalizable to the population as a whole."

ECHO is a nationwide research program supported by the NIH with the goal of understanding the effects of a broad range of early [environmental influences](#) on [child health](#) and development. The study used data collected over two decades from 1,391 children between the ages of 2 and 5 years and their mothers. They were enrolled in ECHO research sites in California, Illinois, Massachusetts, Colorado, New Hampshire, Georgia and New York.

Thousands of individual PFAS are used in oil- and water-repellant textiles, [personal care products](#), firefighting foams, food packaging, [medical products](#) and many other household products. Toxic PFAS are incredibly durable and are thought to persist in the environment for thousands of years, which is how they've come to be known as "forever chemicals."

The researchers analyzed the levels of seven different PFAS in [blood samples](#) collected from mothers during pregnancy. They then calculated each child's body mass index, an approximate measure of body fat.

The researchers found that higher levels of PFAS in mother's blood during pregnancy were related to slightly higher BMIs. Increased risk of obesity was seen equally for male and female children.

These associations were observed even at low levels of PFAS exposure, said senior author Joseph Braun, a professor of epidemiology and director of the Center for Children's Environmental Health at Brown's School of Public Health. This is important to note, Braun said, since PFAS exposures have changed over time as some manufacturers have voluntarily phased out their use in response to concerns of associated health effects as well as environmental persistence.

"The fact that we see these associations at relatively low levels in a contemporary population suggest that even though PFAS usage in products has decreased, pregnant people today could still be at risk of harm," Braun said. "This means, according to our findings, that their children could also be at risk of PFAS-associated harmful [health effects](#)."

Over the past 10 years, Braun has been involved with multiple studies on the effects of PFAS on children's health. This type of data, he said, can help inform and influence environmental policy and safety guidelines.

"There is a continued interest in understanding the effects of low-level PFAS exposure on children's health," Braun said. "Studies like this one can help researchers and policymakers better understand the risks of PFAS in order to take effective actions to protect vulnerable populations."

Liu said that future research will examine the associations between maternal PFAS exposure and obesity-related health outcomes in older children, and eventually teens and adults.

More information: Associations of Gestational Perfluoroalkyl Substances Exposure with Early Childhood BMI z-Scores and Risk of Overweight/Obesity: Results from the ECHO Cohorts, *Environmental Health Perspectives* (2023). DOI: [10.1289/ehp11545](https://doi.org/10.1289/ehp11545).
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Provided by Brown University

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