ECHO
Environmental influences on Child Health Outcomes
A program supported by the NIH

Study Summary

Study Reveals Rising Levels of Plastics, Pesticides, and Replacement Chemicals in Pregnant Women

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Who sponsored this study?

This research was supported by the Environmental influences on Child Health Outcomes (ECHO) program, Office of The Director, National Institutes of Health.

Why was this study needed?

There is little data on exposure of pregnant women to many pesticides and industrial chemicals, even those that could be harmful during pregnancy and throughout childhood development.

Who was involved?

The study included 171 women from five U.S. states and Puerto Rico who were part of an ECHO cohort. Of these women, 60% were Black or Hispanic.

What happened during the study?

Research team members measured 89 biomarkers for more than 100 chemicals in urine samples from pregnant women in nine ECHO cohorts. Most of the chemicals can be found in pesticides, plastics, sunscreens, personal care products, and flame retardants. Many of the chemicals measured are replacement chemicals: chemicals meant to replace other harmful chemicals (e.g., BPA, phthalates). The team used a new method that measured multiple chemicals in a single urine sample to determine if pregnant women were exposed to the chemicals. The researchers then studied how different factors—such as age, race, education level, and the year the sample was collected—related to the levels of chemicals found.

What were the study results?

Most of the chemicals were found in at least one of the women in the study and about a third of the chemicals were found in greater than half of the participants. One fifth of the chemicals were detected in over 90% of the pregnant women indicating widespread exposure to the chemicals measured.

The study found some chemicals were detected more often or were present in higher amounts in non-white women, those with lower education, those who were single, and those exposed to tobacco. Hispanic women had higher levels of some chemicals not included in previous biomonitoring studies including parabens (preservatives) as well as phthalates and bisphenols (from plastics).

The study found that levels of some of the chemicals used as replacements for more toxic ones that were banned or phased out, increased over time and were present in higher amounts than have been seen in previous studies. The levels of several phased out chemicals were found to remain stable or decrease over time.

Footnote: Results reported here are for a single study. Other or future studies may provide new information or different results. You should not make changes to your health without first consulting your healthcare professional.

Impact

This is the largest study to date to measure exposure to a wide variety of environmental chemicals in a diverse group of pregnant women across the U.S. The results of this study highlight the widespread and unequal exposure of pregnant women to chemicals from air pollution, food, water, plastics, and other industrial and consumer products.

What happens next?

The research team will continue to study exposures in a larger, diverse population of pregnant women (more than 6,500) to see whether these prenatal chemical exposures are linked to negative birth outcomes. This data will be important for understanding the factors that may contribute to additional negative health effects during pregnancy and childhood.

Where can I learn more?

Access the full journal article titled, “Exposure to contemporary and emerging chemicals in commerce among pregnant women in the United States: The Environmental influences on Child Health Outcomes (ECHO) Program” in *Environment Science & Technology*.

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