



# ECHO

Environmental influences  
on Child Health Outcomes

A program supported by the NIH

## Study Summary

### ***Exposures to environmental chemicals and their effect on important molecules during pregnancy***

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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, under Award Numbers U2COD023375 (Coordinating Center), U24OD023382 (Data Analysis Center), and UH3 OD023275, and NIH NIEHS P42ES007373. Additional supporting entities include the Dartmouth Center for Molecular Epidemiology NIGMS, P20 GM104416) and the RTI Children's Health Exposure Analysis Resource (CHEAR) Exposure Assessment Hub (NIEHS, U2CES026544, Fennell PI), among others

#### Why was this study needed?

Pregnant women are exposed to chemicals in their environment. It is important to know how these chemicals might impact their health and the health of their babies. New tools can help us study how these chemicals affect health.

#### Who was involved?

This study included pregnant women in the New Hampshire Birth Cohort Study (NHBCS), who lived in north-central New England. A total of 177 women participated in this specific study within NHBCS.

#### What happened during the study?

During early pregnancy, women wore silicone wristbands for one week that captured chemicals in their environment. About three months later, the same women provided a blood sample, which was used to measure important molecules in their blood. Researchers looked at the link between environmental chemicals and the amounts of different molecules in the blood in order to better understand the health effects of these chemical exposures.

#### What were the study results?

Some of the chemical exposures were related to changes in the amounts of certain small molecules in the blood. Specifically, chemical exposures had the most impact on the amounts of a certain "amino acids," which are the building blocks of many proteins that are important to both mother and child. When considered together, these molecule changes suggest that some of the chemical exposures may impact key health processes.

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 study used new tools to study how chemical exposures can affect important small molecules during pregnancy. The study results provide clues to the potential impact of these chemical exposures on the health of both mother and baby. In the future, further investigation of these chemical exposures may reveal more about their link to specific health endpoints.

## What happens next?

Going forward, it may be helpful to look for a link between the changes in molecules and related health processes and outcomes. Researchers may also want to reproduce these findings in other cohorts, to better understand these environmental effects.

## Where can I learn more?

[Access the full journal article](#), titled “Chemical co-exposures assessed via silicone wristbands and endogenous plasma metabolomics during pregnancy” published in the *Journal of Exposure Analysis and Environmental Epidemiology*.

[Learn about silicone wristbands at the MyExposome website](#).

[Learn about small molecules and the methods to measure them](#) at The UNC Nutrition Obesity Research Center (NORC) Metabolism and Metabolomics Core.

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