

Simpler lifestyle found to reduce exposure to endocrine-disrupting chemicals

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A lifestyle that features fresh foods and limited use of products likely to contain environmental chemicals has been shown to reduce exposure to endocrine-disrupting chemicals (EDCs), such as BPA and phthalates, in a small population study. EDCs are linked to a number of adverse health complications including neuro-developmental delays, behavioral issues and fertility problems. They are produced by the millions of pounds per year and found extensively in a range of products that contain certain plastics.

Researchers from Mount Sinai School of Medicine and University of Rochester School of Medicine and Dentistry examined individual behavioral choices and community lifestyle practices, as well as analyzed urine samples, from a group of Old Order Mennonite (OOM) women in mid-pregnancy and determined that they have lower levels EDCs in their systems than the general population. The study is published online today in the journal *NeuroToxicology*.

Bisphenol A (BPA) and phthalates are part of a group of chemicals known as endocrine disruptors, chemicals in plastic that interfere with the body's endocrine, or hormone, system. They are used at length in a range of products, including clothing, furniture, cosmetics, and medical supplies and are also commonly found in food, water, and dust. EDC exposure can occur through ingestion, inhalation and absorption through the skin.

In addition to neuro-developmental delays, behavioral issues and [fertility](#)

[problems](#), exposure to BPA and phthalates have been linked to reproductive tract changes, neuro-developmental delays, behavioral issues, obesity, asthma, allergies, fertility problems and heart disease. The effects of EDCs appear to be greatest for the fetus exposed during gestation.

"Bisphenol A and phthalates have been linked to a number of [adverse health effects](#), but because these chemicals are so pervasive in the environment, and we all carry their signatures in our bodies, it's difficult to explicitly identify environmental sources and pathways," said Shanna H. Swan, PhD, Professor of Preventive Medicine at Mount Sinai School of Medicine and lead author of the study. "The Mennonite community provides us with a natural comparison group because they eat mostly fresh, unprocessed foods, farms without pesticides, applies no cosmetics, and uses personal care products sparingly,."

Researchers measured the amounts of EDCs in urine samples from 10 OOM women in mid-pregnancy. Study participants also completed a 14-category questionnaire identifying their exposure to risk factors such as personal care products, household products and medications in the 48 hours prior to providing the urine sample. Researchers compared levels of the chemicals in the OOM women to those of pregnant women who participated in The National Health and Nutrition Examination Survey (NHANES), a program of studies by the Centers for Disease Control and Prevention designed to assess the health and nutritional status of adults and children in the United States. NHANES also combines physical examinations and interviews.

Seven out of 10 of the OOM women had detectable levels of BPA and all of them had detectable levels of one or more of the [phthalates](#) being tested, but levels were lower than expected. The median BPA concentration in the OOM sample was 0.71 ng/mL compared to a median level of 2.8 ng/mL in the NHANES sample. The phthalate with

the highest level of detection was mono-2-ethyl-5-carboxypentyl phthalate (MECPP), primarily exposed to people through soft plastic food packaging. The median concentration in the OOM sample was 9.9 ng/mL compared to the NHANES median of 23.8 ng/mL.

Data from the questionnaire showed that the three OOM women who reported being in a car or truck within 48 hours of providing a urine sample had higher levels of diethylhexyl phthalate (DEHP). DEHP is found in polyvinyl chloride, or PVC, and is used in car interiors. And the one woman who had reported using hairspray and perfume had high levels of monoethyl phthalate (MEP), while the nine other women all had levels of MEP below detection.

"Despite the small sample size of this study, the results are remarkably robust and consistent," said Dr. Swan. "They underscore the degree to which the home environment determines exposure levels to many toxic or potentially toxic chemicals. They also argue for a much greater emphasis on individual lifestyle factors in assessing variations in exposure values that obscure attempts to link health effects to particular chemical agents."

Researchers hope to expand on this pilot study and secure funding to enlist a much larger sample of OOM women, compare their exposure values to women from other communities, and conduct an extensive survey of the kinds of products found in homes.

Provided by The Mount Sinai Hospital

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