

Study finds highest reported BPA level in pregnant woman and associated abnormalities in infant

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A new case study examining an infant's neurobehavioral abnormalities and extremely high bisphenol A (BPA) concentration of the baby's mother suggests a link between the two. The study, *Environmental Health Perspectives: A Case Study of High Prenatal Bisphenol A Exposure and Infant Neonatal Neurobehavior*, was led by researcher Sheela Sathyanarayana, MD of Seattle Children's Research Institute, and recently published online in *Environmental Health Perspectives*.

BPA, a synthetic, man-made chemical, is used in a wide variety of products including: can linings; hard polycarbonate plastics such as baby bottles and reusable cups; and [dental sealants](#). Food may be the single largest source of BPA [exposure](#) due to contamination of foods during preparation and processing. BPA has estrogenic (hormone-like) properties. In animal studies, exposure to BPA early in life can lead to a variety of abnormalities in early development of the brain, behavior, [prostate gland](#) and breast tissues.

In human studies, exposure to BPA early in life has not been studied extensively. However, one study found an association between BPA exposure in pregnancy and abnormal acting out behaviors in female children. In adults, increased BPA exposure has been associated with changes in hormone concentrations, sperm quality, and [endometriosis](#).

"Pregnant women are often exposed to BPA in their daily lives," said

Sathyanarayana, pediatrician and environmental health specialist at Seattle Children's and assistant professor of pediatrics at the University of Washington School of Medicine. "It's important that they are aware of the potential sources of BPA, so they can take steps to avoid unnecessary exposures."

In this case study, Sathyanarayana and co-investigators reported on a specific mother/infant pair from a larger study ([Health Outcomes and Measures of the Environment - HOME study](#)) that examined BPA exposures in pregnant women and then examined their infants for neurodevelopmental outcomes. At 27 weeks of pregnancy, the mother had the highest reported urinary BPA concentration of anyone in the general population. She reported consuming canned foods and beverages, and using and microwaving plastic food storage containers consistently during this pregnancy time period. All of these exposures could have led to her extremely high BPA concentration. Her infant had a normal newborn neurobehavioral exam but had many neurobehavioral abnormalities at the one-month study visit including: increased muscle tone, tremors, and abnormal movements. The child went on to have normal neurobehavioral assessments yearly from one to five years of age.

This case study confirms previous studies documenting multiple sources of BPA exposure in humans. Additionally, it highlights the need for medical providers to be aware of the harmful effects of BPA exposures so they may counsel families appropriately about prevention. The study also identifies potential sources of BPA exposure that can be targeted to reduce exposures in the future. "Families can decrease their exposure to BPA by eating fresh fruit and vegetables (as opposed to processed and canned foods) and by decreasing use of plastic food storage containers," said Sathyanarayana. "Check the recycling code of your plastics on the bottom. If it shows #7, then the plastic may contain BPA."

This research project was supported by grants from the National Institutes of Health and the National Institute of Environmental Health Sciences. Along with Sathyanarayana, the research team included: Joe M. Braun, PhD, from Harvard School of Public Health; Kimberly Yolton, PhD, and Bruce P. Lanphear, MD, from Cincinnati Children's Hospital Medical Center; and Stacey Liddy, MS, from BC Children's Hospital.

Tips for reducing exposure of BPA for pregnant women and other parents and caregivers:

You may not be able to completely avoid BPA, but there are steps you can take to reduce your family's exposure to it:

1. Limit the amount of canned foods your family eats.
2. Rinse canned fruits and vegetables before eating. When possible, choose fresh fruits and vegetables instead.
3. Limit the amount of canned beverages your family drinks.
4. Avoid using plastic food and beverage storage containers with #7 on the bottom. If the recycling code is #7, then the plastic may contain BPA.
5. Avoid using plastic [baby bottles](#) with #7 on the bottom.
6. Decrease the use of all plastic food storage containers.
7. Avoid using plastic [food storage](#) containers to heat food in the microwave. (High temperatures increase the chance of food absorbing [BPA](#).)

8. Use ceramic, glass, or other microwaveable dishes when heating food in the microwave.
9. Avoid canned infant formula. Instead, use powdered formula or liquid formula sold in plastic or glass containers.

More information: Environmental Health Perspectives
[ehp03.niehs.nih.gov/article/fe ... tion?articleURI=info%3Adoi%2F10.1289%2Fehp.1003064](http://ehp03.niehs.nih.gov/article/fe...tion?articleURI=info%3Adoi%2F10.1289%2Fehp.1003064)

Provided by Seattle Children's

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