OPTIMAL HEALTH UNIVERSITY™

Presented by Dr. Michael K. Corey

The Dangers of Bisphenol A in Plastics — Beyond Baby Bottles

Bisphenol A, or BPA, is a chemical found in a vast array of food and drink packaging. And a plethora of scientific studies link BPA with serious health issues. BPA has been in the news recently as concerns have been raised about baby bottles containing BPA. As a result, there are now many BPA-free baby bottles on the market.

But Dr. Corey wants patients to be aware that BPA is not just a health hazard for babies; new research reveals that BPA exposure can have grave consequences for adults as well.

What Is BPA?

Bisphenol A (BPA) is a chemical produced in large quantities for use primarily in the production of polycarbonate plastics and epoxy resins.

Polycarbonate plastics have many applications, including use in some food and drink packaging, e.g., water and infant bottles; compact discs; impact-resistant safety equipment; and medical devices. Epoxy resins are used to coat metal products such as food cans, bottle tops and water supply pipes.

Why Is it Dangerous?

Researchers have found that BPA leaches into food and drink and ends up in humans. In fact, the Centers for Disease Control and Prevention (CDC) found measurable amounts of BPA in the bodies of more than 90 percent of the US population studied.

Dr. Corey wants patients to know that BPA is problematic because it is an endocrine disruptor. This means that low doses of bisphenol A can mimic the body's own hormones, possibly causing negative health effects.

Although the US FDA and the chemical industry maintain that BPA is safe, the US Congress has taken steps to restrict the use of bisphenol A and has asked the FDA to re-examine its position on the chemical.

Canada recently announced plans to phase out the use of bisphenol A in baby products. And Nalgene, Playtex and Wal-Mart have agreed to no longer manufacture or carry many products containing BPA.

New Research Links BPA With Diabetes and Heart Disease

A 2008 study published in the *Journal of the American Medical Association* examined the link between urinary BPA concentrations and adult health status. The study looked at 1,455 adults ages 18 through 74 years. The study found that "higher urinary BPA concentrations were associated with cardiovascular diagnoses in age-, sex-, and fully adjusted models. Higher BPA concentrations were also associated with diabetes." The researchers conclude: "Higher BPA exposure, reflected in higher urinary concentrations of BPA, may be associated with avoidable morbidity in the community-dwelling adult population." (*JAMA* 2008;300:1303-10.)

Previous research on animals also pointed to a link between BPA and diabetes. A study on mice published earlier this year states that "environmentally relevant doses of the ubiquitous endocrine disruptor bisphenol-A (BPA) have profound effects on mice endocrine pancreas — an essential tissue involved in glucose metabolism."

After examining mice given BPA, the study concludes: "The results reviewed here demonstrate that doses well below the current lowest observed adverse effect level considered by the US-EPA, disrupt pancreatic beta-cell function producing insulin resistance in male mice. Therefore, this altered blood glucose homeostasis by BPA exposure may enhance the risk of developing type II diabetes." (*Int J Androl* 2008;31:194-200.)

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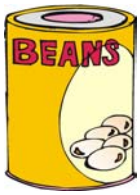
How to Avoid BPA

Completely eliminating exposure to BPA may not be possible, but there are steps you can take to reduce your family's exposure to this chemical.

Limit canned food consumption, especially for pregnant women and young children. Rinsing canned fruit or vegetables with water prior to heating and serving could lessen BPA ingestion. Also look for soups sold in cartons, rather than cans. It's currently nearly impossible to find a canned-food manufacturer that does not use BPA in its cans. Eden Foods' organic beans cans do not contain BPA, but it does use BPA in its tomato cans.

Choose powdered infant formula, rather than liquid. Powdered formula may not have BPA in its packaging and is more diluted with water. If your baby needs liquid formula, look for types sold in BPA-free plastic or glass containers. Also seek out BPA-free or glass baby bottles.

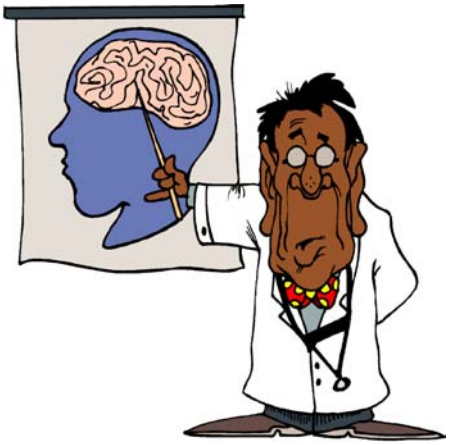
Avoid #7 plastics. BPA is found in polycarbonate plastic food containers often marked on the bottom with a recycling label #7. Polycarbonate plastics are rigid and transparent and used for sippy cups, baby bottles, food storage and water bottles.



BPA and Pregnancy

Scientific evidence also links BPA exposure to pregnancy problems. For instance, a study published in the journal *Human Reproduction* looked at 45 patients with a history of three or more consecutive first-trimester miscarriages and 32 healthy women with no history of live birth or infertility. The researchers then examined subsequent pregnancy outcomes. The study concludes that "exposure to bisphenol A is associated with recurrent miscarriage." (*Hum Reprod* 2005;20:2325-9.)

Another analysis compared BPA levels among 19 non-obese and seven obese women with normal menstrual cycles. The researchers found that "serum BPA concentrations were significantly higher in both non-obese and obese women with polycystic ovary syndrome." (*Endocr J* 2004;51:165-9.)



BPA and Brain Development

A recent investigation uncovers a disturbing link between BPA and brain function. The study's authors point out that a critical limitation of previous studies on BPA and brain function "is that they were based on rodent animal models, which may not be representative of the effects of human BPA exposure." This new study, therefore, examined the influence of continuous BPA administration on a "nonhuman primate model."

Researchers administered the BPA at a daily dose equal to the current U.S. Environmental Protection Agency's safe daily limit. They then examined its effects on the formation of synapses (connections between nerve cells) in areas of the brain primarily responsible for memory and behavior.

Results revealed that, even at this relatively low exposure level, BPA completely abolished the synapse responses they were studying. The investigators point out that, because formation of these synapses may play a critical role in cognition and mood, the ability of BPA to interfere with this process has profound implications.

The scientists conclude: "This study is the first to demonstrate an adverse effect of BPA on the brain in a nonhuman primate model and further amplifies concerns about the widespread use of BPA in medical equipment, and in food preparation and storage." (*Proc Natl Acad Sci U S A* 2008;105:14187.)

BPA and Breast Cancer

A 2008 study also found a link between BPA exposure and breast cancer. As part of the study, scientists took tissue samples from the opposite, cancer-free breast of patients with breast cancer in their other breast. They then exposed this tissue to BPA in the laboratory.

The study found that BPA exposure to the high-risk, but non-malignant, breast tissue induced changes that would typically lead to large, aggressive tumors. The researchers conclude that BPA exposure to high-risk breast tissue "could play a deterministic role in establishing and maintaining tumor aggressiveness and poor patient outcome." (*Cancer Res* 2008;68:2076.)