

Are You Still Drinking Bottled Water?

The Perils of Plastic, TIME Magazine

“The problem is, BPA is also a **synthetic estrogen**, and plastics with BPA can break down, especially when they're washed, heated or stressed, allowing the chemical to leach into food and water and then enter the human body.

That happens to nearly all of us; **the CDC has found BPA in the urine of 93% of surveyed Americans over the age of 6.** If you don't have BPA in your body, you're not living in the modern world.”



BPA stands for bisphenol A. BPA is an industrial chemical that has been used to make certain plastics and resins since the 1960s. BPA is found in polycarbonate plastics and epoxy resins. Polycarbonate plastics are often used in containers that store food and beverages, such as water bottles. They may also be used in other consumer goods.

Epoxy resins are used to coat the inside of metal products, such as food cans, bottle tops and water supply lines. Some dental sealants and composites also may contain BPA.

Some research has shown that BPA can seep into food or beverages from containers that are made with BPA. Exposure to BPA is a concern because of possible health effects of BPA on the brain, behavior and prostate gland of fetuses, infants and children.

Human Exposure Sources

The major human exposure route to BPA is diet, including ingestion of contaminated food and water.^[41] Bisphenol A is leached from the lining of food and beverage cans where it is used as an ingredient in the plastic used to protect the food from direct contact with the can.^[42] It is especially likely to leach from plastics when they are cleaned with harsh detergents or when they contain acidic or high-temperature liquids. **BPA is used to form epoxy resin coating of water pipes;** in older buildings, such resin coatings are used to avoid replacement of deteriorating pipes.^[43] There is limited evidence on inhalation exposure but the body of research on dermal absorption continues to grow. There are many uses of BPA for which related potential exposures have not been fully assessed including digital media, electrical and electronic equipment, automobiles, sports safety equipment, electrical laminates for printed circuit boards, composites, paints, and adhesives.^[44]

In November 2009, the *Consumer Reports* magazine published an analysis of BPA content in some canned foods and beverages, where in specific cases the content of a single can of food could exceed the FDA "Cumulative Exposure Daily Intake" limit.

The CDC had found bisphenol A in the urine of 95% of adults sampled in 1988–1994 and in 93% of children and adults tested in 2003–04. While the EPA considers exposures up to 50 µg/kg/day to be safe, the most sensitive animal studies show effects at much lower doses, and several studies of children, who tend to have the highest levels, have found levels over the EPA's suggested safe limit figure.¹⁵

A 2009 Health Canada study found that the majority of canned soft drinks it tested had low, but measurable levels of bisphenol A. A study conducted by the University Of Texas School Of Public Health in 2010, **found BPA in 63 of 105 samples of fresh and canned foods, including fresh turkey sold in plastic packaging and canned infant formula.**

A 2011 study published in *Environmental Health Perspectives*, selected 20 participants based on their self-reported use of canned and packaged foods to study BPA. Participants ate their usual diets, followed by three days of consuming foods that were not canned or packaged. The study's findings include: 1) evidence of BPA in participants' urine decreased by 50% to 70% during the period of eating fresh foods; and 2), participants' reports of their food practices suggested **that consumption of canned foods and beverages and restaurant meals were the most likely sources of exposure to BPA in their usual diets.** The researchers note that, even beyond these 20 participants, BPA exposure is widespread, with detectable levels in urine samples in more than an estimated 90% of the U.S. population. Another U.S. study found that consumption of soda, school lunches, and meals prepared outside the home were statistically significantly associated with higher urinary BPA.

Another 2011 experiment by researchers at the Harvard School of Public Health indicated that BPA used in the lining of food cans is absorbed by the food and then ingested by consumers. Of 75 participants, half ate a lunch of canned vegetable soup for five days, followed by five days of fresh soup, while the other half did the same experiment in reverse order. "The analysis revealed that when participants ate the canned soup, they experienced more than a **1,000 percent increase in their urinary concentrations of BPA**, compared to when they dined on fresh soup."

A 2009 study found that drinking from polycarbonate bottles increased urinary bisphenol A levels by two thirds, from 1.2 µg/g creatinine to 2 µg/g creatinine. Consumer groups recommend that people wishing to lower their exposure to bisphenol A avoid canned food and polycarbonate plastic containers.

To avoid the possibility of BPA leaching into food or drink, the National Toxicology Panel recommends avoiding microwaving food in plastic containers, putting plastics in the dishwasher, or using harsh detergents.

A 2009 study found higher urinary concentrations in young children than in adults under typical exposure scenarios. In adults, BPA is eliminated from the body through a detoxification process in the liver. In infants and children, this pathway is not fully developed so they have a decreased ability to clear BPA from their systems. Several recent studies of children have found levels that exceed the EPA's suggested safe limit figure.

Children may be more susceptible to BPA exposure than adults. A study of people in Austria, Switzerland, and Germany has suggested polycarbonate (PC) **baby bottles** as the most prominent role of exposure for infants, and canned food for adults and teenagers. In the United States, the growing concern over BPA exposure in infants in recent years has led the manufacturers of plastic baby bottles to stop using BPA in their bottles. However, babies may still be exposed if they are fed with old or hand-me-down bottles bought before the companies stopped using BPA.

In 2012 the FDA banned the use of BPA in baby bottles, however the Environmental Working Group called the ban "purely cosmetic" and "If the agency truly wants to prevent people from being exposed to this toxic chemical associated with a variety of serious and chronic conditions it should ban its use in cans of infant formula, food and beverages." **The Natural Resources Defense Council called the move inadequate, saying the FDA needed to ban BPA from all food packaging.** In a statement an FDA spokesman said the agency's action was not based on safety concerns and that "the agency continues to support the safety of BPA for use in products that hold food."

Environmental risk

In 2010, the U.S. Environmental Protection Agency reported that over one million pounds of BPA are released into the environment annually. BPA can enter the environment either directly from chemical, plastics coat and staining manufacturers, from paper or material recycling companies, foundries who use BPA in casting sand, or indirectly leaching from plastic, paper and metal waste in landfills. or ocean-borne plastic trash.

In May 2009, Lyndsey Layton from the Washington Post **accused manufacturers of food and beverage containers and some of their biggest customers of the *public relations and lobbying strategy to block government BPA bans.*** She noted that, **"Despite more than 100 published studies by government scientists and university laboratories that have raised health concerns about the chemical, the Food and Drug Administration has deemed it safe largely because of two studies, both funded by a chemical industry trade group".**

In August 2009 the *Milwaukee Journal Sentinel* investigative series into BPA and its effects showed the Society of the Plastics Industry plans of a major public relations blitz to promote BPA, including plans to attack and discredit those who report or comment negatively on BPA and its effects.

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