

Bisphenol A (BPA)

Description/Chemical Forms:

BPA is a synthetic compound derived from diphenylmethane that is used to make polycarbonate, a rigid plastic used in a variety of industrial and house-hold products. It has been in production since the 1960s and is still used by many industries today.



Sources/Routes of Exposure:

Sources: There are no natural sources of BPA and since this compound is used in polycarbonate production, it can be found in food can linings, plastic water bottles, dental sealants, Tupperware, disposable food packages, medical devices, ink on receipts, and some appliances. Also, landfill leachate can seep into waterways and adversely affect aquatic species. Young children and infants may also be exposed through baby bottles and plastic food containers.

Main Route of Exposure:

- Ingestion-the chemical has been shown to leach into foods and beverages that are stored with packaging containing BPA; fish and seafood due to biomagnification

Health Effects:

Animal studies have shown the ability of this chemical to cause harmful endocrine effects, including decreased sperm production/fertility, mammary gland development, and lowered antioxidant enzymes. In addition, early onset puberty, and behavioral changes, like aggression and hyperactivity can occur with exposure.

Fetal exposure is also a concern due to BPA crossing the placenta and causing development effects both in the womb and later stages of life. Young children and infants may also be exposed through baby bottles and plastic food containers.

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Diagnosis/Treatment Options:

BPA is poorly soluble in water and is therefore most effectively detected in urine. The NHANES study conducted by the CDC during the 2003-2004 year showed almost all of the 2,517 participants (aged 6 and up) had BPA in their urine, suggesting widespread exposure among the US population.

Biomonitoring, however, is the best strategy for predicting adverse health effects from prolonged exposure.

Prevention Strategies:

- Advise patients to purchase BPA-free containers, especially baby bottles, since the chemical can leach through extreme heat (microwaving) or cold (freezing)
- Keep canned and processed foods to a minimum
- If hard plastics cannot be avoided, be sure to keep away from the most hazardous ones, symbols 3, 6, and 7 on the bottom of the container

Links for Additional Information:

More information concerning BPA exposure and health effects can be found at the following sites:

<http://www.mayoclinic.org/healthy-living/nutrition-and-healthy-eating/expert-answers/bpa/faq-20058331>

<http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm064437.htm>