

## About Baby

BPA and infants:

May cause developmental issues of:  
Brain, Prostate gland  
May adversely affect behavior



### History of BPA

1891: Bisphenol A invented (2)

1937: Chemist Charles Edward Dodds discovered that BPA acted as an artificial estrogen on rats (5).

1960's: BPA came into

1976: BPA "grandfathered" in (along with 62,000 other chemicals) as part of Toxic Substances Control Act which was the first law to regulate industrial chemicals. None of these chemicals were tested for safety before inclusion (2).

1997: Study conducted by Frederick VomSall showed low dose exposure to BPA may cause harm to the prostate (6).

2003-2006: FDA's National Institute of Health worked with the Center for the Evaluation of Risk to Human Reproduction (a collection of industry manufacturers) to compile an evaluation of research.

2008: Question of safety of BPA causes many international retailers to remove products containing BPA from shelves.

2010: FDA released report to public about potential hazards to fetuses, infants and young children.

2010: Canada declared BPA as a toxic substance and banned it as

2009-2012: Companies make the choice to remove BPA from baby bottles before governments ban BPA

2012: FDA promises to release results of research and make a determination about BPA in the food supply (1)

## Bottles and sippy cups



### SAFE:

Glass  
Bottle #2-6

### AVOID:

Plastic bottles #7 or "PC"  
Plastic bottle liners (avoid unless recommended by pediatrician)



Although there has been a lot of focus on baby bottle, it is actually the formula that has a higher risk of containing BPA that is passed on to babies. According to the Environmental Working Group, their testing from 2007, as well as testing done by the FDA have detected a variety of BPA concentration levels in 16 out of 20 liquid formula samples<sup>2</sup>. This is because most formulas are packaged in containers that



are lined with a plastic epoxy which contains BPA, and that then transfers a little BPA to the formula.

## Food for baby



### SAFE:

Human milk  
Liquid or powdered  
glass container  
Powdered formula in paper or  
plastic container

### ACCEPTABLE:

Powdered formula in container with cardboard sides, metal lid and bottom  
Liquid formula concentrated in plastic container (polyethylene or polypropylene which do not contain BPA)

### AVOID:

Liquid formula, concentrated, in metal can  
Diluted / ready-to-eat liquid formula in metal can



(recommendations from the Environmental Working Group<sup>2</sup>)

## What am I drinking out of anyways? What you need to know before you drink...



**Number 1 Plastics:** PET or PETE  
(polyethylene terephthalate)

PETE

**Found in:** “Soft drink, water and beer bottles; mouthwash bottles; peanut butter containers; salad dressing and vegetable oil containers; ovenable food trays” (3).

**What you should know:** PET is the most common for single-use bottled beverages, as its inexpensive, easy to recycle, and poses low risk for leaching breakdown products. However, PET is known to have a porous surface that allows bacteria to grow, so its best to not reuse these bottles.



**Number 2 Plastics:** HDPE (high density polyethylene)

HDPE

**Found in:** “Milk jugs, juice bottles; bleach, detergent and household cleaner bottles; shampoo bottles; some trash and shopping bags; motor oil bottles; butter and yogurt tubs; cereal box liners” (3)

**What you should know:** Very versatile and has many uses, especially packaging. HDPE carries low risk of leaching and is readily recyclable into many goods. This plastic is considered safe.



**Number 3 Plastics:** PVC or V (Vinyl)

V

**Found in:** “Window cleaner and detergent bottles, shampoo, cooking oil bottles, clear food packaging, wire jacketing, medical equipment, siding, windows, piping” (3).

**What you should know:** Tough and weathers well, so its commonly used for piping, siding and similar applications. PVC contains chlorine, which can be dangerous when released as dangerous dioxins. If you cook with PVC, don't let the plastic touch the food and never burn PVC because it releases dangerous toxins. There are phthalates in this material, which can interfere with hormonal development. Minimized use of PVC when cooking with food is recommended.



LDPE

**Number 4 Plastics:** LDPE (low density polyethylene)

**Found in:** “Squeezable bottles; bags: bread, frozen food, dry cleaning and shopping; tote bags; clothing; furniture; carpet” (3).

**What you should know:** Very flexible plastic with many applications. More and more communities are starting to accept for recycling. This plastic is considered safe.



PP

**Number 5 Plastics:** PP (polypropylene)

**Found in:** “Some yogurt containers, syrup bottles, ketchup bottles, caps, straws, medicine bottles” (3).

**What you should know:** PP has a high melting point, and is often chosen for containers that contain hot liquid. This plastic is considered safe.



PS

**Number 6 Plastics:** PS (polystyrene)

**Found in:** “Disposable plates and cups, meat trays, egg cartons, carry-out containers, aspirin bottles, compact disc cases” (3).

**What you should know:** AKA styrofoam. Evidence suggests that PS can leach potential toxins into foods, especially when heated. Proceed with caution when using this plastic.



OTHER

**Number 7 Plastics:** Miscellaneous

**Found in:** “Three- and five-gallon water bottles, “bullet-proof” materials, sunglasses, DVDs, iPod and computer cases, signs and displays, certain food containers, nylon” (3).

**What you should know:** A variety of plastic resins that don't fit into the previous categories are lumped into number 7- basically a “mixed-bag” composed of plastics that have been developed after 1987. This is where BPA may be found!!! Polycarbonate is a considered #7 and is the hard plastic that has parents worried, as studies have show it can leach potential hormone disruptors. Use caution when something is made of plastic #7 because you don't know exactly what it's made from.

### Health Concerns of BPA (8, 9):

Consumer concern for BPA exposure stems from the fact that its use is widespread in products and exposure to it is virtually unavoidable. It is estimated that approximately 2.2 million tons pounds of bisphenol-A are produced every year globally.

BPA is considered to be an endocrine disruptor

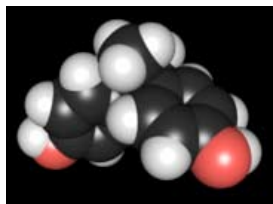
Has the ability to cause pre-cancerous changes in glands (mammary, prostate) in fetuses, infants, children

Altered development of the brain causing behavior abnormality and early onset of puberty

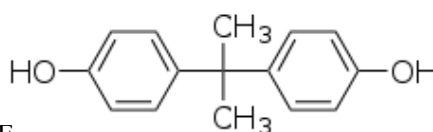
Reproductive abnormalities such as low sperm counts, hormonal changes, enlarged prostate glands and abnormalities in the number of chromosomes in eggs

May effect obesity and insulin resistance, conditions which can lead to the development of diabetes

May alter thyroid function



Molecular formula	C <sub>15</sub> H <sub>16</sub> O <sub>2</sub>
Molar mass	228.29 g mol <sup>-1</sup>
Appearance	White solid
Density	1.20 g/cm <sup>3</sup>
Melting point	158-159 °C, 431-432 K, 316-318 °F
Boiling point	220 °C, 493 K, 428 °F (4 mmHg)



[http://en.wikipedia.org/wiki/Bisphenol\\_A](http://en.wikipedia.org/wiki/Bisphenol_A)

### Resources:

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- 2.. Environmental Working Group. <http://www.ewg.org/book/export/html/25570>. Accessed Oct 28, 2012
3. The daily Green: What Do Recycling Symbols on Plastics Mean? [http://www.thedailygreen.com/green-homes/latest/recycling-symbols-plastics-460321?click=main\\_sr](http://www.thedailygreen.com/green-homes/latest/recycling-symbols-plastics-460321?click=main_sr) Accessed 10-26-2012
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7. FDA Science Board Subcommittie. Scientific Per-review of the draft assessment of bisphenol A for use in food contact applications. <http://www.fda.gov/ohrms/dockets/ac/08/briefing/2008-4386b1-05.pdf>. Accessed Oct 28, 2012
8. Calafat, A. M., et al. (2005). "Urinary concentrations of bisphenol A and 4-nonylphenol in a human reference population." Environ Health Perspect 113(4): 391-5.
9. Calafat, A. M., et al. (2009). "Exposure to bisphenol A and other phenols in neonatal intensive care unit premature infants." Environ Health Perspect 117(4): 639-44.

### Images:

<http://bioeworld.blogspot.com/2011/09/boost-your-babys-formula-fed-with.html>

<https://encrypted-tbn3.gstatic.com/>

[images?q=tbn:ANd9GcRTCFCgEAdO7bwPBLayh2CJ9PrX29eP1Ts88v9zETDmrxvsjTF7VGC05wM](https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcRTCFCgEAdO7bwPBLayh2CJ9PrX29eP1Ts88v9zETDmrxvsjTF7VGC05wM)

<http://www.inhabitots.com/baby-formula-contaminated-with-aluminum-40-times-more-than-breast-milk/>

[https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcSsFnR03E\\_oX229d459FyDqVVv8mguGTOoMaGhoyCs\\_Qgq7b2eRYZdpvl](https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcSsFnR03E_oX229d459FyDqVVv8mguGTOoMaGhoyCs_Qgq7b2eRYZdpvl)

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[http://en.wikipedia.org/wiki/Bisphenol\\_A](http://en.wikipedia.org/wiki/Bisphenol_A)

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