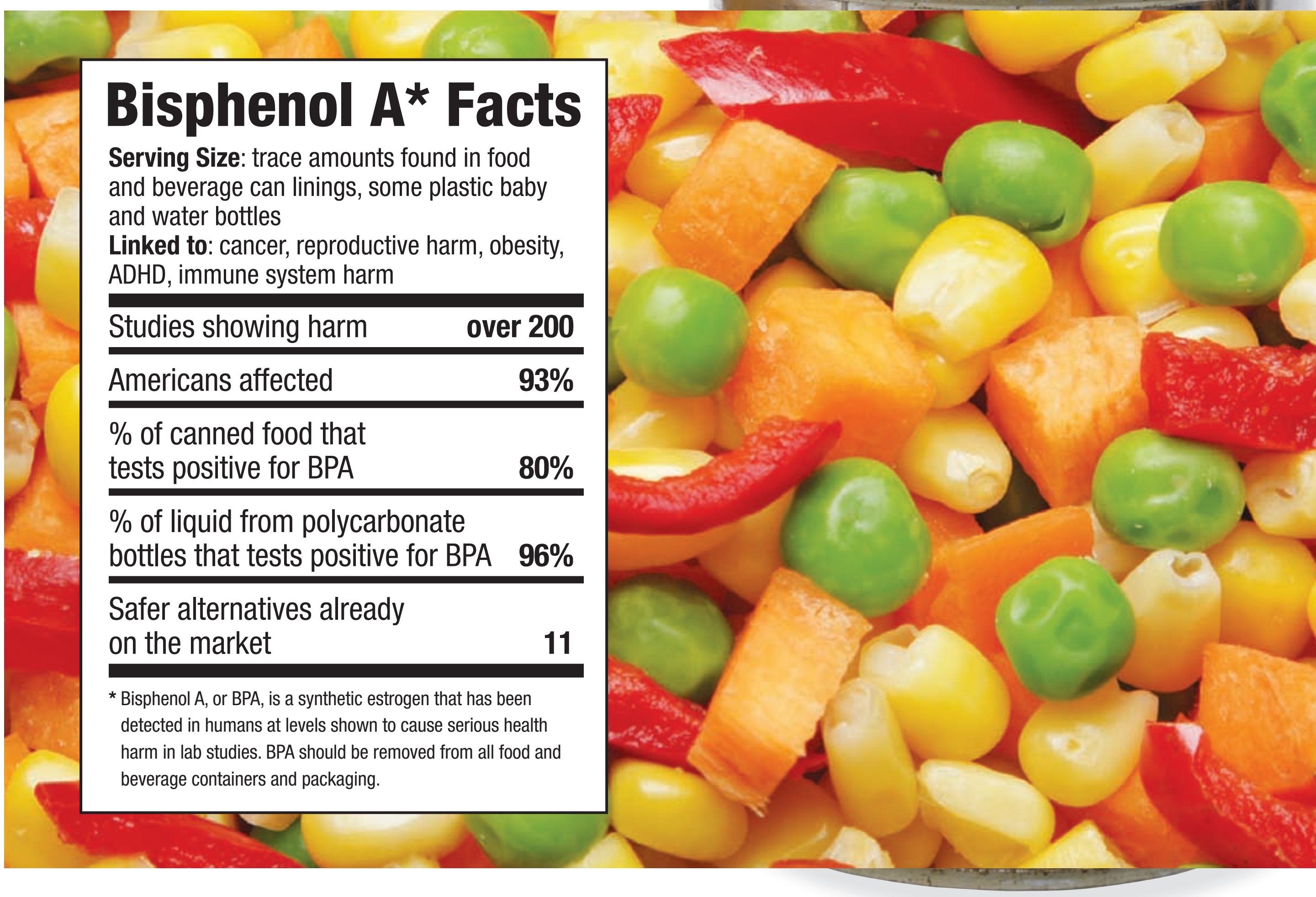
WHAT LABELS DON'T TELL US

Getting BPA out of Our Food and Our Bodies



Bisphenol A* Facts

Serving Size: trace amounts found in food and beverage can linings, some plastic baby and water bottles
Linked to: cancer, reproductive harm, obesity, ADHD, immune system harm

Studies showing harm	**over 200**
Americans affected	**93%**
% of canned food that tests positive for BPA	**80%**
% of liquid from polycarbonate bottles that tests positive for BPA	**96%**
Safer alternatives already on the market	**11**

* Bisphenol A, or BPA, is a synthetic estrogen that has been detected in humans at levels shown to cause serious health harm in lab studies. BPA should be removed from all food and beverage containers and packaging.

BREAST CANCER FUND
PREVENTION STARTS HERE.

A Report by the Breast Cancer Fund • 2010

What Is BPA?

Bisphenol A, or BPA, is one of the most pervasive chemicals in modern life. It is the chemical building block for clear, shatterproof polycarbonate plastic, which is used in baby bottles, water bottles and food storage containers. It is also in the epoxy-resin linings of metal food cans, including infant formula cans. BPA leaches from containers and can linings, enters food and beverages, and, ultimately, gets into people. In fact, 93 percent of Americans have detectable levels of BPA in our bodies, according to the U.S. Centers for Disease Control and Prevention.[1]

BPA is a synthetic estrogen that can disrupt the hormone system, particularly when exposures occur during gestation or in early life. Miniscule exposures (parts per billion and even parts per trillion) have been associated with a wide range of adverse health effects, including increased risk of breast and prostate cancer (in animal models), infertility in men and women, early puberty in girls, metabolic disorders such as type-2 diabetes and obesity, and neurobehavioral problems such as attention deficit hyperactivity disorder (ADHD).

What's in This Report?

In response to the growing body of scientific evidence linking BPA to increased risk of breast cancer and other adverse health effects, the Breast Cancer Fund set out to evaluate the exposure levels to BPA from common food items, and put these data in the context of the growing field of scientific evidence demonstrating negative health effects of BPA exposures in both humans and laboratory animal models.

This Report Documents Our Work to:

1. **Review** the science linking BPA to adverse health effects in laboratory animals in the context of the growing human data supported by the animal models.
2. **Estimate** human exposure to BPA from food packaging.
3. **Understand** the relationship between the levels of human food-based BPA exposure and the levels of exposure associated with negative health effects in laboratory animals.

We reviewed the body of BPA product-testing results from the U.S. and Canada, which includes tests of nearly 700 individual food and beverage items. Based on this, we estimated the average BPA concentration in canned food and in beverages stored in polycarbonate water and baby bottles. We then reviewed all of the literature regarding human body burdens of BPA, exposures from BPA migration from food-contact items, and adverse health effects in animals. When we compared the data, we found that humans are likely exposed to BPA from food items at levels that compromise health.

Based on Our Findings, We Can Surmise That:

1. The Food and Drug Administration's estimates of human BPA exposure are too low.
2. The Environmental Protection Agency's oral reference dose, which sets the "safe" level of exposure, is too high.
3. The levels of likely BPA exposure from canned foods and other food and beverage containers are within the range of exposures that have been shown to have negative health effects in laboratory animals.

Clearly, we need policy changes that update the regulation of food-contact items such as BPA. Markets and state laws are already shifting, but in order to protect all Americans, we need federal policy reform to ensure that children and adults are not exposed to harmful chemicals, including BPA, through foods and beverages as a result of unsafe food packaging additives.

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Units of Measure Used in This Report

Throughout this report, we refer to various scientific units of measurement—most importantly, part per billion (ppb).

A part per billion is a very small concentration, equal to about 3 seconds in 100 years. A considerable body of research shows that BPA exposures in the ppb range can negatively affect health.[2] Where accurate, we have converted units into ppb.

Other Units of Measure in This Report:

- **µg** = microgram. 1 microgram is 1/1,000,000 of a gram.
- **µg/L** = micrograms/liter. One µg/L of water is equal to a part per billion. Since urine and blood have different densities than water, and vary by person, we report BPA levels as µg/L instead of ppb.
- **µg/day** = micrograms of BPA per day. This is the typical unit for reporting total daily consumption of BPA.
- **µg/kg/day** = micrograms of BPA/kilogram of body weight/day. This is the consumption or exposure to BPA in a day, adjusted by weight.


Health Effects of BPA

BPA has been linked to negative health effects in animals at levels comparable to the amount an average person may be exposed to through food-based BPA contact. Exposure to BPA is ubiquitous in the United States[3] and other developed countries, and exposure begins before birth, when the risk of harm is greatest. BPA has been found in blood samples from developing fetuses as well as in placental tissue and the surrounding amniotic fluid,[4] in umbilical cord blood of newborn infants[5] and in human breast milk.[6] Finding BPA in breast milk confirms the presence of this environmental estrogen in breasts—the target organ for breast cancer.

The CDC's National Health and Nutrition Examination Survey (NHANES) found urinary BPA levels at around 2.6 µg/L,[7] with higher levels among African-Americans, men and children. These estimates may vary further for individuals exposed at higher levels. One study found that newborns in neonatal intensive care units had urine levels as high as 30 µg/L.[8]

Recent research has explored the impact of BPA levels on health, and found associations between BPA levels in the NHANES sample and increased risk of heart disease and diabetes.[9] A Korean study found that higher levels of BPA were associated with markers of oxidative stress and inflammation among post-menopausal women.[10] In a study of BPA levels in plasma, women with polycystic ovarian syndrome had higher levels of BPA than healthy women.[11] Finally, doses as low as approximately 2.5 µg/kg reduced the efficacy of chemotherapeutic agents targeting breast cancer cells,[12] and adversely impacted hormones related to metabolic disorders such as type-2 diabetes, obesity and insulin resistance.[13]

The EPA sets the oral reference dose, which is considered an estimate of a level that does not have appreciable risks, at 50 µg/kg/day. This value is based on chronic-exposure studies from 1982, adjusted by an uncertainty factor of 1000. Over the past two decades, more than 200 animal studies have revealed that BPA exposure at levels magnitudes lower than the EPA estimate is linked to a wide spectrum of health problems, including prostate and breast cancer, obesity, attention deficit and hyperactivity disorder, altered development of the brain and immune system, lowered sperm counts and early-onset puberty. While hundreds of studies have found negative health effects of BPA, only 29 studies have failed to find an effect.[14] Many of these studies used rats that are known to be insensitive to estrogen, and since BPA is a very weak estrogen, it is not surprising that these rats are not reactive to the chemical. In addition, chemical corporations conducted 14 of the 29 studies that found no evidence of adverse effects from BPA exposure.

Exposure to BPA during pregnancy, infancy and childhood is of particular concern to scientists. Growing infants and children are not just little adults; their developing brains and other organ systems are especially sensitive to the deleterious effects of chemical exposures. Disruptions to their hormonal systems during development can set the stage for later-life diseases such as breast cancer and prostate cancer.

Table 1: Selected Physiological Impacts in Animals at Low Doses of BPA

BPA CONCENTRATION	PHYSIOLOGICAL EFFECTS
<1 µg/kg/day	Effects on the brain that mirror estrogenic effects,[15] reduced sperm motility,[16] decreased antioxidant enzymes,[17] mammary gland structural changes,[18] changes in female reproductive organs[19]
1-2 µg/kg/day	Prolonged estrous cycles,[20] increased prostate weight,[21] changes in male reproductive organs (decreased weight of organs),[22] behavioral effects and decreased testosterone,[23] changes in brain neurotransmitters[24]
2.3-2.5 µg/kg/day	Changes in body weight,[25] decreased testosterone and luteinizing hormone levels in males and decreased testosterone, specifically in the testes,[26] early-onset sexual maturation in females,[27] increased post-natal growth in males and females,[28] mammary hyperplasias and ductal carcinoma in situ,[29] autoimmune effects[30]
5-10 µg/kg/day	Increased adult prostate size,[31] prostate changes that may predispose males for later-life prostate cancer,[32] male infertility,[33] decreased maternal behavior in females exposed in utero,[34] increased insulin secretion (estrogen-receptor mediated) and insulin resistance,[35] increased body weight in females[36]
15-20 µg/kg/day	Increased adult prostate size,[37] changes in male reproductive organs (decreased weight of organs, except prostate),[38] decrease in daily sperm production,[39] decrease in percentage of moving sperm,[40] increased malformed sperm and severely deformed sperm,[41] disturbances in sexual cell division,[42] increased brain estrogen synthesis in males exposed during lactation,[43] increased hyperactivity,[44] increased spontaneous motor activity[45]
25 µg/kg/day	Increased mammary tumors in rats,[46] increased embryo fatality,[47] decreased daily sperm production and reduced sperm concentration[48]

BPA in Food Packaging

A Principal Route of Exposure to BPA: Food Packaging

BPA is found in the lining of metal food cans and in polycarbonate plastic food containers, including some baby bottles, water bottles, microwave ovenware and eating utensils. Because BPA is an unstable polymer and is lipophilic (fat-seeking), it can leach into infant formula and other food products, especially when heated.[49] Once in food, BPA can move quickly into people. BPA can also move quickly out of people: its half-life is estimated to be about 6 hours, meaning that BPA leaves the body completely within a few days. Therefore, removing BPA from food packaging would relatively immediately reduce people's BPA body burden.

We reviewed the literature regarding BPA in food cans, polycarbonate baby and water bottles, and other packaging. Table 2 highlights the average amount of BPA by packaging and food category, as reported in 17 studies[50] and nearly 700 individual products from the U.S., Canada and the U.K., and from government, academic and non-governmental organization studies. BPA migrating from food containers into foods averages 24.6 ppb in canned foods and 26.6 ppb in polycarbonate plastics. Among canned-food products, the highest levels of BPA are in coconut milk, soups, meats, vegetables, meals (such as pasta dishes), beans, canned juices and canned fish.

Table 2: Average BPA Concentration Migrating from Food Packages into Food or Food Simulant

FOOD CONTACT TYPE	AVERAGE BPA (IN PPB)
Epoxy-lined cans and polycarbonate containers	25.6
Epoxy-lined cans	24.6
Polycarbonate containers	26.6
"BPA-free" cans (no epoxy lining)	10.7
Polypropylene containers with epoxy-lined lids	4.7
Other packaging*	0.1*

* These include containers in which BPA is not an additive, such as glass, Tetra Paks, cardboard and non-polycarbonate plastics.

A. Canned Food: Average BPA Concentration in Food or Food Simulant

FOOD (CONTAINER TYPE)	NUMBER OF ITEMS TESTED	AVERAGE BPA (IN PPB)
Beer (epoxy-lined can)	11	2.2
Energy drink (epoxy-lined can)	12	1.1
Juice	4	31.2
Soda (epoxy-lined can)	76	0.6
Meal replacement (epoxy-lined can)	7	12.8
Other beverages (epoxy-lined can)*	7	.195
Beans (epoxy-lined can)	9 10	34.1 (food) 11.7 (simulant)**
Coconut milk (epoxy-lined can)	3	78.1
Dessert (epoxy-lined can)	4	4.3
Evaporated milk (epoxy-lined can)	8	4.1
Fish (epoxy-lined can)	20	24.6
Fruit (epoxy-lined can)	21	6.8
Infant formula (epoxy-lined can)	54	6.1
Meals (epoxy-lined can)***	24	36.3
Meat (epoxy-lined can)	9	65.0
Soup (epoxy-lined can)	52	70
Vegetables (epoxy-lined can)	65	63.8
Meals (polypropylene with epoxy-lined lid)***	2 5	9.4 (food) .04 (simulant)**
Beans (oleoresin-lined can)	3-4	1.1
Tuna (unknown can lining)	3-4	20.2

* Other beverage = tea, tonic water.
** See discussion on next page about analytical methods for measuring BPA migration from food packaging.
*** Meals include canned pasta dishes (such as spaghetti and ravioli) and canned chili.

B. Polycarbonate: Average BPA Concentration in Water Stored in Container

CONTAINER TYPE	NUMBER OF ITEMS TESTED	AVERAGE BPA (IN PPB)
Food dishes	3	1.1
Baby bottle	48	45.9
Water bottle	43	32.9
TESTING CONDITION (water bottles)	**NUMBER OF ITEMS TESTED**	**AVERAGE BPA (IN PPB)**
Room temp. for 24 hours	7	0.2
Heated for 24 hours	5	19.8
Room temp. for 120 hours	8	0.4
Heated for 120 hours	2	403.5

The levels of BPA migrating from polycarbonate were generally low at room temperature, but very high with the application of heat.

Analytical Methods for Measuring BPA Migration from Food Packaging

Several methods are used to analyze BPA migration from food packaging. The FDA recommends placing food simulants, which are typically water or water mixed with ethanol or oils to approximate the acidity or fat content of foods, into food-contact items to assess the amount of migration from the container into food.[51] The simulant can then be processed for analysis. In some of the studies we reviewed, BPA was measured in the actual food from food packages. In general, BPA levels in the actual food were higher than in food simulants. In addition, several different laboratory techniques are used to determine the concentration of BPA in food and food simulants.

Our Calculations

Because the levels detected by different laboratory methods were similar, we averaged the values from the various laboratory techniques. We also averaged the values from both food and food-simulant tests, with the exception of two cases—canned beans and polypropylene containers with metal lids—where the values differed considerably. In these cases, we report all values.

C. Non-BPA-based Packaging: Average BPA Concentration in Food or Food Simulant

FOOD (CONTAINER TYPE)	NUMBER OF ITEMS TESTED	AVERAGE BPA (IN PPB)
Baby food (plastic tubs)	2	0.02
Baby food (glass jars with epoxy-lined lids)	101	.9
Fish (retort package, e.g., pouch)	2	0
Powdered infant formula (cardboard cylinder)	39	0
Juice (pouch)	1	0
Juice (Tetra Pak)	2	0.001
Juice or milk (waxed cardboard cartons)	4	0
Meals (coated cardboard trays)	6	.02
Meals (polypropylene trays)	4	0
Pasta sauce (glass jars with epoxy-lined lids)	2	0
Soups (Tetra Pak)	1	.002
Vegetables (frozen steam bags)	5	0.4
HDPE water bottle	12	0.08

BPA: From Food Containers to People's Bodies

BPA Exposure Estimates from Two Hypothetical Diets

We calculated potential BPA intake levels by creating two possible diets: 1) A low BPA diet with two canned food items in a day, and 2) A high BPA diet with many canned food items in a day. This approach allowed us to refine estimates of BPA exposure to canned foods and to calculate a range of BPA exposures.

Using the FDA's recommended approach to calculating the daily intake of BPA (daily intake = BPA concentration x food intake),[52] estimates were calculated by multiplying the recommended daily servings on food labels (in grams) by the average parts per billion of BPA (μg/kg) found in canned foods in our review of the literature. We assumed a child's food intake to be two-thirds that of an adult, based on Kaiser Permanente's serving size recommendations.[53] As noted in the table below, estimated levels of BPA intake per day ranged from 9 to 41.4 μg/day for adults, and 6 to 27.6 μg/day for children.

Table 3: Estimated Food Exposures Based on Two Hypothetical Diets

	LOW BPA DIET	TYPICAL DIET
Estimated total daily BPA intake for adults	**9.0 μg/p/day**	**41.4 μg/p/day**
Estimated total daily BPA intake for children	**6.0 μg/p/day**	**27.6 μg/p/day**
Breakfast	Granola and yogurt; coffee	Oatmeal and milk; canned juice
Lunch	Canned tuna fish sandwich with lettuce, tomato, mayonnaise; soda	Canned tomato soup; grilled cheese; soda
Dinner	Baked chicken; canned green beans; rice pilaf	Taco meat; salsa made with canned diced tomatoes; canned refried beans; canned corn; soda
Snack	Fresh fruit and nuts	Canned fruit cocktail

BPA Intake Estimates from Five Families

In addition to estimating BPA exposure in low and typical diets, we tested the level of BPA in the urine of five families consisting of two adults and two children each. BPA levels for these families are reported below by gender and age category. To estimate the BPA intake/day, we multiplied the average BPA in their urine by the average daily urine output (by gender and age).*

Table 4: BPA Levels in Members of Five Families

GENDER/AGE	AVERAGE BPA MG/L IN URINE	AVERAGE AGE	ESTIMATED BPA INTAKE, μg/DAY
Female adult	4.66 (1.02 to 10.10)	39	5.59
Male adult	6.11 (1.40 to 10.70)	42	9.78
Female child	6.09 (1.20 to 15.80)	7	3.65
Male child	3.17 (1.79 to 6.90)	5.5	1.9

*Urinary output in liters/day by age and gender

Total BPA intake was assessed by multiplying average BPA levels in urine by typical urine output.[54]

Male child: .6 L
Female child: .6 L
Male adult: 1.6 L
Female adult: 1.2 L

For example: Estimated daily BPA intake for an adult female: 4.66μg/L of BPA x 1.2L urine = 5.59 μg BPA/day

Actual BPA urine concentration levels in families consuming minimal canned food items closely matches our estimates of BPA intake in the hypothetical low BPA diet. In both cases, BPA levels hover around .1 μg BPA/kg of body weight, a level that is considerably lower than estimated BPA intake for the high BPA diet. Lowest observed effects in animals occur at levels below our lowest estimates of children's BPA intake, and between the levels for the low and high BPA diet in adults.

BPA Levels Adjusted by Body Weight

In order to compare human exposure levels to animal data, we calculated BPA exposures based on body weight. We divided the daily BPA intake estimates in Table 3 by values reported in the EPA's body weight studies.** Based on that calculation, we estimate the average daily BPA intake to vary depending upon age, gender and diet.

Notably, estimates derived from the NHANES data,[55] the FDA[56] and Health Canada[57] suggest BPA exposures closest to the low BPA diet. Thus, these estimates may fail to capture the range of BPA intake from diets with greater intake of canned foods or use of polycarbonate food and beverage containers. Both the FDA and Health Canada estimate adult intake in the range of .18 -.19 µg/kg/day, and formula-fed infant intake in the range of 2.42 -2.63 µg/kg/day.[58] BPA consumption in formula-fed infants is exceptionally high due to infants' singular diet and greater consumption of food per pound of body weight. The exposure levels in infants are more than 10 times that of the lowest concentrations found to affect animals at similar life stages, and at levels where dozens of studies have found adverse health effects.

Table 5: Comparison of Human BPA Exposure by Body Weight to Effects in Animals

	BODY BURDEN IN SAMPLED FAMILIES	EXPECTED BURDEN FROM LOW BPA DIET	EXPECTED BURDEN FROM TYPICAL DIET	LOWEST OBSERVED EFFECT IN ANIMALS EXPOSED TO BPA ORALLY
Gender/age	Urinary levels (µg/kg per day)	Low BPA diet (µg/kg per day)	Typical diet (µg/kg per day)	
Female adult	0.09	0.14	0.63	2 µg/kg/day (increased social interactions and reduced exploratory behavior)[59]
Male adult	0.11	0.10	0.47	.2 µg/kg/day (decreased sperm motility, decreased testes weight)[60]
Female child	0.12	0.20	0.90	.02 µg/kg/day (hormonal changes in the brain)[61]
Male child	0.06	0.20	0.90	.1 µg/kg/day (change in brain steroids)[62]

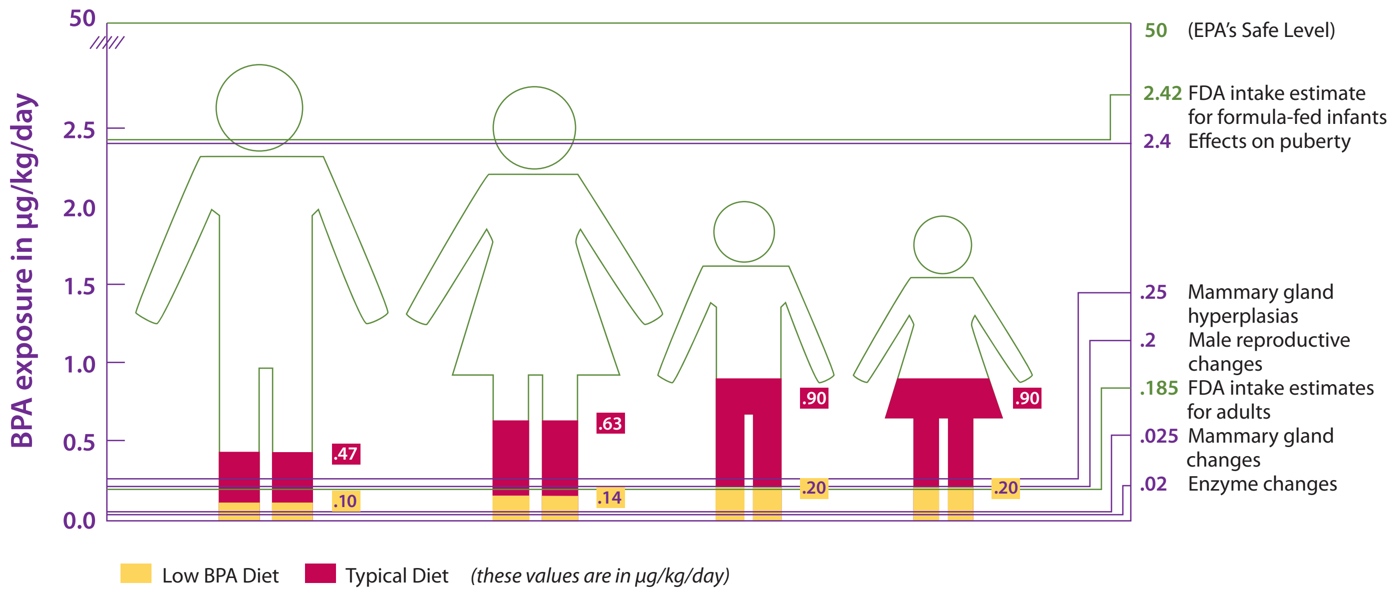
**Average U.S. body weights by age and gender

BPA intake by body weight was estimated by dividing daily intake estimates based on urine levels or hypothetical diet exposures by average body weight.[63]

Male child: 30.7 kg
Female child: 30.8 kg
Male adult: 88.4 kg
Female adult: 65.4 kg

For example: Estimated BPA by body weight in a female child on a high BPA diet: 27.2 µg /day ÷ 30.8 kg = .896 µg/kg/day

Estimated BPA Dietary Intake Compared with Levels Shown to Be Harmful in Lab Studies



.02 µg/kg/day Enzyme changes in brain and gonads (mice, early exposure)[64]

.025 µg/kg/day Mammary gland changes (female mice, early exposure);[65] female genital tract alterations (female mice, early exposure)[66]

.185 µg/kg/day FDA estimated daily intake by body weight for adults

.2 µg/kg/day Male reproductive tract changes (male mice, adult exposure) and decreased sperm motility and sperm production (male rats, adult exposure)[67]

.25 µg/kg/day Reduced sexual differentiation in the brain (mice, early exposure);[68] mammary gland changes (female mice, early exposure),[69] mammary gland hyperplasias[70]

2.4 µg/kg/day Testosterone disruptions (male rat, early exposure);[71] puberty and body weight effects (female mice, early exposure); and female puberty-onset changes (female mice, early exposure)[72]

2.42 µg/kg/day FDA estimated daily intake by body weight for newborns fed canned infant formula

50 µg/kg/day EPA's safe level (known as the "reference dose")

BPA Alternatives for Food and Beverage Packaging

Alternatives to BPA-based epoxy can linings and polycarbonate plastics exist and are already in use. Many of these alternatives could be used even more extensively to replace BPA-based polymers in food-contact items. Based upon our review of the literature, BPA exposures from food could be reduced 200-fold by a transition to packaging alternatives that do not rely on BPA.

BPA Application	BPA Alternative	Alternative Product	
Polycarbonate reusable food and beverage containers (e.g., baby bottles, water bottles, food storage)	**Tritan Copolyester:** Toxicological studies conducted by Eastman Chemical assert copolyester is not carcinogenic and that the monomers used in Tritan do not demonstrate an affinity to bind to hormone receptors, nor a potential to cause endocrine-disruptive effects. **Polyethersulfone (PES) and Polyphenylsulfone (PPS):** PES and PPS can withstand very high temperatures without breaking down or releasing ingredient chemicals, and, therefore, have been utilized as alternatives to polycarbonate baby bottles.[73] **Stainless steel or glass:** Many alternatives entering the market are simple materials, including glass and stainless steel. Glass and stainless steel are so stable that individuals can heat and cook food or beverages in both materials safely without health concerns.	*Examples:* • Klean Kanteen stainless steel water bottles • Dr. Weil baby bottles • Nalgene Tritan Copolyester water bottles	
Canned foods (e.g., beans, fish, fruit, meals, soups, vegetables)	**Polyester coatings (DAREX polyester, PET film):** Polyester coatings can be used in place of BPA liners or as an overlay on an epoxy undercoating, which reduces BPA migration by 95 percent.[74] **Baked-on resins (oleoresin):** Oleoresin is a natural mixture of an oil and a resin extracted from various plants, such as pine or balsam fir.[75] Oleoresin only works for low-acid canned foods, such as beans and vegetables.	*Example:* Eden Organic Canned Foods	
Liquid infant formula (concentrate or ready-to-use) **Baby food containers** (glass jars with epoxy-lined lids)	**Polypropylene:** Based on the information provided to the FDA for registration of this plastic, it appears to be safer for human health and the environment than BPA polycarbonate plastics. **HDPE:** HDPE, or #2, plastics are primarily used for non-reusable containers that hold milk, juice, water and other beverages. HDPE is a non-carcinogenic plastic. **Polyethylene:** Polyethylene terephthalate (PET), or #1, plastics are commonly used in single-use soda and water bottles. Currently, PET is recommended only for single-use applications.	*Examples:* • Similac formula in polypropylene or polyethylene jugs • Gerber baby food plastic made with #1 (Polyethylene or PET)	
Acidic foods such as tomatoes and pineapple **Juices, soy milk, soups**	**Tetra Pak:** Tetra Pak is a packaging alternative to aluminum or steel cans. Tetra Pak is made of 70 percent paperboard combined with thin layers of LDPE (low density polyethylene) and aluminum foil.[76] Tetra Paks are widely used in Europe and are increasingly common in the United States for juice, soups, liquid dairy products and wine.	*Examples:* • Corelli diced tomatoes • Trader Joe's tomato sauce • Silk soy milk	

Flaws in Federal Regulation of BPA

The FDA approved BPA as a food additive in the early 1960s under its petition-and-review process.[77] Substances used to make food and beverage packaging that were approved under this old process are not subject to regular re-evaluation, despite advances in food and chemical safety. Once an additive is approved, any manufacturer of food or food packaging may use it for the approved purpose, with no requirement to notify the FDA of that use. For example, there are hundreds of different formulations for epoxy linings containing BPA, and manufacturers are not required to disclose to the FDA the existence or nature of these formulations.

A newer set of regulations, known as the Food Contact Notification program, emerged in 2000.[78] Under this program, a manufacturer must notify the FDA of a proposed use of a new chemical (or a new use of a previously approved chemical) and wait 120 days before marketing it. If the FDA does not object in writing, the new packaging formulation can go on the supermarket shelf. If requested by the FDA, the manufacturer must submit safety data (generated by the manufacturer, not by government or independent scientists). If BPA were subjected to this new program, and if the FDA requested data, the manufacturer would be asked to prove that the chemical is not carcinogenic. But BPA, like many other chemicals of concern, is an endocrine-disrupting compound, and, while it can affect structural changes to developing organs and tissues, alter hormonal functions and predispose people to cancer, it is not currently defined as a carcinogen. Therefore, even under this newer program, BPA would likely pass the FDA's scrutiny.

Clearly, current regulation of food-contact substances is deeply flawed and requires a major overhaul.

Changing Markets, Changing Laws

Because of the increasing body of scientific evidence linking BPA to adverse health effects, a number of governments and corporations have taken action to reduce the public's exposure to BPA.

Major retailers phasing out BPA-containing baby bottles include CVS, Kmart, Kroger, Safeway, Sears, Toys "R" Us, Walmart, Wegmans Foods and Whole Foods. Many baby bottle manufacturers have eliminated or are phasing out BPA, including Avent, Born Free, Disney First Years, Evenflo, Dr. Brown, Gerber, Munchkin, Playtex and Think Baby. Water bottle manufacturers phasing out BPA include Aladdin, CamelBak, Nalgene and Polar Bottle.

Eden Foods already uses BPA-free cans, and Muir Glen, a subsidiary of General Mills, announced it will begin packaging its tomato products in BPA-free cans in late 2010.

BPA manufacturer Sunoco is requiring its customers to guarantee that BPA will not be used to manufacture food and water containers intended for use by children under 3.

As of July 2010, BPA has been banned from baby bottles and children's sippy cups in Connecticut, Maryland, Minnesota, Washington, Wisconsin, Vermont and New York. Connecticut and Vermont's laws also restrict the use of BPA baby-food and infant-formula cans. In all, 31 states and localities have introduced legislation to more strictly regulate BPA in food packaging.

At the federal level, Sen. Dianne Feinstein, D-Calif., and Rep. Ed Markey, D-Mass., have introduced legislation to ban BPA in all food and beverage containers regulated by the FDA.

Recommendations for Action

The findings of this report outline the urgent need to remove BPA from food packaging—a major source of our exposure to this toxic, hormonally active chemical. Action by the states is commendable, but is resulting in a patchwork of regulation that still leaves the majority of Americans exposed to a chemical that has been linked in hundreds of peer-reviewed studies to breast cancer, developmental problems and a host of other illnesses. Congress must set a high bar for safety by enacting federal legislation to ban BPA from food and beverage containers and giving the FDA the authority it needs to more strictly regulate other harmful packaging additives.

With BPA legislation already introduced in both the Senate and the House, Congress has the opportunity—and the obligation—to address this problem immediately in order to protect all Americans, especially our children, from this toxic chemical.

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PREVENTION STARTS HERE.

The Breast Cancer Fund translates the scientific evidence linking breast cancer and environmental exposures into campaigns that reduce breast cancer risk and protect our health and our environment.

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