



Talking Points

Basics

- BPA is a synthetic chemical that is recognized as endocrine-disrupting because of its effects on hormones, including estrogen.
- The scientific evidence linking BPA exposure to harm in humans is compelling and growing: More than 300 animal and human studies have linked BPA exposure, often in exquisitely small amounts measured in parts per billion and parts per trillion, to a number of health problems, including breast and prostate cancer, asthma, obesity, behavioral changes including attention deficit disorder, altered development of the brain and immune system, low birth weight and lowered sperm counts.
- Data from the U.S. Centers for Disease Control and Prevention indicate that 93 percent of Americans tested have detectable levels of BPA in their urine suggesting that people are consistently exposed and re-exposed to BPA through foods and from other sources. BPA has been detected in breast milk, amniotic fluid and umbilical cord blood, suggesting that babies are exposed to BPA as newborns and even before they are born, during critical windows of development and vulnerability.
- This report represents two years of work to understand the current state of the industry use of BPA and BPA alternatives in food can linings. It is the first to experimentally test the linings of food cans to identify what types of linings manufacturers are currently using.
- This report is meant to serve as a wake-up call for national brands and retailers who may be jumping from the frying pan into the fire by eliminating BPA in favor of regrettable substitutions. Consumers want BPA-free food cans that are truly safer, not food cans lined with alternative chemicals that are toxic or that have unknown safety.

Report Findings

To download the reports go to www.toxicfoodcans.org

- 100 percent of Campbell's products sampled (15 of 15) contained BPA-based epoxy, while the company says they are making significant progress in its transition away from BPA.
- 71 percent of sample Del Monte cans (10 of 14) tested positive for BPA-based epoxy resins.
- 50 percent of sampled General Mills cans (six of 12, including Progresso) tested positive for BPA.
- Collectively, 62 percent of retailers' private-label, or generic food cans (71 out of 114) analyzed in the study tested positive for BPA-based epoxy resins, including Albertsons (including Randalls and Safeway), Dollar General, Dollar Tree (including Family Dollar), Gordon Food Service, Kroger, Loblaws, Meijer, Publix, Target, Trader Joe's, and Walmart.
- BPA was found in the majority of private-label canned goods tested at the two biggest dedicated grocery retailers in the United States: Kroger and Albertsons (Safeway). In private-label cans, 62 percent of the Kroger products sampled (13 out of 21), and 50 percent of the Albertsons products sampled (eight out of 16 from Albertsons, Randalls, Safeway) tested positive for BPA-based epoxy resins.



- BPA was found in private-label cans sold at both Target and Walmart, the largest grocery retailer in the United States. In their private label products, 100 percent of Target cans sampled (five out of five) and 88 percent of Walmart cans sampled (seven out of eight) tested positive for BPA-based epoxy resins.
- Discount retailers (commonly known as “dollar stores”) were among the laggards in transitioning away from BPA in can linings. Testing revealed that 83 percent of Dollar Tree and Family Dollar private-label cans (five out of six) and 64 percent of Dollar General private-label cans (nine out of 14) were coated with BPA-based epoxy resins. This is especially a problematic because discount retailers are often the major retail outlet in low-income communities—which already face higher levels of BPA exposure. Broth and gravy cans were the most likely (100 percent of those sampled) to contain BPA in the can linings; corn and peas were the least likely category (41 percent of those sampled).
- On the positive side, Amy’s Kitchen, Annie’s Homegrown (recently acquired by General Mills), Hain Celestial Group, and ConAgra have fully transitioned away from BPA and have disclosed the BPA alternatives they’re using. Eden Foods reported eliminating the use of BPA-based epoxy liners in 95 percent of its canned foods and stated that it is actively looking for alternatives. Whole Foods has clearly adopted the strongest policy of the retailers surveyed in the report. Whole Foods reports that store brand buyers are not currently accepting any new canned items with BPA in the lining material.

What about the alternatives?

- The report found that retailers and national brands that are phasing out BPA could be replacing it with regrettable substitutes. Identifying the safety of BPA alternatives is challenging, given the insufficient FDA review and approval of packaging additives and highly protected trade secrets in this product sector. However, the report found that:
- Aside from BPA, four major coating types were identified among the 192 cans tested including: acrylic resins (including almost all oleoresin, polyester resins, and polyvinyl chloride (PVC) copolymers. There were multiple formulations of these compounds found, but no way to determine the specific chemicals used or how they are produced.
- 18 percent of retailers’ private-label foods and 36 percent of national brands were lined with a PVC-based copolymer, that is made from highly hazardous chemicals including vinyl chloride, a known human carcinogen. PVC is considered a regrettable substitute.
- 33 percent of retailers’ private-label foods and 51 percent of national brands were lined with acrylic based polymers. Of the cans tested, 39 percent had a polystyrene-acrylic combination, of concern because styrene is considered a possible carcinogen.
- Much more research is needed to determine the safety of these compounds, and what may be migrating from the “alternative” can linings into food.
- The report includes numerous recommendations including:
- National brands, grocery stores, big box retailers and dollar stores should eliminate and safely substitute BPA from all food packaging and label all chemicals used in can liners.
- In conjunction with the report release, advocates have launched a national online campaign calling on Kroger and Campbell’s to eliminate and safely substitute BPA. Congress should adopt comprehensive legislation to reform the FDA’s fatally flawed system for reviewing and approving the safety of packaging material.



- Consumers should choose fresh or frozen foods, or only purchase canned food from manufacturers and retailers that fully disclose the identity and safety of their can linings. Look for food packaged in other materials such as glass and Tetra Pak containers.

What consumers can do

Until we see strengthened federal regulation of food packaging and voluntary market-based solutions that provide people with the information they need to make safe and informed purchases of canned food, we recommend consumers do the following:

- Use glass, ceramic and stainless steel food storage containers and water bottles. Glass jars are easy to clean and can be reused for serving, drinking, storing, freezing and heating foods.
- Use glass and ceramic in the microwave.
- Avoid canned foods whenever possible (choose fresh and frozen instead).
- Look for soups and sauces in glass or other safe packaging.
- Skip the can and cook your own dry beans: they taste better and cost much less, too!
- See the complete test results from the 192 cans we tested for this report, plus an additional 60 cans, at www.healthystuff.org or www.toxicfoodcans.org

How can consumers advocate for market-based and political solutions to toxic food cans?

Consumers should reinforce and strengthen the call for safer food cans in the following ways:

Vote with their pocketbooks and only purchase canned food from manufacturers and retailers that fully disclose the identity and safety of their can linings.

Visit www.toxicfoodcans.org and send an email to the CEO of Campbell's and Kroger – identified as key laggards by the “Buyer Beware” report asking them to develop a timeline and benchmarks for getting BPA out of the food cans, label the chemicals in their can linings and publicly disclose safety data for any BPA-alternatives they're moving toward.

Support the “Ban Poisonous Additives Act” and other federal policy initiatives that would require the FDA to more strictly regulate the safety of food packaging;

Demand that their favorite national brands and retailers take these steps:

Set a timeframe to eliminate and safely substitute BPA from the lining of canned foods and other food packaging;

Label the presence of BPA and BPA-alternative chemicals in their can linings; and

Publicly disclose safety data for their BPA alternatives.

- Join the campaigns listed in this report and visit their websites for additional information and updates:
 - o www.breastcancerfund.org
 - o www.MindTheStore.org
 - o www.cleanproduction.org



- o www.ecocenter.org
- o www.nontoxicdollarstores.org

Frequently Asked Questions (FAQ's)

What evidence do we have that BPA is harmful?

Why this report? How is it different?

The FDA says BPA in can linings is safe. Why do you feel differently?

Should I buy canned food labeled "BPA-free"? Are these cans safer?

Why do food cans have liners?

How do the chemicals in the can liners get into the food?

Why would a company knowingly use something that's potentially harmful?

Why aren't cans labeled to inform consumers of the lining material?

How did you choose which stores and products to test?

Are children or adults more susceptible to the harmful effects of BPA?

What can consumers do to avoid BPA in food cans?

How can consumers advocate for market-based and political solutions to toxic food cans?

What recommendations do you have for the national brands, retailers, dollar stores and suppliers?

How is this report different than recent reports published by groups like EWG

Did you find other bisphenols being used in place of BPA in can linings?

What evidence do we have that BPA is harmful?

BPA is a synthetic chemical that is recognized as endocrine-disrupting because of its effects on hormones, including estrogen.

The scientific evidence linking BPA exposure to harm in humans is compelling and growing: More than 300 animal and human studies have linked BPA exposure, often in exquisitely small amounts measured in parts per billion and parts per trillion, to a number of health problems, including



breast and prostate cancer, asthma, obesity, behavioral changes including attention deficit disorder, altered development of the brain and immune system, low birth weight and lowered sperm counts.

Data from the U.S. Centers for Disease Control and Prevention indicate that 93 percent of Americans¹ tested have detectable levels of BPA in their urine^{2,3}, suggesting that people are consistently exposed and re-exposed to BPA through foods and from other sources. BPA has been detected in breast milk, amniotic fluid and umbilical cord blood, suggesting that babies are exposed to BPA as newborns and even before they are born, during critical windows of development and vulnerability.⁴

Why this report? How is it different?

This report represents two years of work to understand the current state of the industry use of BPA and BPA alternatives in food can linings. It is the first to experimentally test the linings of food cans to identify what types of linings manufacturers are currently using. We went beyond a focus only on BPA-based linings by identifying the lining types in nearly 200 cans, including the alternatives being used in place of BPA-based epoxy. We found widespread use of PVC (25% of tested cans) and polystyrene-acrylic resins (39%)--two potentially poor substitutes. Also, our survey of food manufacturers and retailers achieved a relatively high response rate.

This report is meant to serve as a wake-up call for national brands and retailers who may be jumping from the frying pan into the fire by eliminating BPA in favor of regrettable substitutions. Consumers want BPA-free food cans that are truly safer, not food cans lined with alternative chemicals that are toxic or that have unknown safety.

The FDA says BPA in can linings is safe. Why do you feel differently?

¹ U.S. Environmental Protection Agency (2010, March 29). *Bisphenol A Action Plan*. Retrieved from www2.epa.gov/sites/production/files/2015-09/documents/bpa_action_plan.pdf.

² Calafat, A. M., Kuklennyik, Z., Reidy, J. A., Caudill, S. P., Ekong, J., & Needham, L. L. (2005). Urinary concentrations of bisphenol A and 4-nonylphenol in a human reference population. *Environmental Health Perspectives*, 391-395.

³ Calafat A, Ye X, Wong L, Reidy J, Needham L (2008). Exposure of the U.S. Population to Bisphenol A and 4-tertiary-Octylphenol: 2003-2004. *Environ Health Perspect*, 116 (1): 39-44.

⁴ U.S. Environmental Protection Agency (2010, March 29). *Bisphenol A Action Plan*. Retrieved from www2.epa.gov/sites/production/files/2015-09/documents/bpa_action_plan.pdf.



The regulatory systems governing chemicals used in food packaging fall far short of ensuring that these chemicals are safe for consumption. For example, hazardous chemicals such as phthalates, several of which have been banned in children's products, are approved for use in food packaging. We know from many research studies that chemicals present in food packaging routinely leach into food and enter people's bodies.

Although BPA is eliminated relatively quickly by the body, it is considered functionally persistent because we are exposed to BPA from multiple sources many times a day. BPA is therefore present in our bodies almost continuously.

In 2010, the FDA joined other federal health agencies in expressing "some concern" over BPA safety and publicly supported industry taking action to remove BPA from baby bottles, feeding cups and the lining of formula cans and other food cans. In 2014, however, the FDA reviewed published research studies and concluded that BPA as currently used does not pose a threat to human health. There are several troubling aspects of this FDA review:

1) They used stringent criteria to eliminate most available studies from consideration. For example, all 48 epidemiological studies available were rejected. The vast majority of animal and cell studies were also rejected.

To be sure, not all studies are designed and executed well. Reviews like the FDA's must choose which studies to include based on some set of criteria. But in this case, the FDA reviewers made notes that undermine the case for rejecting certain studies. "These data support a plausible relationship between urinary BPA levels and obesity," they wrote on one, for example. A Newsweek reporter wrote more about this in a 2015 article. { <http://www.newsweek.com/2015/03/13/bpa-fine-if-you-ignore-most-studies-about-it-311203.html> }

2) The FDA's evaluation methods do not consider the possibility of very low-dose effects like those observed in multiple research studies on BPA. { <http://www.ncbi.nlm.nih.gov/pubmed/24388189> } Scientists are calling for regulatory agencies to use newer hormone-based tests when evaluating chemicals that may be hormonally active. { <http://www.ncbi.nlm.nih.gov/pubmed/23411111> }

BPA interacts with certain hormone receptors, causing a variety of downstream effects such as cell proliferation, at extremely low doses.

{ <http://www.ncbi.nlm.nih.gov/pubmed/19074586> } At higher doses, BPA's activity in cells may actually be lower. Hormone disruption by chemicals such as BPA is an intricately complex and growing field of research.



3) A stark disparity is seen between the findings of industry-funded studies and non-industry-funded studies about BPA. A 2006 review {<http://www.ncbi.nlm.nih.gov/pubmed/16256977> } found that all the studies funded by industry found no harm from BPA, while almost all of the non-industry studies found health effects. While funding from industry does not automatically render a study useless, this disparity is suspicious.

Should I buy canned food labeled "BPA-free"? Are these cans safer?

Yes, it is a good idea to avoid BPA. However, our investigation questions the safety of BPA-free coatings as well. Due to lack of safety assessments, retailers and brands could be replacing BPA-based epoxy with regrettable substitutes. The data from FDA's review and approval of packaging additives are extremely limited when it comes to BPA-free can coatings. We also have found very little data in the published scientific literature regarding the health effects of BPA epoxy replacements.

We suggest

- 1) avoiding cans with BPA epoxy
- 2) minimizing consumption of canned foods in general.

Why do food cans have liners?

The hard plastic coating on the insides of metal food cans acts as a barrier between the metal and the food, creating a seal that keeps the food safe from bacterial contamination. The lining prevents food from corroding the metal can as well as preventing metal from leaching into the food and altering its taste.

Some light-colored fruits are packaged in cans with no lining in the can body. These cans are steel with a tinplate interior surface. The tin reduces oxidation and discoloration of the fruit. The can lid (and the bottom end) are, however, coated to protect the welded side seams from corrosion.

How do the chemicals in the can liners get into the food?

All can linings start with a mix of ingredients, including chemical building blocks called monomers. For example, BPA is a monomer for BPA-based epoxy. Cross-linkers and stabilizers are also added. The monomers and cross-linkers react with one another, binding together to make up the final coating. However, a portion of the monomer and cross-linker is typically left over in the final coating. These molecules are small and able to migrate out of the coating and into food contacting it. Considerable research has shown this.



Some research suggests that much of the BPA present in canned foods gets there during the sterilization step, in which the filled can is heated. {
<http://www.ncbi.nlm.nih.gov/pubmed/25575039>} Heat greatly increases migration rates.

Our study identified a major research gap regarding residual chemicals in food can linings: Dozens of different chemicals other than BPA are used in the various alternative coatings, as well as in BPA-based epoxy. Research is lacking on safety of these chemicals and the extent to which they may migrate into food.

What lining is preferable? Are there any can liners that we know are safe?

Thus far, we do not see any replacements in use with sufficient data on their safety or capacity to migrate. We know the canned food and can lining industry is actively exploring replacements, and we encourage transparency about the chemistry and safety data regarding those alternatives to both food companies and consumers.

Why would a company knowingly use something that's potentially harmful?

Our research revealed that can-lining suppliers are not always providing their customers--the food manufacturers—with full disclosure regarding the chemical identity or safety data for the can linings they're buying. The national brands and retailers thus find it impossible to be fully transparent with the public about the safety of their food cans. This lack of disclosure puts both business and consumer health at risk. Can lining suppliers need to see themselves as part of the solution by publicly disclosing the chemical composition of their BPA-free can linings, and by ensuring that these materials have been rigorously assessed for their impacts on environmental and human health.

Why aren't cans labeled to inform consumers of the lining material?

Even though most national brands — and a number of private-label retail brands — now claim to be manufacturing BPA-free canned foods, few are labeling their products BPA-free, with the notable exception of Amy's Kitchen and Eden Foods.

We are calling on manufacturers to label food cans with the identity of their can linings, but it is not required by law that they do so.

Is it safer to eat certain canned foods over others?

Food companies choose coatings for their cans, in part, based on the properties of the food. For example, tomatoes, which are highly acidic, react with oleoresin, causing an unpleasant taste. Our findings reflect the complex can lining requirements posed by different types of foods:



•The corn and peas category was the least likely overall to contain BPA-based epoxy, either as a single coating or in combination with another coating, and the most likely to contain oleoresin, a plant-based substitute.

•Broth and gravy cans were the most likely overall to contain BPA-based epoxy.

Eighty percent of broth and gravy can lids were coated with BPA-based epoxy.

Based upon the Breast Cancer Fund's 2010 review of the BPA literature, the highest levels of BPA migration is into foods that are highly fatty or salty, such as coconut milk, soups, meats, vegetables, and meals (such as pasta dishes).⁵

How did you choose which stores and products to test?

192 cans were purchased from 22 retail stores. The cans included 68 brands from 44 food manufacturing companies. Cans were chosen to include samples representing the following categories:

- Top national and regional retailers, including dollar stores
- Retailer store private-label brands
- Top national brands
- Mainstream grocers, budget grocers, high-end grocers and dollar stores
- Canned food ingredients often used to prepare a holiday meal
- Tomato and bean products for all brands

For each selected retailer, the study included at least one can each of 1) plain beans (pinto, black, garbanzo, etc.) and 2) tomatoes or tomato sauce. This allowed us to compare two commonly purchased food types, each with different requirements for can coatings due to their different properties, across multiple retailers and brands.

Are children or adults more susceptible to the harmful effects of BPA?



The continued presence of BPA — and potentially unsafe alternatives — in the lining of canned foods has resulted in ongoing hazardous exposures to workers, low-income populations, pregnant women, children and other vulnerable populations. Prenatal exposures to BPA can have lifelong effects. Human studies have found evidence linking prenatal BPA exposures to altered thyroid hormones, wheezing, behavioral changes and emotional difficulties, alterations in birthweight and childhood BMI.

Data from animal studies also suggests that prenatal exposures may be of particular concern. Many of these studies show negative health effects including breast cancer, prostate cancer, metabolic changes, decreased fertility, neurological changes and immunological changes at doses much lower than the EPA-designated “safe dose” for BPA (50 µg/kg body weight/day).

BREAST CANCER With regard to breast cancer, laboratory studies have demonstrated that BPA alters mammary gland development in rats and mice. Because rodent mammary gland development follows a trajectory similar to that of humans, these studies are considered relevant for human breast cancer. Prenatal exposures of rats and mice to BPA have also been shown to result in precancerous growths and mammary tumors. A 2013 study found that exposure to BPA prenatally and perinatally (soon after birth) alters mammary gland development and results in abnormalities that manifest during adulthood. Some of the alterations in mammary gland development may make rodents more susceptible to tumors later in life.

In 2015, the Endocrine Society released its second statement on endocrine-disrupting compounds in which it identified BPA as an endocrine-disrupting chemical (EDC) having one of the strongest associations with impaired mammary development. Even more worrisome, recent evidence from studies of cultured breast cancer cells indicates that BPA exposure may reduce the efficacy of chemotherapeutic and hormonal treatments for breast cancer.

What can consumers do to avoid BPA in food cans?

Until we see strengthened federal regulation of food packaging and voluntary market-based solutions that provide people with the information they need to make safe and informed purchases of canned food, we recommend consumers do the following:

- Use glass, ceramic and stainless steel food storage containers and water bottles. Glass jars are easy to clean and can be reused for serving, drinking, storing, freezing and heating foods.
- Use glass and ceramic in the microwave.
- Avoid canned foods whenever possible (choose fresh and frozen instead).
- Look for soups and sauces in glass or other safe packaging.
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Support the “Ban Poisonous Additives Act” and other federal policy initiatives that would require the FDA to more strictly regulate the safety of food packaging;

Demand that their favorite national brands and retailers take these steps:

Set a timeframe to eliminate and safely substitute BPA from the lining of canned foods and other food packaging;

Label the presence of BPA and BPA-alternative chemicals in their can linings; and

Publicly disclose safety data for their BPA alternatives.

- Join the campaigns listed in this report and visit their websites for additional information and updates:
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 - o www.MindTheStore.org
 - o www.cleanproduction.org
 - o www.ecocenter.org
 - o www.nontoxicdollarstores.org

What recommendations do you have for the national brands, retailers, dollar stores and suppliers?

- National brands, grocery stores, big box retailers, and dollar stores, should take these steps:
 - Commit to eliminating and safely substituting BPA from all food packaging and establishing public timelines and benchmarks for their transition to safer alternatives.
 - Conduct and publicly report on the results of “alternatives assessments”, using the GreenScreen® for Safer Chemicals or a similar third-party certification tool for assessing the safety of can linings.
 - Label all chemicals used in can liners, including BPA or BPA alternatives; and demand that their suppliers of canned food linings fully disclose safety data, so as to provide a higher level of transparency to consumers.
 - Adopt comprehensive chemical policies to safely replace other chemicals of concern in products and packaging.



- Can-lining suppliers need to see themselves as part of the solution by publicly disclosing the chemical composition of their can linings and ensuring that the final materials have been rigorously assessed for their impacts on environmental and human health.

How is this report different than recent reports published on BPA in cans?

Our report is the first to include extensive product testing to determine the types of linings currently being used. We went beyond a focus only on BPA-based linings by identifying the lining types in nearly 200 cans, including the alternatives being used in place of BPA-based epoxy. We found widespread use of PVC (25% of tested cans) and polystyrene-acrylic resins (39%)--two potentially poor substitutes.

Also, our survey of food manufacturers and retailers achieved a relatively high response rate.

Did you find other bisphenols being used in place of BPA in can linings?

No, we did not see evidence of other bisphenols. Other bisphenols would have different infrared (IR) spectra than BPA. All the can linings identified as BPA-based epoxy in our study match the spectral pattern of BPA.

(Note we have a more technical response if needed)