BPA in Kids' Canned Food

A product-testing report by the Breast Cancer Fund

BREAST CANCER FUND

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BPA-FREE

Cans Not Cancer

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Summary

There is a toxic chemical lurking in your child's Campbell's Disney Princess soup, in her Chef Boyardee pasta with meatballs, even in her organic Annie's cheesy ravioli. It's called bisphenol A, or BPA, and you won't find it on any ingredient label. This chemical, which is hormonally active and has been linked in laboratory studies to breast cancer and a host of other health concerns, is in the lining of food cans. What's meant to be a protective barrier between the metal and the can's contents actually contains this toxic chemical, which leaches into the food and is then consumed by adults and children alike.

In order to bring more attention to the problem of BPA in canned food, and to highlight the particular dangers BPA poses to children, the Breast Cancer Fund tested canned foods marketed to and consumed by children for the presence of BPA. *Every food sample tested positive for BPA*, with Campbell's Disney Princess and Toy Story soups testing the highest.

There should be no place for toxic chemicals linked to breast cancer and other serious health problems in our children's food. You may be familiar with BPA-free baby bottles and sports water bottles, but there is no widely available BPA-free option for canned food. That's why the Breast Cancer Fund has launched the "Cans Not Cancer" campaign—to convince canned food manufacturers to replace BPA with a safer alternative.

Our Cans Not Cancer campaign is about our health, our children's health, and a safer future in which breast cancer rates have dropped because we've reduced our exposure to toxic chemicals.

Join us at www.breastcancerfund.org/cansnotcancer.

What We Tested and What We Found

For this report, the Breast Cancer Fund sent 12 canned food items—two cans of each of six canned meal products marketed to and largely consumed by children—to Anresco Laboratories, an independent testing laboratory in San Francisco. Since children may be particularly vulnerable to the effects of hormone-disrupting chemicals like BPA, we wanted to determine the levels of BPA in canned foods marketed specifically to children. We limited our selections to meals or soups that can be served on their own or as a main dish in a meal.

We tested for BPA levels in the food. Contents of each sample were removed, pureed in BPA-free materials, and assessed for BPA levels using Gas Chromatography-Mass Spectrometry (GCMS). The estimated limit of detection was 0.5 micrograms/kg (0.5 parts per billion, or ppb). (See the appendix for detailed testing methodology.)

WE TESTED:

- **Annie's Homegrown Cheesy Ravioli**
- **Campbell's Disney Princess Cool Shapes Shaped Pasta with Chicken in Chicken Broth**
- **Campbell's Spaghettios with Meatballs**
- **Campbell's Toy Story Fun Shapes Shaped Pasta with Chicken in Chicken Broth**
- **Chef Boyardee Whole Grain Pasta, Mini ABC's & 123's with Meatballs**
- **Earth's Best Organic Elmo Noodlemania Soup**

We purchased products from current stock at regionally well-known grocery outlets in the San Francisco Bay Area and the greater Milwaukee, Wisc., metropolitan area. All products were well within the recommended "best if used by" dates printed on the cans.

BPA Levels in Foods Marketed to Children

PURCHASED IN	COMPANY	ITEM	BPA LEVEL (IN PARTS PER BILLION)
Calif.	Campbell's	Disney Princess Cool Shapes, Shaped Pasta with Chicken in Chicken Broth	148
Wisc.	Campbell's	Disney Princess Cool Shapes, Shaped Pasta with Chicken in Chicken Broth	80
Calif.	Campbell's	Toy Story Fun Shapes, Shaped Pasta with Chicken in Chicken Broth	90
Wisc.	Campbell's	Toy Story Fun Shapes, Shaped Pasta with Chicken in Chicken Broth	71
Calif.	Earth's Best	Organic Elmo Noodlemania Soup, USDA Organic	42
Calif.	Earth's Best	Organic Elmo Noodlemania Soup, USDA Organic	34
Wisc.	Annie's Homegrown	Cheesy Ravioli, USDA Organic	34
Calif.	Annie's Homegrown	Cheesy Ravioli, USDA Organic	27
Calif.	Chef Boyardee	Whole Grain Pasta, Mini ABC's & 123's with Meatballs	21
Wisc.	Chef Boyardee	Whole Grain Pasta, Mini ABC's & 123's with Meatballs	19
Calif.	Campbell's	Spaghettios with Meatballs	16
Wisc.	Campbell's	Spaghettios with Meatballs	10

The average level of BPA in the 12 items tested was 49 ppb (micrograms/kg). These data are consistent with the findings of a product-testing literature review conducted by the Breast Cancer Fund,[1] which found that soups averaged 69 ppb and meals averaged 36 ppb of BPA. In the current tests of children's canned food, soups averaged 77.5 ppb and meals averaged 21 ppb.

The levels of BPA we found in these canned foods marketed to children are of great concern. While a child-sized serving (about two-thirds of an adult-sized serving, according to Kaiser Permanente's serving size estimates for children[2]) may result in BPA exposure at a level of concern, an adult-sized serving given to a child would result in even higher BPA exposure. Nutritional labels on the cans we tested have recommended serving sizes based on adult caloric intake, probably often leading parents to give children adult-sized servings. Additionally, pairing the foods we tested with other canned foods such as fruits or vegetables, as commonly happens, would lead to even higher BPA exposures. Consuming canned foods beyond a single serving on a regular basis could lead to exposure to levels of BPA that have been associated with abnormalities in breast development and increased risk of developing breast cancer, and adverse effects on brain development, reproductive development, prostate weight, testis weight, puberty onset, body weight, metabolic immune system functions, and gender-related behaviors including aggression and some social behaviors.[3-9]

BPA and Its Health Effects

BPA is known as an endocrine-disrupting chemical because of its effects on hormone systems. It can mimic the hormone estrogen, and studies have shown that exposure to even low doses (parts per billion and even parts per trillion) of the chemical—levels comparable to the amount an average person can be exposed to through food packaging—can increase the risk of breast and prostate cancer, infertility, early puberty in females, type-2 diabetes, obesity and attention deficit hyperactivity disorder.

Exposure to BPA during childhood is of particular concern to scientists. Growing children are not just little adults; their developing brains and other organ systems are especially sensitive to the harmful effects of chemical exposures. Disruptions to their hormonal systems during development can set the stage for later-life diseases.

The Principal Route of BPA Exposure: Food Packaging

BPA is a chemical used to make, among other things, the epoxy-resin linings of metal food cans. The BPA lining forms a barrier between the metal and the food, which helps create a seal so that the food is safe from bacterial contamination. But while BPA-based epoxy resins solve one food-safety problem, they unfortunately create another, as BPA can leach from the resin, make its way into food, and ultimately end up in people.[10] 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.[11]

Why does BPA leach from the epoxy-resin can liner? The epoxy resin is formed using two chemicals—BPA and epichlorohydrin.[12] When these two molecules bind, the resulting copolymer can be incomplete and unstable, allowing BPA to migrate from the liner into food.[13] Because BPA is lipophilic, or fat-seeking, it tends to leach more into fatty foods.[14] After aggregating the results of tests of 300 canned food products, the Breast Cancer Fund demonstrated that canned foods that are salty or fatty, such as soup, meals (e.g., ravioli in sauce) and vegetables tend to have the highest BPA content.

In March 2011, the Breast Cancer Fund and Silent Spring Institute published a groundbreaking study in *Environmental Health Perspectives* that provides clear and compelling evidence that food packaging is a major source of exposure to BPA.[15]

For the study, we provided five families with fresh food—not canned or packaged in plastic—for three days. The effect was significant. While the families were eating our food, their BPA levels dropped an average of 66 percent. When families returned to their regular diets, their BPA levels increased back to pre-intervention levels.

This study suggests that removing BPA from food packaging will remove a major source of BPA exposure.

Research has also uncovered a relationship between household income and BPA exposure, showing that people with the highest BPA exposure were from the lowest income groups.[16-17] This data may be attributed to the fact that canned foods are usually cheaper, last longer and are more readily available in low-income neighborhoods than fresh foods.

ALTERNATIVES TO CANNED FOODS FOR KIDS

Canned food is certainly convenient. Fortunately, there are simple and inexpensive replacements for canned food so that parents can avoid unnecessarily exposing their children to BPA:

Dry Pasta

One great and inexpensive alternative to canned pasta is cooking dry pasta and mixing it with fresh or jarred sauce. Dry pastas come in a variety of shapes and colors, making meal time fun for kids. It is easy to make large batches and separate portions into smaller containers for later use. Another inexpensive option is boxed macaroni and cheese, which is now widely available in a variety of brands and options, including organics.

Frozen Pasta

You can find a variety of heat-and-serve pasta meals in the frozen-food aisle. Just make sure to take the food out of the plastic bag or tray before heating, as it's always best to avoid heating any plastic in the microwave.

Soup

Many soups now come in containers called Tetra Paks—they look like giant juice boxes. Tetra Paks are re-sealable, so you can just pop the container in the refrigerator after opening. It used to be hard to find anything other than broth in Tetra Paks, but you can now find all kinds of soups, including chicken and rice, black bean, vegetable, and chunky tomato, making the transition to BPA-free soups easy and affordable.

Fruit

The best BPA-free alternative to canned fruit is dried or fresh fruit. An added bonus to moving away from canned fruits is that they often contain added sugar, so cutting out the BPA might also help you cut the calories! Frozen fruit is also a great option to use in smoothies or in baking if fresh isn't available.

Market Solutions: Cans Not Cancer

The findings of this report outline the urgent need to remove BPA from food packaging—a major source of exposure to this toxic hormone disruptor— especially in foods marketed to children. That's why the Breast Cancer Fund has launched the Cans Not Cancer campaign to convince canned food manufacturers to replace BPA with a safer alternative that's not linked to disease.

Since April 2011, consumers have sent more than 30,000 messages to three of the largest canned food manufacturers (Campbell Soup Co., Del Monte Foods and General Mills, maker of Progresso, Cascadian Farm and Muir Glen) urging them to get BPA out of canned foods and replaced with a safer alternative.

Fortunately, some companies are beginning to listen. Due in large part to increased consumer demand for BPA-free packaging, many companies are beginning to signify interest in finding alternatives. Some canned food companies are altering their packaging processes by either changing to a BPA-free can liner or changing the food packaging altogether. Eden Foods began transitioning away from BPA in 1999 and uses a substance that was used in cans long before BPA was introduced to the canned food industry. This lining, an oleoresinous c-enamel, is a mixture of an oil and a resin extracted from various plants, such as pine or balsam fir.

An alternative food packaging that some companies have used as a BPA-free alternative are Tetra Paks, made of 70 percent paperboard combined with thin layers of LDPE (low-density polyethylene) and aluminum foil.[18] Tetra Paks are used widely throughout Europe and have been used in the United States for juice, soups, liquid dairy products and even wine.

Other companies, including General Mills' Muir Glen tomato products, have developed alternatives to the BPA epoxy resin that lines most canned foods. However, not all have been transparent about the alternatives they are using. Any alternative to BPA must be studied for its effects on health; switching out a chemical we know is harmful for one that's unknown and untested is not the solution consumers are looking for. It is of paramount importance that companies transitioning to an alternative can liner be transparent to consumers about what chemical replacement they are using so that consumers can have confidence that products are safe for their children.

These market moves are a hopeful sign that some in the industry are leading the way to BPA-free food packaging, but more needs to happen, and quickly. Every day, children are being exposed to BPA through canned foods marketed to them using slick advertising and their favorite

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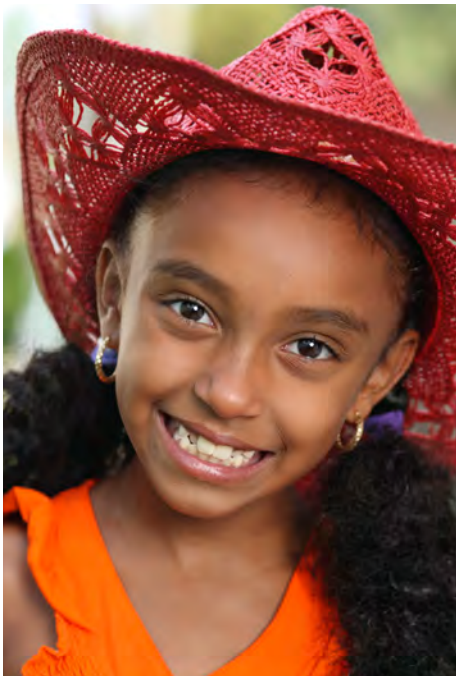

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characters. The Breast Cancer Fund's Cans Not Cancer campaign is pushing the entire canned food industry to not only eliminate BPA from their products but also require that companies be transparent about their alternatives and only use those that are safe.

Our Cans Not Cancer campaign is about our health, our children's health, and a safer future in which breast cancer rates have dropped because we've reduced our exposure to toxic chemicals.

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Policy Solutions

While market changes are influential, it is imperative that public policy solutions enforce voluntary corporate efforts as well as protect all consumers by ensuring the entire food and food-packaging industry is BPA-free. Therefore, the Breast Cancer Fund supports legislation currently in front of Congress, authored by Rep. Ed Markey, D-Mass., that would ban BPA from all food and beverage containers. Markey's legislation also requires the FDA to review food packaging additives that have been previously approved and to limit the use of any substance the FDA determines may pose health risks, based on new scientific information. This bill was introduced in Congress on January 25, 2011 and has the support of more than 50 public health, environmental, labor and faith-based groups. Read more at www.breastcancerfund.org/bpaact.

In addition, 10 states have restricted the use of BPA in infant food containers. While these laws do not cover the kinds of canned foods tested in this study, they send a strong signal to the marketplace that states are taking action to protect children from harmful chemicals in food packaging.

Appendix — Details on the Testing Method

Food samples were composited by stainless steel blender in an unlidded Mason jar, from which 15 g were taken for analysis (samples were fortified as needed). BPA was extracted using QuEChERS method with 15 ml ACN. In a plastic (polypropylene) centrifuge tube, 15 g sample + 1.5 NaCl + 6 g MgSO4 +15 ml ACN were shaken for 2 minutes. The mixture was centrifuged for 10 minutes at 4000 RPM. 10 ml of ACN top layer were evaporated and taken through derivatization. The BSTFA/TMCS volume was modified to 1 ml and was added to the residue at which point it was placed in an oven for 30 minutes at 80 degrees C. After cooling, the derivatization agent was evaporated under N2 and the residue was reconstituted in 4 ml of chloroform. Sample was microfuged at 10,000 RPM. 1 µl were injected into the Gas Chromatograph Mass Spectrometer (GCMS). The estimated level of detection was 0.5 µg/kg.

GCMS operating parameters: Shimadzu GC-17A equipped with MS QP4000. 150 degree C for 2 minutes then 20 degree/minute to 300 C and hold 20 minutes. Flow @ 1.0 ml/minute. Interface at 300 degrees C. Injector at 250 degrees C. SIM (m/z): 372, 357. (These recoveries were from previous testing. Four spiked samples at the level of 20 ppb per sample yielded the following recoveries: Sample #1: 121.5%, Sample#14: 118.5%, Sample #20: 116.5%, Sample #25: 95.6%).

As a negative control, blanks of de-ionized water prepared and extracted with samples were run only once to verify that there was no contamination in the process. No BPA was detected.

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