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#### Health Tip

Don't expect to find beneficial compounds like soy protein and isoflavones in soy oil. Although soy oil contains some omega-3 fatty acids, it's still mostly an unhealthy polyunsaturated oil.



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Issue: September 2006

page 1 of 1

## Living Better with Plastics

Plastic is hailed as one of the world's greatest inventions. While its use in products such as helmets and computers makes lives safer and tasks easier, I'm wary of many kitchen plastics used to protect and serve meals. Recent studies show that when some plastics come in contact with food, certain chemicals migrate to the food and may cause an array of health problems. Scientists fear that even low levels of these chemicals may reduce immunity and alter behavior in adults and cause cancers and irreversible organ damage in fetuses and children. The good news is that you don't have to give up the convenience of your favorite plastic, because in almost all cases there are similar products made from a safer plastic or other material.

### A Closer Look at Four Problem Plastics

In June, San Francisco banned the manufacturing, sale, and distribution of child-care products and toys containing certain phthalates and bisphenol A, both hormone-disrupting chemicals found in some plastics that are thought to interfere with childhood development. The European Union has similar bans on phthalates.

**Bisphenol A (BPA).** BPA is found in many polycarbonate plastic products (often labeled as #7), such as plastic labeled as microwavable, eating utensils, linings for metal food and beverage containers, baby bottles, and other products. I believe San Francisco's measure to ban BPA in children's products is justified. BPA is a hormone disrupter, a chemical that alters the body's normal hormonal activity and mimics the effects of estrogen. In mice and rats, exposure to BPA has led to miscarriages, birth defects, and mental retardation, as well as early puberty, breast and prostate cancers, and reduced sperm counts. In laboratory studies, this chemical has been shown to inhibit the formation of connections in a part of the brain called the hippocampus, or memory center.

The Centers for Disease Control and Prevention detected BPA in the urine of a majority of the thousands of people it tested in the United States. Frederick vom Saal, PhD, a professor of reproductive biology at the University of Missouri-Columbia, has been researching the effects of these chemicals for more than 30 years and is convinced they're a danger to health, especially for children and fetuses. He and his colleagues looked at human cells and BPA and were astonished at the small amount of chemicals needed to alter the cells. Since then, more than 40



studies have confirmed the negative effect of low doses of BPA on human cells and mouse cells, where they produced an almost identical response. More studies show BPA's cell-altering effects at higher levels.

I'm concerned about these findings. Normal wear and tear of plastics causes chemicals to leach. "In adults, high levels affect behaviors and the immune system, but babies are ruined for life," says vom Saal. Of particular concern is the abundance of baby bottles on the market containing BPA. *Consumer Reports* tested hard plastic baby bottles and found that even after multiple washings, they continued to leach BPA. "When you boil them in water, you have an estrogen cocktail," says vom Saal.

"Many countries, in fact, have banned polycarbonate dishes and cutlery," says vom Saal. "In Japan, consumer use of polycarbonate is crashing." Recent state bills in California, Maryland, and Minnesota that proposed a ban on children's products containing high levels of BPA haven't fared as well as legislation did in San Francisco.

*My advice:*

- Microwave food in glass or ceramic, never in plastic.
- Unfortunately, cans are not labeled that they contain BPA. Once opened, notice the canned products that are lined with plastic and try to avoid them.
- Switch to baby bottles made of glass or opaque pastel-colored #4 or #5 plastic. (Evenflo and Gerber offer nontoxic bottles.) I'm not concerned about toddlers' sippy cups, which are made from safe #5 and polyethylene #2 plastic.

**Polystyrene.** Polystyrene, labeled as #6, is often found in foam containers and cups and sometimes in clear disposable takeout containers, plastic cutlery, and cups. Polystyrene may leach styrene, a possible human carcinogen, into food it comes in contact with. Studies involving mice show that when it's ingested over several weeks, this chemical can damage the liver, kidneys, lungs, and brain.

*My advice:*

- Avoid consuming hot liquids, fatty foods, or alcoholic drinks from Styrofoam containers, since heat and alcohol may increase leaching of the chemical.
- Transfer foods from takeout containers made of Styrofoam to glass or ceramic.

**Adipates and Phthalates.** Many plastic-wrapped foods in grocery stores, such as meats and cheeses, are wrapped in polyvinyl chloride (PVC), often labeled as #3 plastic. To make PVC plastic flexible, manufacturers add chemicals called plasticizers. These chemicals, known as adipates and phthalates, can leach out of the PVC into food, especially hot, fatty foods. In mice, these chemicals have been shown to cause birth defects, fetal death, and damage to the liver, kidneys, lungs, and reproductive systems. Di-(2-ethylhexyl) adipate, or DEHA, is one plasticizer used in many plastic wraps. In one study

by the Consumers Union, 19 pieces of cheese wrapped in plastic were analyzed and the seven that were wrapped in PVC plastic contained consistently high levels of DEHA. Levels averaged 153 parts per million; the European Union's limit is 18 parts per million for DEHA migration from plastic to food.

*My advice:*

- Since many plastics used to wrap meat and cheese are made from PVC, I take these items out of the plastic and wrap them in one of my favorite kitchen tools—wax paper. You can also store them in a glass or ceramic dish covered with a lid or a piece of PVC-free plastic wrap (not touching the food), such as Glad Cling Wrap or Saran Cling Plus.
- Never let plastic wrap touch food in the microwave.
- Some cooking oils are sold in plastic bottles made from PVC. Only store oils in glass bottles.

### **Selecting the Right Water Bottle**

All soft plastics have the potential to leach chemicals into food and beverages, including disposable and reusable bottles. Here are a few practical tips:

- Avoid reusing single-use plastic bottles. Frequent washing of disposable plastic bottles may accelerate its breakdown and cause chemicals called adipates to leach.
- Toss the bottle of water that's been sitting in your car. Solar heat can do as much damage as the microwave.
- Some plastic bottles are made from BPA, so use stainless steel water bottles (*visit [kleankanteen.com](http://kleankanteen.com)*).

### **Good and Bad Plastics by the Numbers**

#### **Plastics to Avoid**

#3 polyvinyl chloride (V or PVC)

Where you'll find it: plastic wrap, cooking oil bottles

#6 polystyrene (PS)

Where you'll find it: Styrofoam

#7 other (usually polycarbonate made with bisphenol A)

Where you'll find it: microwavable plastics, eating utensils, linings for metal food and beverage containers, baby bottles

#### **Safer Plastics**

#1 polyethylene terephthalate (PET or PETE)

Where you'll find it: soft drink and water bottles

#2 high-density polyethylene (HDPE)

Where you'll find it: milk and water bottles

#4 low-density polyethylene (LDPE)

Where you'll find it: wrapping films, grocery bags

#5 polypropylene (PP)

Where you'll find it: yogurt containers, syrup bottles

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