

New York Times, 7/22/22

The Types of Plastics Families Should Avoid

If it seems like plastic is everywhere, that's because it is. But there are ways to limit your exposure.

By Alice Callahan

- Published April 17, 2020, Updated July 22, 2022

Take a look around your home and count the items that are made with plastic. Then, consider the less obvious sources: the dust accumulating on your bookshelf, the linings of soup cans, food packaging, cosmetics, even your tap water and beer. Plastic is everywhere, and like many parents, I worry about the danger it poses to my kids' health, as well as to my own.

On Jan. 27, the Environmental Defense Fund, along with several other organizations, submitted a petition to the Food and Drug Administration that urged the agency to limit the use of the chemical bisphenol-A (BPA) in food packaging. BPA is just one of many chemicals used in plastics that are concerning because of their links to certain health conditions, said Dr. Leonardo Trasande, a pediatrician and director of the Center for the Investigation of Environmental Hazards at the N.Y.U. Grossman School of Medicine.

But while Dr. Trasande supports stricter limits on the use of BPA, he said that the F.D.A. is "woefully outdated" in its approach to regulating chemicals used in food packaging. Focusing on a single chemical like BPA rather than the entire suite of harmful chemicals in plastics and other materials leads to "chemical whack-a-mole, in which one chemical gets replaced with something very similar that may be equally problematic," he said. For now, the burden of reducing exposure to many of these chemicals remains with consumers.

Given this reality, here's what you need to know about how chemicals in plastics and other consumer products might affect your health and how you can lower your exposure.

What to Do

Understand which plastics are worrisome.

Plastics may look inert, but the chemicals inside them are not. “There are chemicals used in plastics that are not tightly bound to the material, which means they easily leach away,” especially when exposed to heat, said Dr. Sheela Sathyanarayana, a pediatrician and researcher at the University of Washington and the Seattle Children’s Research Institute.

The two most concerning types of chemicals in plastics are phthalates and bisphenols, Dr. Trasande said. Phthalates, which are typically added to plastics to make them pliable and soft, are used in plastic food wrap, vinyl flooring and personal care products like deodorants, nail polish, hair gels, shampoos, soaps and lotions. Bisphenols, including BPA, are more typically found in hard polycarbonate plastics such as water and juice bottles, food containers, eyeglass lenses and have been identified in the linings of food and soda cans.

A large body of research suggests that phthalates and bisphenols can act as endocrine disruptors, meaning that they either mimic or interfere with hormones in the body. The early troubling studies of phthalates and bisphenols were on rodents, but more recently, researchers have begun linking the chemicals to worrying effects on humans, Dr. Trasande said.

For example, human studies have found that exposure to higher phthalate levels in the womb is associated with asthma in childhood. And in boys, it’s linked to more behavioral problems and shorter distances between their anuses and genitals — a measure linked to lower testosterone levels and semen quality later in life. In men, higher phthalate exposures in adulthood have been associated with lowered sperm counts; and exposures in pregnant women have been linked to lower thyroid hormone levels and more preterm births.

BPA, on the other hand, can mimic estrogen — another hormone important to reproductive development and function — and has been linked to reduced fertility in men and women, later puberty in girls, earlier puberty in boys and behavioral problems in children.

There’s also growing evidence that exposure to hormone disruptors like phthalates and bisphenols is associated with a greater risk of Type 2 diabetes, heart disease and obesity. In a 2021 review, researchers noted that exposure to these and other endocrine disruptors from food, consumer products and the environment may increase the risk of obesity by a similar magnitude as more commonly cited culprits like lack of exercise or following a poor diet.

The research is compelling and alarming, but the science is ongoing, and some findings are inconsistent and controversial. Together, though, the evidence is convincing enough that avoiding endocrine-disrupting chemicals is worthwhile, especially during sensitive periods of development like pregnancy, infancy, early childhood and puberty, said Kim Harley, a reproductive epidemiologist and an associate director at the center for environmental research and children’s health at the University of California, Berkeley.

The good news is that phthalates and bisphenols don't stay in your body permanently, so making changes has a near-immediate effect. "If you reduce your exposure, you can wash out these chemicals from your body within a matter of days," Dr. Harley said. And while it's impossible to completely eliminate such chemicals from your life, she added, a little reduction may go a long way.

Prioritize fresh, whole foods.

Studies have shown that people who consume more fresh foods and fewer processed and packaged foods have lower urinary concentrations of BPA and phthalates.

Processed meals, like those purchased from fast food restaurants or grocery stores (think boxed macaroni and cheese) can be convenient and sometimes necessary, but they can contain high levels of phthalates. Studies also suggest that higher-fat foods — like certain meat and dairy products — can accumulate more phthalates than others. Bisphenols and other chemicals can lurk in the linings of cans, so soups, sauces and beverages packaged in glass tend to be safer choices; as are fresh or frozen fruits and veggies. The plastic bags used for frozen produce don't contain phthalates or bisphenols, and cold temperatures make leaching of chemicals from plastic much less likely, Dr. Sathyanarayana said.

Avoid using certain types of plastic containers.

Bisphenols can hide in the plastics used to store food and drinks, so when possible, use metal or glass versions of baby bottles, sippy cups, food storage containers and water bottles. The F.D.A. banned BPA from baby bottles and sippy cups in 2012 and in infant formula packaging in 2013, but products labeled "BPA-free" might be made with other bisphenols with similar health effects.

When you use plastic, look at the recycling code on the bottom for clues about what's in it. Dr. Trasande recommended avoiding items labeled 3 for phthalates, 7 for bisphenols and 6 for styrene. (Styrene, which is found in Styrofoam and other plastic products, is "reasonably anticipated" to be a human carcinogen, according to the National Institutes of Health.) Dr. Trasande also suggested avoiding plastic wrap and tossing plastics that are scratched or showing signs of wear.

Avoid heating plastics.

Warming plastics by heating them in the microwave, using them for hot foods or washing them in the dishwasher can increase the chance that harmful chemicals will leach from them and end up in your food or liquid.

Swap out vinyl products.

If you have a vinyl shower curtain, switching to one made with fabric is an easy way to reduce phthalates in your home, Dr. Harley said. Also watch out for vinyl in products like anti-slip bathtub mats, baby play mats and place mats, and choose products made from other materials.

Avoid handling store receipts more than necessary.

Receipts are usually printed on thermal paper, which contains bisphenols that can be absorbed through the skin. Limiting how much you touch receipts and not allowing kids to play with them is a small step that can reduce exposure, said Joseph Braun, an epidemiologist and director of the Center for Children's Environmental Health at Brown University.

Reduce exposures from toys.

Phthalates used to be in soft plastic toys, but they were banned in 2008 from toys in the United States. Still, if your baby is in a stage from 6 months to a year when they want to put everything in their mouth, try to direct them toward wooden or silicone toys instead, Dr. Sathyanarayana said. Simply playing with plastic toys is fine, she added.

Take care with personal care products.

Cosmetics, nail polish, shampoo, body wash, lotions and powders often contain phthalates, and use of these products may explain why women have higher phthalate levels in their bodies than men. Recent research has also found that Black and Hispanic women in the United States have greater phthalate exposure, including during pregnancy.

Choosing personal care products labeled "phthalate-free" or "fragrance-free" (phthalates are often found in fragrances) can significantly reduce phthalate exposure. In a 2016 study conducted by Dr. Harley and her colleagues, 100 Latina teen girls in California were provided with such low-chemical personal products for three days, and the levels of several urinary phthalate compounds dropped by 27 to 45 percent.

Keep in mind that products labeled "unscented" may still contain fragrance chemicals to cover up other smells, and aren't guaranteed to be phthalate-free. The Environmental Working Group's Skin Deep Cosmetics Database is a useful resource for identifying phthalate-free products.

Reduce exposure to dust.

Phthalates can be found in glues, adhesives (such as those found on tape), carpet backings, vinyl shower curtains and floors, and other soft pliable plastics, Dr. Braun said. These chemicals can wind up in the dust in your home, and then enter the body by

inhalation or absorption through the skin, or hand-to-mouth activity of babies and young children, he said.

In one 2021 study, Dr. Braun and his colleagues found that improving the homes of pregnant women so that they were easier to keep clean, like replacing broken floor tiles and refinishing wood floors, resulted in their babies having lower urinary phthalate concentrations at 1, 2 and 3 years of age when compared with children living in dustier households.

Dr. Braun also recommended using a vacuum cleaner outfitted with a HEPA filter; without the filter, the vacuum just blows the fine phthalate particles out the back end, he explained.

This guide was originally published on Sept. 19, 2019. It has been updated to reflect news events.

Alice Callahan is a health and science writer based in Oregon and the author of “The Science of Mom: A Research-Based Guide to Your Baby’s First Year.”