

Plastics: We Know They Are Dangerous – What Can We Do to Protect Our Planet and Ourselves?



Article Source: Mercola.com

STORY AT-A-GLANCE

- Plastic products are developed from a number of chemicals, some known to be endocrine disruptors responsible for interfering with the normal function of your natural hormones
- Data indicate microplastics may be found in nearly every animal consuming the particles, including animal foods consumed on a regular basis
- Research demonstrates phthalates and BPA have significant negative health effects on animals and

humans, including development of dysfunctional sperm, increased inflammation and symptoms linked to body systems controlled by estrogen and thyroid hormones

- Despite overwhelming evidence, the FDA is unwilling to regulate the plastic industry, potentially as a consequence of millions spent on lobbying by the industry or the result of disinformation published in scientific journals

By Dr. Mercola

Plastic products are made of a number of different chemicals, some of which are known to act as endocrine disruptors. These chemicals are similar in structure to natural sex hormones and interfere with the normal functioning of those hormones. They may be found in fast foods, processed and boxed foods and even those marketed as organic.¹

One class of chemicals, [phthalates](#), are widely used to make plastic more flexible, such as your shower curtain, food packaging and vinyl gloves. They can also be found in household cleaners, cosmetics and [personal care products](#). Although intended to make plastic more durable, they're not strongly bound to the product. This means that with heat and use, the chemicals leach out.

Americans spend 87 percent of their time in enclosed buildings and 6 percent in enclosed vehicles,² totaling 93 percent of your life spent inside, breathing indoor air where levels of many pollutants are often two to five times higher than typical outdoor concentrations.³

In your environment, the chemicals attach to dust particles increasing risk of exposure, especially to children due to their hand-to-mouth behavior.⁴ Exposure also occurs when eating and drinking foods that have been in contact with containers containing phthalates.

U.S. Center for Disease Control and Prevention (CDC)⁵ scientists measured 13 different phthalate metabolites in urine, finding measurable levels in the general population indicating widespread exposure. Women have higher levels of urinary metabolites than men, as they use more soaps, body washes, shampoos and other [personal care products](#).

Microplastics in Much of Your Food and Bottled Water

After researchers found more than 90 percent of bottled water from the world's leading brands are contaminated with microplastics, the World Health Organization (WHO) initiated a review of bottled water.⁶

The researchers analyzed nearly 250 bottles from 19 locations in nine countries and found an average of 325 plastic particles for every liter of water sold.^{7,8} The scientists wrote they had found nearly twice the number of particles in bottled water as compared to their previous study of tap water.⁹

The irony is most buy bottled water to avoid contamination found in tap water. However, most food containers are made with polycarbonate plastics, including bioactive chemicals like phthalates and bisphenol-a (BPA).

The chemicals can leach into food and drinks, especially when they become hot. This risk may increase when bottled drinks are transported and stored in unrefrigerated areas. Microplastics are also found in the tissue and cells of some of the foods you're eating, demonstrating the ability of certain microplastic particles to become incorporated into body tissue.

In one study,¹⁰ researchers proved microplastics were taken into cells and cause significant effects on the tissue of the

blue muscle under laboratory conditions. Another¹¹ investigated the tissue distribution, accumulation and tissue-specific health risks of [microplastics](#) in mice, finding they accumulated heavily in the liver, kidney and gut, with a distribution pattern dependent on particle size.

Yet another study¹² found 73 percent of mesopelagic fish caught in the Northwest Atlantic had microplastics in their stomach – one of the highest levels measured globally. The findings are worrying as these fish inhabit a remote area of the world and should be isolated from human influence. What's more, they are often prey for fish eaten by humans, leading to bioaccumulation up the food chain.

The American Academy of Pediatrics Warns Parents to Avoid Plastic

The American Academy of Pediatrics (AAP) has become concerned enough about chemical exposure it has issued a letter warning parents that chemicals in food colorings, preservatives and packaging may be dangerous to their children, and that these chemicals are not being appropriately regulated by the government.¹³

In a review of almost 4,000 additives found in food products, they determined 64 percent had no research demonstrating they were safe to eat or drink. This is especially concerning as the growth process in small children makes them more vulnerable to ill effects. They called for strong reforms from the Food and Drug administration's (FDA) food additive regulatory process.

In their policy statement they warn parents to avoid these chemicals, as an increasing number of studies suggest they interfere with [hormones](#), growth and development. Dr. Leonardo Trasande, an AAP Council on Environmental Health member and

lead author of the policy statement, said:¹⁴

“There are critical weaknesses in the current food additives regulatory process, which doesn’t do enough to ensure all chemicals added to foods are safe enough to be part of a family’s diet. As pediatricians, we’re especially concerned about significant gaps in data about the health effects of many of these chemicals on infants and children.”

The Disturbing Health Effects of BPA and BPA-Like Chemicals

Ubiquitous exposure makes it difficult to measure the health impact from a specific chemical. However, there is compelling scientific evidence the endocrine disrupting capabilities of plastics exert a range of disturbing health effects on people and animals. Especially in the prenatal stage, children are at significant risk. Tom Nelter at the Environmental Defense Fund commented:¹⁵

“Whatever organ or system under development in the fetus or child during an exposure could be altered in subtle yet significant ways, even at low doses.”

The impact of chemicals and plastics have been studied in both humans and animals. Depending upon the specific polymer, the effects can vary. Researchers have determined many are harmful, however as the evidence mounts the industry produces its own aggressive and widespread campaign to attack scientists and journalist who report on the dangers of these chemicals.

Using animal studies, researchers are able to isolate specific chemicals to analyze the effect on the body. This is something that cannot be done in human studies. However, while isolated

chemical effects may be identified, it is likely the effects are magnified when people are exposed to a chemical soup from ingesting multiple polymers found in packaging, bottles or inhaled in dust.

Aquatic animals have been important models for human disease¹⁶ and have demonstrated the chemicals can have a clear effect on estrogen and thyroid hormone systems.

Published data demonstrates the negative effects of BPA and/or phthalates on precursors to the female egg,¹⁷ symptoms of [asthma](#) and allergies,¹⁸ the inflammatory response, and dysfunctional sperm development or testicular damage in mice and guinea pigs.¹⁹

Dr. Frederick Vom Saal, endocrinologist at the University of Missouri explains much of the early research on animals involved very high doses, a complaint from many skeptics.

In response, Vom Saal and colleagues published a study demonstrating phthalates commonly found in food packaging had adverse reproductive effects in doses nearly 25,000 times lower than had been previously tested or imagined.²⁰

Effects on Humans Are Alarming

Vom Saal's research suggested plastics are harmful to animals' reproductive systems and causes abnormal sperm, egg and fetal development. The effects on humans are just as damaging.

While human studies are mostly epidemiological and may only define associations and not causal relationships, it's easy to understand how consuming endocrine disrupting chemicals may have a significant effect.

Reviews of literature demonstrate a link between exposure to BPA, phthalates and other additives with a reduction in

fertility, male sexual function, sperm quality and blunted immune function. Additionally, researchers have discovered exposure to plastic additives increases the risk of [Type 2 diabetes](#), heart disease, [obesity](#), miscarriages and low birth weight.

At the urging of the U.S. Consumer Product Safety Commission following studies demonstrating the devastating health effects plastic chemicals have on children, manufacturers stopped adding phthalates to children's pacifiers, soft rattles and teething toys in 1999.²¹

Although acknowledged to be "reasonably considered a human carcinogen,"²² the chemicals continue to be added to thousands of products. Yet another health effect associated with exposure to phthalates is the influence they have on gender development as a baby grows in his mother's womb, causing males to become more female.

The chemicals have disrupted the endocrine systems of wildlife, causing testicular cancer, genital deformations, low sperm counts and [infertility](#) in a number of species, including polar bears, deer, whales and otters. Research from the University Pittsburgh found the same occurs in humans.²³

The US Government Is Not Interested in Regulating Plastic

Despite a rapidly growing body of scientific evidence demonstrating the risk to human health from exposure, the FDA appears uninterested in regulating the industry. An initial effort was made in 1997 when the FDA established the Packaging and Food Contact Substances program.²⁴

The system was supposed to determine chemicals that were safe when used in contact with food. The exception to the rule is

when a substance is considered “Generally Recognized As Safe” (GRAS).²⁵ This is a category created for items with a long history of use and considered to have no evidence of harmful side effects.

Yet the GRAS list includes substances such as [sugar](#) and an exceptionally long list of polymers, many without independent safety testing.²⁶ The AAP Council on Environmental Health noted how easy this is it is to obtain a GRAS designation as there is little oversight and significant conflict of interest.

This happens since the FDA doesn’t do any testing but leaves the decision up to the manufacturer as to whether the polymers, or any other substance touching your food, is safe for consumption. Several have criticized the system, including the AAP, as part of a larger issue of failing to acknowledge scientific data regarding the impact of exposure.

One reason for the ease of getting a GRAS classification is because manufacturing of new chemicals and plastics goes much faster than evidence-based research. This places the burden of proof on regulators instead of manufacturers. Another reason regulators may have dismissed researchers concerns about chemical exposure is the significant amount of lobbying done by the chemical industry.

Nefarious Disinformation Campaigns Designed to Disguise the Truth

In tactics borrowed from the tobacco industry, chemical companies have developed enough disinformation published in industry-friendly journals and intensive lobbying to make a parent’s job difficult.

According to the Center for Responsive Politics,²⁷ Dow Chemical spent close to \$14 million in 2016 lobbying Congress, and the

American Chemistry Council²⁸ – an umbrella organization lobbying for plastic manufacturers – has spent between \$5 million and \$13 million each year lobbying Congress since 2009.

Unfortunately, this means many chemicals remain unregulated while well-documented, decades-long disinformation campaigns are used to create research for the chemical industry to undermine studies finding evidence that those chemicals harm human health.²⁹ Former Environmental Protection Agency (EPA) employee and attorney Erik Olson says, “To be blunt, it’s an honor system.”

While Olson believes the EPA does a terrible job of protecting people, he believes the FDA is worse, saying “they are completely in bed with industry.”³⁰ He is not alone in his characterization of the FDA. Rutgers University environmental sociologist professor Norah MacKendrick, Ph.D., echoes the same sentiments in her recent book.

Before making his conclusion the FDA does not protect children, Trasande spent two years evaluating food additive safety. He believes the AAP statement is a conservative consensus of the organization’s 67,000 members and claims, “This is not a bunch of green tree-hugging pediatricians.”³¹

Several investigative reports from the Center for Public Integrity note corporate-funded researchers favor two journals: Critical Reviews and Toxicology and Regulatory Toxicology and Pharmacology.

Public health experts dismiss these publications as unreliable vanity journals designed to manufacture and disseminate scientific doubt. David Michaels, Ph.D., professor at George Washington University School of Public Health states:³²

“They provide the appearance of peer review and credibility

to 'product defense' science – mercenary studies not designed to contribute to the scientific enterprise but to forestall public health and environmental protections and to defeat litigation.

Corporations opposing public health or environmental regulations enter the rigged studies and questionable analyses published in these mercenary journals into regulatory proceedings or lawsuits to manufacture scientific uncertainty.”

A Better Coffee Cup Won't Save the Future of Human Health

The rapid development of new plastics and chemicals is fueled by a throw-away mentality that developed after mass production of plastics began. Greed for single-use products that are easily disposed of is a major environmental blight and cause for significant concern.

Although several companies have begun pledging a reduction in the use of [straws](#) and plastic cups, it will likely take a change in the way society thinks as a whole in order to make a significant impact on the environment and human health.

While it would be nice to believe the FDA and EPA are looking out for future generations, the reality is each of us need to take responsibility for personal choices each day. As has been demonstrated in the past, you have the power to vote using your wallet.

Making healthy choices for your family directs manufacturers to produce products demanded in the marketplace. For help making choices to reduce your exposure to plastics, see my previous article, “[Phthalate Exposure Threatens Human Survival.](#)”