



Credit: Shutterstock

PLASTIC MATERIALS AND THEIR ADDITIVES CAN CONTAIN THOUSANDS OF DIFFERENT CHEMICALS, MOST OF WHICH HAVE NOT EVEN BEEN STUDIED FOR THEIR SAFETY.

PLASTIC POLLUTION POSES A RISK TO HUMAN HEALTH

We are surrounded by plastic. We now know that our air, food and drinking water are contaminated with small bits of microplastic. They've been discovered in house dust, table salt, fish, shellfish, honey, beer and even human feces. But how these plastics are affecting our health remains in question.

One recent estimate of average exposure in Americans from all of the potential sources of plastic exposure clocked in at over 70,000 particles per year. What's more, our exposure to microplastic and its associated risks is expected to increase with the projected growth in plastic production.

WHAT ARE PLASTICS MADE OF?

Plastics are made up of tightly connected, repeating units of molecules called polymers that are very resistant to degradation. The strength of these polymers' chemical bonds is what makes plastic so persistent in the environment. But plastic materials and their additives can contain thousands of different chemicals, most of which have not even been studied for their safety.

PLASTIC IN AIR

Microplastic particles have been discovered in indoor air and dust. They've also been found in rain and outdoor air ranging from urban areas in Europe and China to remote mountaintops.

Some of the microplastic particles in air are small enough to inhale, while larger fiber particles in indoor areas settle in dust at a rate of up to 7,300 particles per square meter per day.

Plastic particles and fibers in indoor air can enter our diet when they fall on food and beverages that we then consume. Some of these particles can also contain harmful chemicals, posing a risk to small children who frequently put their hands in their mouths.

To learn more, visit usa.oceana.org/plastics

OCEANA Protecting the World's Oceans






EXPOSURE TO PLASTIC CHEMICAL ADDITIVES

Often, chemicals are added to plastics to give them desirable properties, such as flexibility or rigidity, stability and color. Because these chemical additives are not tightly bound to the polymers, they are prone to leaching out.

Chemicals associated with plastic polymers are found in human blood, urine and tissue.

We know more about the potentially toxic effects of some plastic chemical additives than we know about the health effects of the plastic particles themselves.

Chemicals associated with plastic polymers are found in human blood, urine and tissue. Because people are exposed to these chemicals from multiple plastic and non-plastic sources, it is not yet possible to tie specific products to these chemical exposures.

NAME	PRODUCTS/USES	HEALTH RISKS	
Bisphenols (e.g., BPA) and phthalates	Plastics containing bisphenols and phthalates may include hard plastic containers, food packaging films, PVC pipes, plastic toys, vinyl flooring, shower curtains and window blinds.	Bisphenols are known endocrine (or hormone) disruptors. They are suspected to cause reproductive and nervous system disorders, breast and prostate cancers, obesity and diabetes.	
Vinyl chloride	Vinyl chloride is the chemical building block of polyvinyl chloride (PVC), which can be found in the plastic used to wrap meat and sandwiches, as well as in clothing, inexpensive household plumbing and kids' toys.	This is a suspected carcinogen.	
Flame-retardant chemicals (PBDE, TDCPP)	Flame-retardant chemicals are found in food packaging, furniture foam, plastic consumer electronics and textiles.	They are linked to hormone disruption, reproductive problems, developmental toxicity and cancer. Although some are not on the market anymore, they persist in the environment, in animals and in humans for years.	
Highly fluorinated, waterproof "forever" chemicals (PFAS)	PFAS are used in many consumer products due to their oil-, stain- and water-repellent properties. PFAS are found in plastic and synthetic food packaging, clothing, carpets and car seats.	These chemicals are linked to cancer, high cholesterol, reproductive and thyroid problems, and immune suppression.	
Heavy metals (e.g., cadmium and lead)	Heavy metals are added to plastic as stabilizers and for color.	They are linked to neurological disorders, including lowered IQ and behavioral problems, as well as breast, bladder and lung cancers.	
Styrene	Styrene is the major building block of polystyrene, a plastic resin that's used in food-service packaging, plastic cutlery, cups and packing peanuts.	The World Health Organization recently upgraded its rating of styrene's risk from "possibly carcinogenic" to "probably carcinogenic."	