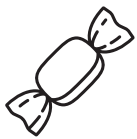


# PLASTICS and Human Health

Over 98% of plastics are made from fossil carbons such as oil and gas. Turning these substances into plastics involves the addition of petrochemical additives – quite a lot of them. Over 13,000 chemicals are known to be involved in the production of plastic. More than 2300 of these are “chemicals of concern.” Some are highly toxic, and include carcinogens, neurotoxicants, and endocrine disruptors. These chemicals pose serious risks to human health because they can leach or migrate at every stage of plastics’ life cycle.

## How Am I Exposed?



**Food Packaging:** When food or beverage is packaged in plastic, chemical additives can leach into what we eat. It is well established that bisphenol A and phthalates (which make plastics rigid or flexible) migrate into food but because many of the chemicals present in plastics are undisclosed, researchers are only partially aware of the risks. Chemical migration from packaging into food increases with smaller serving sizes (due to the increased ratio of surface-to-food), higher temperatures, and longer storage times.

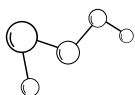


**Microplastics:** Plastics don’t biodegrade; they break up into smaller and smaller pieces known as micro- and nanoplastics, which are so small that they become caught up in the air we breathe, the water we drink, and the food we eat. These pieces are present almost everywhere researchers have ever looked, including inside the human body. Scientists have detected plastic particles in human lung tissue, intestinal tissue, blood, breast milk, the muscle of the heart, and both sides of the placenta – including inside fetuses and newborn babies.

## What Happens After I’m Exposed?

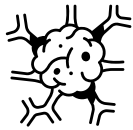


**Cell damage:** Plastic particles inside the body can irritate, inflame, and even puncture cells. This is especially concerning in the intestine and lung, where microplastics make direct contact with thin, sensitive tissue.



**Chemical leaching:** Microplastics never stop leaching their chemical contents. Once they are inside the human body, they can act like tiny trojan horses, spilling out chemical additives for as long as they are present.

## How Is My Health Affected?



**Cancer:** Many of the chemical additives in plastics are known to cause cancer. Bisphenol A, phthalates, and polyvinyl chloride, for instance, are well-documented carcinogens.



**Endocrine Disruption:** A great number of additives mimic hormones and disrupt signaling throughout the body. They can scramble appetite cues and metabolism, leading to obesity, diabetes, high blood pressure, and heart disease. They can hijack reproductive signals, speeding puberty, lowering sperm counts, and prompting infertility. Endocrine disruptors are also associated with cancer – especially breast, prostate, and testicular cancers.



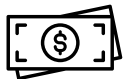
**Neurological Effects:** Endocrine disruption can disturb brain development, leading to lower IQ, ADHD, and autism-spectrum disorders.

## Who Is The Most Vulnerable?



The brains and bodies of infants, fetuses, and small children undergo exquisitely complicated and carefully timed changes. When these are disrupted, the effects can be permanent – and profound. Infants and fetuses also face risks of prematurity, stillbirth, low birth weight, birth defects of the reproductive organs, impaired lung growth, and childhood cancer.

## What Is The Health Cost?



A report published in the *Annals of Global Health* in 2023, conservatively estimated that Americans spent over \$1.5 trillion on health costs related to plastics in 2015. “These estimates undercount the full costs of plastics’ health damages,” the authors warned. “They are externalized by fossil fuel and plastic manufacturing industries.”

## What Are The Solutions?



Nearly half of all plastics manufactured today are single use items and packaging. Legislation that reduces the production of these items and mandates extended producer responsibility will go a long way toward relieving health risks. It is vital that lawmakers regulate the chemical content and toxicity of plastic. Many of the chemicals used to manufacture plastic are unnecessary and can be banned and substituted with safer alternatives.