



## PLASTICS: A RISK TO HEALTH

Exposure to plastics is an inextricable part of daily life and is becoming ever more so as plastic production, use and waste increase exponentially.

Over 98% of plastics are derived from coal, oil and gas. This is concerning because the many petrochemical components of plastic **leach out during use and at every point in the production cycle from manufacture to waste disposal.**

These exposures endanger human health. Toxicological and epidemiological evidence shows that many plastics have neurotoxic, carcinogenic, immune and endocrine-disrupting impacts that harm human health and the global environment.

### THE HEALTH HARMS OF STYROFOAM, A PETROLEUM BASED PLASTIC

Styrofoam, or polystyrene, is a ubiquitous plastic that damages the environment and endangers human health. While many people associate styrofoam only with packing peanuts and single-use coffee cups, polystyrene is in many other commonly used plastic items, including clear plastic cups, water bottles, boxes, egg cartons, plates, utensils and housing insulation.

Styrofoam is made from several health-harming chemicals, including:

- [Benzene](#)—a known carcinogen at [any level of exposure](#);
- Styrene—a [known neurotoxin](#) and [likely carcinogen](#) also found in cigarette smoke, automobile exhaust and fossil fuels;
- Ethylene—a [known carcinogen](#);
- Bis-phenol A (BPA)—an [endocrine disruptor](#);
- Blowing agents (chlorofluorocarbons)—that destroy the protective ozone layer.

**How we are exposed.** We consume these petrochemicals when we warm food in styrofoam containers, because [warming causes the styrene and other chemical components in the plastic to leach out](#) into the food. Exposure is increased with [fatty or oily foods](#). Alarming, styrofoam products also have been shown to leach benzene, a chemical that is carcinogenic even at the very lowest levels.

Styrene content in food [correlates with the length of styrofoam exposure](#). Studies have shown that using a lid on a hot beverage or takeout food will increase the amount of benzene and styrene that leaches into the product. One study found that the [amount of styrene in hot drinks exceeded EPA recommended levels](#) – and the hotter the drink, the higher the level of styrene and benzene.

But **styrene is just one of the 350,000 chemicals** used in plastic production. Importantly, many of the chemicals used in plastics have never been tested for safety to health and many [leach out](#) during everyday use.

### **[THE NEGATIVE HEALTH OUTCOMES FROM PLASTIC USE:](#)**

#### **Harm to Consumers:**

- The chemicals in plastic products that are in day-to-day use have been associated with endocrine dysfunction and increased risk for premature birth, neurodevelopmental disorders, male reproductive birth defects, infertility, obesity, cardiovascular disease, renal disease, and cancers.
- Humans regularly breathe or ingest small particles of plastic, known as microplastics, via the air, water, food and soil. The chemicals contained in microplastics are associated with increased risk for miscarriage, decreased birth weight, reproductive birth defects, neurodevelopmental disorders, metabolic and endocrine diseases, obesity, hypertension and cardiovascular disease, respiratory disease, allergies, adult reproductive disorders, and cancers.
- “Fenceline communities” that live near plastic factories and waste disposal are at increased risk for premature birth, low birth weight, asthma, childhood leukemia, cardiovascular disease, chronic obstructive pulmonary disease, and lung cancer.



### **Occupational workers:**

- **Plastic and chemical workers** are at increased risk for leukemia, lymphoma, hepatic angiosarcoma, brain cancer, breast cancer, mesothelioma, neurotoxic injury, and decreased fertility.
- **Plastic textile workers** are at increased risk for bladder cancer, lung cancer, mesothelioma, and interstitial lung disease at increased rates.
- **Plastic recycling workers** are at increased risk of cardiovascular disease, toxic metal poisoning, neuropathy, and lung cancer.

### **AN UNFAIR HEALTH BURDEN**

While all populations are affected by the health impacts of plastics, the heaviest burden of disease, disability and death falls disproportionately on low-income and/or minority populations who live and work near sites where plastic chemicals are produced and disposed of. Children are especially susceptible to adverse health outcomes due to their body size and immature organ systems.

### **ECONOMIC COST OF PLASTIC POLLUTION**

The annual health-related costs of plastic production (in 2015 dollars) exceeds \$250 billion. The health costs of disease and disability caused by exposures to plastic-associated chemicals in the US alone exceeds \$920 billion dollars annually.

### **A HEALTH PROBLEM WITH CLEAR SOLUTIONS**

Plastics endanger human health and the health of the planet. We are exposed to the petrochemicals in plastics through food, air pollution and water contamination. These chemical exposures lead to disease, disability and premature death at every stage of the plastic production cycle.

Just as the banning of lead in gasoline and the banning of chlorofluorocarbons in propellants had immediate and gratifying positive effects on human health, so will the banning of unnecessary plastic use, the banning of toxic chemical additives to plastics, and the requirement for companies to assume the costs of clean up.

This urgent problem must be addressed in parallel to climate change since they are closely connected.

## **GBPSR ADVOCACY**

With allied groups, we are advocating to cap plastic production and end plastic pollution.

### **GBPSR supports prevention of plastic pollution by advocating for:**

- **Bans on known toxic chemicals in plastics including PFAS, bisphenols and phthalates;**
- **Requiring industry to foot the bill of plastics clean up and disposal;**
- **Passage of a legally binding UN Global Plastics Treaty;**
- **Establishment of a UN High Commission on Chemicals and Plastic Pollution; and**
- **Independent, mandatory health testing of all chemicals.**

### **References**

The Minderoo-Monaco Commission on Plastics and Human Health. Ann Glob Health. 2023 Mar 21;89(1):23. doi: 10.5334/aogh.4056. PMID: 36969097; PMCID: PMC10038118.

<https://pubmed.ncbi.nlm.nih.gov/36969097/>

The Minderoo-Monaco Commission report on Plastics and Human Health was released in April 2023 and has an extensive analysis of the plastics' negative impacts on human health and well-being. The report focuses on vulnerable populations, including pregnant mothers, children, workers, ethnic minorities, as well as Indigenous nations; and on the global environment.

