Scientists' Coalition for an Effective Plastics Treaty

Human Health in the Global Plastics Treaty

Authors: Megan Deeney, Joe Yates, Marina Fernandez, Noreen O'Meara, Xavier Cousin, Muriel Mercier-Bonin, Juan José Alava, Dorte Herzke, Ricarda Fieber, Sam Varvastian, Arturo Castillo, Ricardo Beiras, Jane Muncke, Olga Pantos, Stéphanie Reynaud, Andres Rodriguez Seijo, Marie-France Dignac, and Trisia Farrelly.

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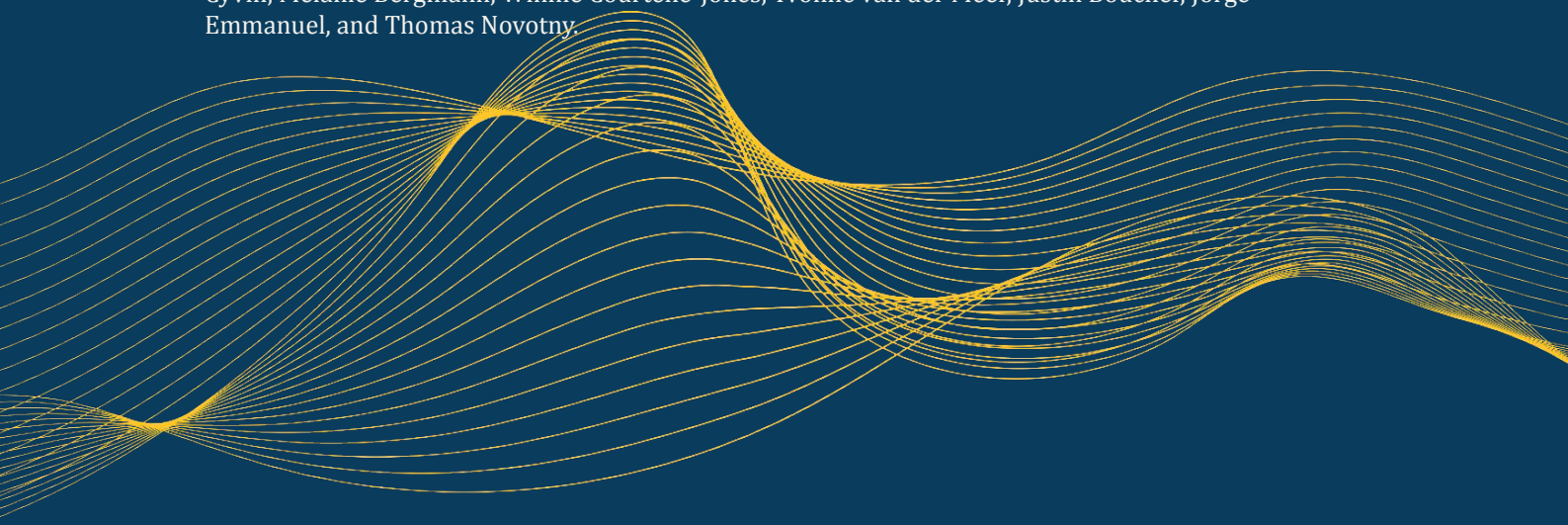

Policy brief

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Human Health in the Global Plastics Treaty

The Global Plastics Treaty must protect the human right to health[1] and the right to a safe, clean, healthy, and sustainable environment[2]

Plastics are a source of pollution throughout their full life cycle, releasing hazardous chemicals, macroplastics, micro- and nanoplastics (MNPs), and greenhouse gases (GHG) to the entire ecosphere. This policy brief focuses on the direct and indirect human health hazards associated with all forms of plastic pollution across the plastics life cycle.

1. State of the science on the human health impacts of plastics

Scientific evidence of the global scale of all forms of plastic pollution, the extent of human exposure and related known and emerging health hazards constitute a serious and evolving global health concern.[3,4]

- Plastic production is driving cascading health hazards throughout its life cycle. Beginning with raw material extraction, production processes emit air pollutants, toxic chemicals, and GHGs, which are associated with increased chronic disease and acute health hazards for fenceline communities and industrial workers.[4] Unsustainable levels of chemically complex and hazardous plastic production exacerbate all downstream health hazards.[4]
- Chemicals and MNPs released throughout the plastics life cycle, and present in human bodies, are a significant cause for concern due to known and emerging health impacts.[4-7]
- Reusing and recycling plastics can lead to unintended health hazards from chemical and MNP environmental emissions, and chemical contamination and accumulation in recycled plastics.[8,9] Chemical recycling is energy-intensive and can release hazardous chemicals.[4]
- The informal waste sector comprises 60% of global plastic recycling, with up to 20 million people working in unsafe, unhygienic conditions on the frontline of plastic waste.[10,11]
- Air pollutants, toxic chemicals and GHGs from incineration technologies and open burning increase the risk of respiratory diseases and cancers and contribute to climate change.[4,12]
- Macroplastic waste can compromise sanitation systems, exacerbating floods[13] and the transmission of infectious diseases caused by pathogens and vectors.[14,15] Plastic waste continues to release chemicals and MNPs as it degrades.

All people are affected by plastic pollution, but not equally. Physiological, sociodemographic and geographic disparities mean that some people are more exposed to plastic pollution and/or are at greater risk of its adverse health effects.[3]* Today, lifetime exposure begins before birth, continues throughout critical stages of childhood development into adulthood, in turn exposing future children and burdening populations with compounding health risks.[4]

2. A quarter of plastic chemicals are known to be hazardous

More than 16,000 chemicals are used or found in plastics, which can vary widely across polymers and products (Scientists' Coalition: Plastic Chemicals).[5]

- **Over a quarter of plastic chemicals are known to be hazardous, and 66% have no available hazard data.[5]**
- **Only 6% of plastic chemicals are currently regulated globally.[5]**

Chemicals of concern are released from plastics throughout their life cycle. Humans are directly exposed through occupational activities and physical contact with plastic products, including food contact materials, toys, and medical devices.[4]

* *"The plastics crisis has disproportionate impacts on groups at heightened risk of human rights violations, such as workers, children, women, persons of African descent, Indigenous peoples, coastal communities and people living in poverty. Not only present but future generations will be affected…"* Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes.[3]

Foodstuffs are contaminated via environmental pollution and the plastics used to produce, process, package and prepare them,[16] including recycled and reusable plastics[9] (Scientists' Coalition: Food Systems). Widespread environmental pollution further contributes to **acute, chronic, and transboundary human exposures to plastic chemicals.**[4]

Plastic chemicals include known endocrine disruptors, carcinogens, and mutagens,[5] **which have been identified in human blood, amniotic fluid and urine,**[6] **with evidence of detrimental health effects even at very low levels.**[17,18] Health concerns include reproductive and developmental disorders, including infertility; obesity, and non-communicable diseases including diabetes, cardiovascular disease, and many cancers.[4,6]

The human health costs of plastic chemicals have been estimated at $250 billion annually in the United States alone.[19] This estimate covers only a subset of all plastic chemicals, and the global burden of associated disease will be substantially higher.[20]

3. Micro- and nanoplastics (MNPs) are ubiquitous and present emerging health hazards

A substantial body of evidence demonstrates MNPs' pervasiveness in natural environments and foods[7, 21-23] (Scientists' Coalition: Microplastics & Food systems)**.** Humans are known to ingest and inhale microplastics. Emerging evidence suggests MNPs could transfer from gastrointestinal tracts and lungs to other body tissues. Smaller particles present greater risks, especially those that can transgress biological membranes.[24] Health concerns of the presence of MNPs presence in humans include:

- **Physical and functional damage to various cells and tissues**, including early evidence of gut lining damage, microbiome alterations, inflammatory and immune responses,[4,24,25]
- **Hazardous effects of leached plastic chemicals of concern.**[4,26]
- **Hazardous effects of adsorbed environmental toxicants,** such as persistent organic pollutants and trace metals, and the potential of pathogens rafting on MNPs. [4,26]

Methods for assessing human MNP exposure and health effects are in the early stages of development but studies in human cells and animal models provide a growing body of evidence.[4] **A precautionary approach is critical given the extent and unavoidability of human exposure to MNPs and emerging evidence of health hazards.**

4. Protecting and promoting the human right to health, and to a safe, clean, healthy, and sustainable environment must be prioritised across treaty provisions.[27]

There is strong scientific consensus that transboundary exposure to plastic chemicals, plastic accumulation, plastics-associated air pollutants and GHG emissions is harming human health globally, with MNPs posing a significant cause for concern. Current regulation is insufficient to protect human health from plastics' known and emerging health hazards.[27,28]

Primary plastic polymer production reduction targets will be most effective in reducing hazards across the life cycle of plastics (Scientists' Coalition: Primary Plastics Polymers).

Globally coordinated, mandatory approaches, with universally standardised safety, sustainability, essentiality (Scientists' Coalition: Essential-Use Concept) and transparency criteria, applied to plastic chemicals, polymers, products, plastic alternatives and non-plastic substitutes, and supporting technologies, systems and services will protect human health.

To facilitate the implementation of the Global Plastics Treaty, an adaptive, independent scientific body should be created to respond to emerging health concerns, ensuring regular monitoring, reporting, evaluation, and compliance.

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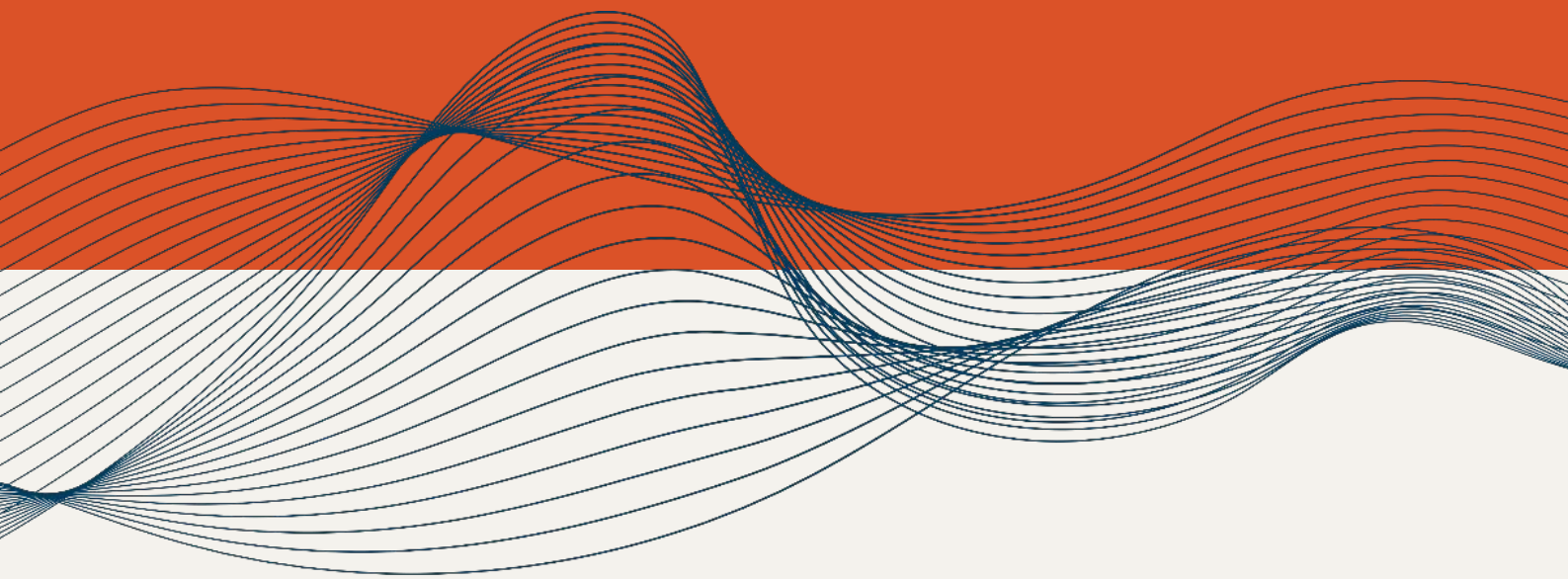

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