

Policy Brief: Role of chemicals and polymers of concern in the global plastics treaty

Chemicals, including polymers, are an integral part of all plastic materials and products. More than 13,000 chemicals are used in plastics, of which >3,200 are classified as hazardous.¹ This means they are officially recognized to be toxic, persistent or have other concerning properties. Yet, only 4% of these chemicals are regulated globally.² They can leach into our food, homes, and the environment, and adversely affect human health and the environment. Negative impacts occur across the plastics life cycle, from resource extraction, production and use to the end of life. Thus, plastic and its chemicals contribute to the triple planetary crisis of climate change, biodiversity loss, and pollution.

Why is it important to address chemicals and polymers of concern in the treaty?

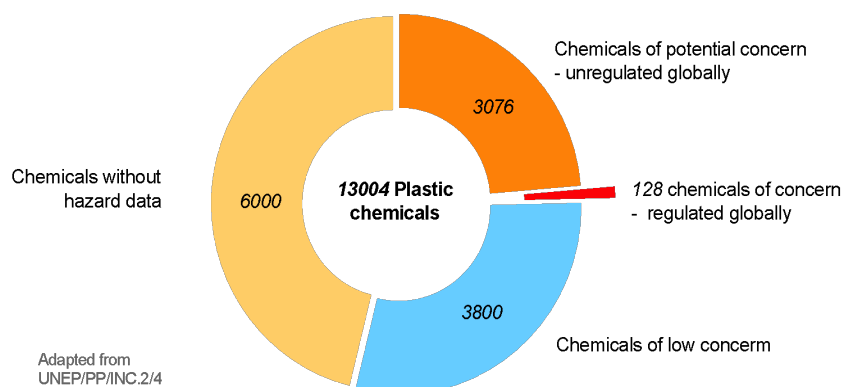
1. Plastic chemicals adversely affect human health and the environment. Abundant scientific evidence on a range of plastic chemicals, such as monomers and additives, demonstrates that they contribute to a significant burden of disease³ and result in substantial health costs, esp. with regards to endocrine disruption.⁴ Importantly, marginalized communities, children, and women are most vulnerable.

2. Plastic chemicals and polymers are globally transported across borders with plastic materials, products, waste, and litter. Plastics and the associated chemicals are used in every country. Yet, production is asymmetric and supply chains highly globalized. Indeed, plastic materials, products, and waste are transported across borders, often from high- to low-income countries, leading to a global dispersal of polymers and their associated chemicals.⁵

3. There is a lack of control of chemicals and polymers of concern because current regulatory systems are ineffective and insufficient. Only 128 of the >3,200 known hazardous plastic chemicals are regulated internationally, and at least 6,000 plastic chemicals have not been assessed for their safety.² Most polymers have undergone only a minimal safety assessment based on outdated criteria or are exempt from regulation altogether.⁶ In addition, the effects of mixtures of chemicals present in plastics are not considered. This indicates a failure of current national and international regulations.

4. Plastic chemicals and polymers of concern impede the transition to a circular plastics economy. Hazardous chemicals can build up in plastics during recycling because new substances are added in each cycle.⁷ They are also present in bioplastics (i.e., biodegradable and bio-based plastics).⁸ Thus, hazardous chemicals prevent the transition to a safe and sustainable circular global economy.

Without comprehensive inclusion of plastic chemicals and polymers, the treaty's goal of protecting human health and the environment from negative impacts of plastics and to promote sustainable production and consumption of plastics⁹ cannot be achieved.



How can the treaty address chemicals and polymers of concern?

Chemicals and polymers of concern are cross-cutting issues relevant for all obligation options outlined by UNEP,¹⁰ in particular options 2, 3, 5, 6, 8, 11, and 12. Accordingly, it is critical to include these in the legally binding obligations set out in the treaty to mitigate the global dispersal of hazardous substances. Multiple opportunities exist to do so:

- 1. Creating a comprehensive, global inventory of plastic chemicals, polymers, and materials is a key prerequisite to reduce plastic pollution.** Such inventory should contain information on production and trade volumes of polymers and materials as well as all chemicals included in plastic materials and products across supply chains. This will promote transparency and accountability and reduce the burden of generating this information using public research funds.
- 2. Science can provide comprehensive definitions regarding plastic chemicals and polymers.** These are needed to avoid loopholes in the plastics treaty that would, for instance, occur when using certain ISO definitions that exclude elastomers, vague definitions of bioplastics, or focusing on “additives” that do not comprise all chemicals present in plastics.
- 3. The chemical complexity of plastics can be addressed by grouping chemicals based on their structure.** Instead of singling out individual substances, the treaty should address groups of chemicals.¹ This would greatly simplify prioritization and preempt regrettable substitutions (i.e., marketing slightly modified chemicals possessing similar hazards).
- 4. Groups of chemicals and polymers of concern can be phased out based on existing frameworks using negative lists.** Officially recognized hazard criteria, such as persistence, bioaccumulation, and toxicity, can be used to prioritize groups of plastic chemicals. For polymers, the toxicity of chemicals used in this polymer type (e.g., monomers), their ability to degrade and release chemicals as well as nano- and microplastics, in addition to the polymer's compatibility with circularity, can be used. Importantly, bioplastics should be assessed using the same criteria.
- 5. Positive lists of chemicals and polymers can be created based on safe-by-design criteria.** Chemicals on a positive list should comply with the hazard criteria set out in the EU's Chemical Strategy for Sustainability¹¹ and should be subjected to additional testing requirements, including their potential to degrade and release chemicals and particles.
- 6. Negative and positive lists will promote the transition to a non-toxic plastic economy when combined with financial incentives.**¹² The latter should encourage the redesign of plastic chemicals and polymers using the principles of chemical simplicity, essential use, and Safe and Sustainable by Design criteria,¹³ creating benefits across plastics life cycles.
- 7. The provisions on plastic chemicals and polymers should be legally binding, as well as adaptive and informed by independent science.** Since the scientific evidence, as well as the composition of plastics is evolving rapidly, these lists should be updated regularly by a panel of independent scientists.

The treaty creates opportunities to improve transparency, phase out hazardous plastic chemicals and polymers and promote the development of non-toxic plastics or non-plastic alternatives where appropriate. These measures should be adaptive and informed by independent science. When instruments to achieve these aspects are implemented, the treaty will reduce the global dispersal of chemicals, mitigate the negative impacts of plastics on human health and the environment, and protect vulnerable communities, especially in the Global South. It can, thus, provide a framework for global cooperation and action towards a more sustainable and healthy future.

Contributors and references

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