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Is plastic debris toxic ?

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Sheet 10: Is plastic debris toxic ?

by Jean-François Ghiglione, Marie-France Dignac

The effects of plastics on organisms

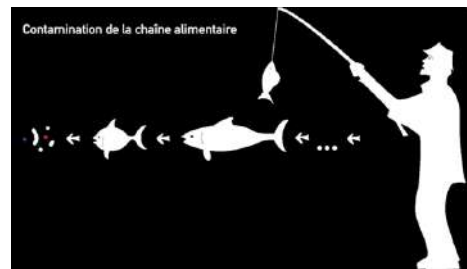


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When ingested by organisms, plastics can cause **obstruction of the airways and digestive tract** which leads to malnutrition and death. More pernicious effects come from chemicals added to plastics (additives) to give them their resistance properties, their color, flame retardant properties, etc. There are now **more than 16,000 additives in commercial plastics, of which 4,000 have proven toxic effects on organisms** and only 4% are banned on the market. Many plastics placed on the market are toxic to the environment⁴⁰.

All links in the food chain are impacted, including humans

From plankton to large predators, plastics accumulate in the food chain. No organism is spared from this global pollution which affects all ecosystems, from the highest peaks to the deepest oceans. Plastics also contaminate human organs and blood, which are not spared. Liver failure, slowed growth, reduced motor skills, disturbance of sexuality, neurological damage, illness and death are all symptoms which indicate a **strong toxic impact of plastics on health**⁴¹.



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see [Microplastics and marine biogeochemical cycles](#)

The resulting health costs, borne by communities, are very high⁴² (see [The normative, ethical and economic challenges of our societies facing plastic production](#)).

Ban toxic components in plastics and require product transparency



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see [Diversity of plastics chemistry](#)

Current standards (ISO, AFNOR) are not sufficiently representative of the original characteristics of plastics and their fate in the environment. The toxicity of products must be assessed by independent researchers and lead to an immediate ban in the event of proven toxicity.

The traceability of plastic additives placed on the market is not ensured under the cover of industrial secrecy, whereas more transparency is essential. A list of non-toxic additives for humans and the environment is essential to ban toxic plastics before they become waste⁴³.

⁴⁰ United Nations Environment Programme & Secretariat of the Basel, Rotterdam and Stockholm Conventions Chemicals in Plastics. 2023. A Technical Report

⁴¹ Meeker et al. 2009. Phthalates and other additives in plastics: human exposure and associated health outcomes. <https://doi.org/10.1098/rstb.2008.0268>.

⁴² Trasande et al. 2024. Chemicals used in plastic materials: an estimate of the attributable disease burden and costs in the United States. *Journal of the Endocrine Society*, 8(2), p.bvad163.

⁴³ Leistenschneider et al. 2023. A critical review on the evaluation of toxicity and risk assessment of plastics in the marine environment. *Science of the Total Environment*. <https://doi.org/10.1016/j.scitotenv.2023.164955>

Plastics : Poison most handy

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