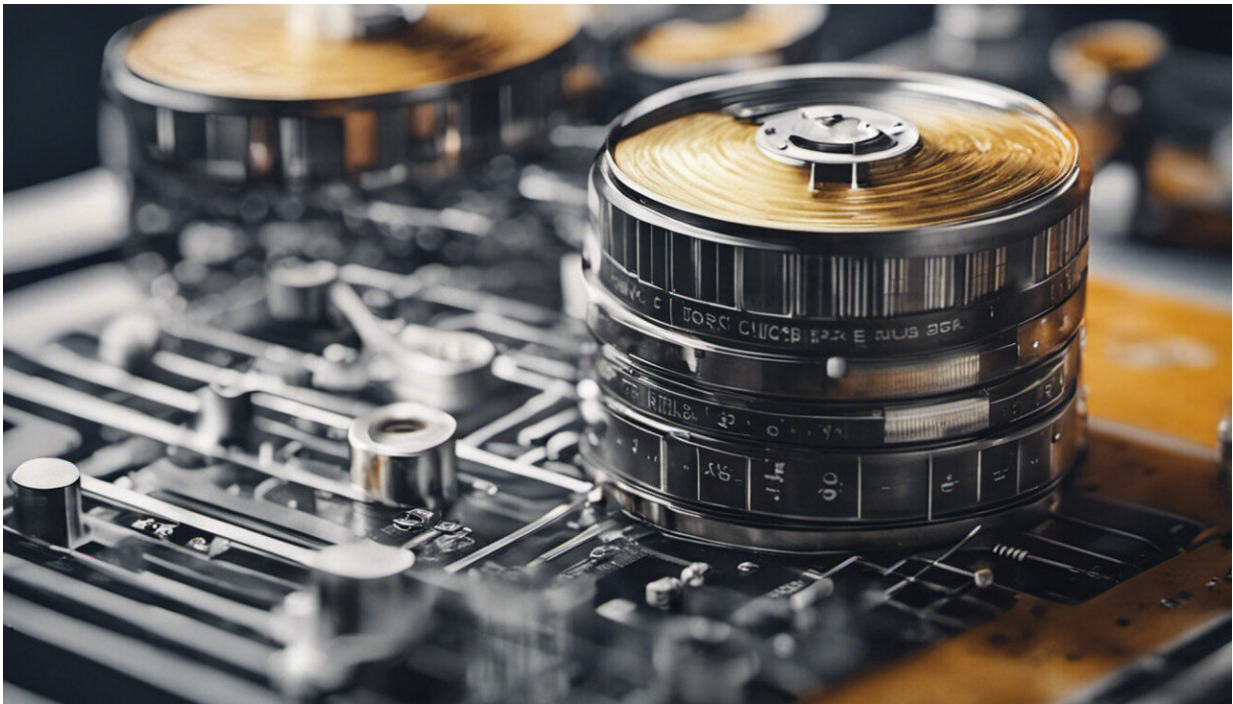


New database charts 60 years of studies on impact of plastic chemicals on human health

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Credit: AI-generated image ([disclaimer](#))

A team of scientists, including a number of alumni from The University of Western Australia, has created a world-first database that maps more than 3,500 studies dating back to the 1960s on the impact of plastic chemicals on human health.

Emerita Professor Sarah Dunlop, former Head of the UWA's School of Biological Sciences, now Heads the Plastics and Human Health research team at Australia's philanthropic Minderoo Foundation that screened more than 100,000 individual papers from multiple [scientific journals](#) to develop the open-access, interactive online tool—the [Plastic Health Map](#).

The database comprehensively charts the human health literature surrounding the exposure of polymers, plasticizers, [flame retardants](#), bisphenols, and PFAS—all common plastic chemicals to which consumers are routinely exposed.

Louise Goodes, Plastic Health Map project lead at Minderoo Foundation, said the aim was to build a greater understanding of an emerging issue and inform regulation changes, as well as providing a [head start](#) for scientists, highlighting the opportunities and priorities for future research.

"The Map includes studies from the 1960s onwards because this was when large-scale production and plastic pollution began to increase significantly, making [human exposure](#) to plastic materials and their degradation products inevitable," Goodes said.

"Given the enormous quantity of plastic materials currently in use, as well as the fact that we were unable to determine whether many of the plastic chemicals in use globally had actually been measured in living humans and evaluated for possible health impacts, we identified an urgent need to systematically map existing research."

The studies indicate that we are exposed to often unregulated -plastic chemicals via inhalation, ingestion, and skin contact. Children are additionally exposed prenatally via the placenta and postnatally via breast milk.

The Plastic Health Map research spotlights concerning information gaps, including:

- Of more than 1,500 chemicals mapped, less than 30% have been investigated for human health impacts.
- Many human health outcomes have not been investigated for any given chemicals class.
- Few studies have addressed "substitution" chemicals, such as organophosphate flame retardants, phthalate substitutes and bisphenol analogs, which have increasingly replaced restricted additives.
- The impact of micro- and/or nano plastics on [human health](#) was not examined in any studies screened.
- Very few studies have been conducted in low-income countries where populations may be heavily exposed to plastic waste.

The research project, conducted using Systematic Evidence Map methodology, is described, along with a discussion about the key results, in an article published in [Environment International](#).

The authors have called for a [paradigm shift](#) in [chemical](#) regulation where, in the absence of evidence for human harm, we can't assume that new chemicals are safe.

"While as authors we fully expected gaps in research, the extent of those gaps shocked us," Dunlop said.

"All new [plastic](#) chemicals should be tested for safety before being introduced in [consumer products](#), with ongoing post-introduction monitoring of their levels in human biospecimens and evaluation of health effects throughout the lives of individuals and across generations."

More information: Louise Margaret Goodes et al, The Plastic Health

Map: A systematic evidence map of human health studies on plastic-associated chemicals, *Environment International* (2023). [DOI: 10.1016/j.envint.2023.108225](https://doi.org/10.1016/j.envint.2023.108225)

Provided by University of Western Australia

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