

# Umbrella review highlights impacts of plastic-associated chemicals along the entire human life span

August 20 2024, by Rhiannon Koch

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Exposure to chemicals found in common plastics can increase health risks at all stages of life, new research has found.

[The world-first umbrella study](#) by University of Adelaide international research organization JBI and Australian philanthropic charity Minderoo Foundation has raised concerns about the impacts of plastic-associated chemicals along the entire human life span.

The work is published in the journal *Annals of Global Health*.

Review of the available evidence found bisphenol A (BPA), polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs) and polyfluoroalkyl substances (PFAS) can be linked to [adverse health outcomes](#) including miscarriage, low birth weights, obesity, blood pressure issues, asthma, bronchitis, precocious puberty, endometriosis, type 2 diabetes and cardiovascular disease.

JBI Director of Synthesis Science Associate Professor Edoardo Aromataris and team, working in close collaboration with experts in plastics and plastic associated chemicals from the Minderoo Foundation Dr. Sarah Dunlop and Dr. Christos Symeonides, analyzed 52 systematic reviews featuring about 1.5 million people.

"Consistent, statistically significant (95%) evidence was found for harm across a wide range of health outcomes for each of the [chemical](#) classes," said Associate Professor Aromataris.

"None of the plastic-associated chemicals examined in the umbrella review can be considered safe, with multiple harmful health effects linked to each chemical class."

Dr. Symeonides said the findings strengthen calls for domestic and international efforts to regulate plastic.

"From the water we drink to the products we use, plastics are an inescapable part of modern living," he said.

"This research categorically proves that none of the examined chemicals—which are used in plastic items humans around the world interact with every single day—should be considered safe.

"This is a red flag for the world. We must minimize our exposure to these plastic chemicals, as well as those that haven't yet been assessed for [human health](#) outcomes but are known to be toxic."

JBI and Minderoo Foundation applaud the work of the High Ambition Coalition—a group of countries targeting an ambitious, comprehensive treaty that regulates the full lifecycle of plastics and protects human health.

This includes a robust, comprehensive and efficient mechanism to regulate the chemicals used in [plastics](#).

**More information:** Christos Symeonides et al, An Umbrella Review of Meta-Analyses Evaluating Associations between Human Health and Exposure to Major Classes of Plastic-Associated Chemicals, *Annals of Global Health* (2024). [DOI: 10.5334/aogh.4459](https://doi.org/10.5334/aogh.4459)

Provided by University of Adelaide

Citation: Umbrella review highlights impacts of plastic-associated chemicals along the entire human life span (2024, August 20) retrieved 20 August 2024 from <https://medicalxpress.com/news/2024-08-umbrella-highlights-impacts-plastic-chemicals.html>

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