

Chemical cocktails cause health risks for children and adults

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Children and adults are at risk of health effects by mixtures of chemicals. Credit: Marisa Howenstine, Unsplash

A new research study shows that mixtures of chemicals pose health risks to children as well as adults. The concentrations of chemicals found in the European population of adults and children exceeds the safe level by a factor of between 3 and 9. Six chemicals contributed to about 95% of the total risk. These results call for improved risk management measures for the chemical mixtures that humans are frequently exposed to.

The study is based on exposure data generated by the HBM4EU project, providing information about [hazardous chemicals](#) found in the bodies of

European adults and children. 136 chemicals were identified in adults and 84 were found in children. The risks of these exposures were estimated using European health-based guideline values. Because guideline values are missing for several chemicals, the mixture risk for adults was assessed for only 20 chemicals. For children 17 chemicals could be included in the risk assessment.

The results of the [risk assessment](#) show that the acceptable exposure to these chemicals is exceeded by a factor of between 3 and 9. Six chemicals contributed roughly 95% of the total risk, phthalates, flame retardants, pesticides, PFAS, cadmium, and UV filters (chemicals used in sunscreen lotions).

Thomas Backhaus, one of the study's co-authors, says, "These results confirm, once again, that chemical mixtures might jeopardize [human health](#), and that we need to improve the risk management of typical complex exposure scenarios."

The European Commission will introduce a "Mixture Assessment Factor" (MAF) to enable the consideration of mixture risks already during the registration or authorization of individual chemicals. The study indicates that a MAF of at least 10 is needed for adequately protecting human health.

The study, titled "Chemical Mixtures in the EU Population: Composition and Potential Risks," is published in the journal *International Journal of Environmental Research and Public Health*.

More information: Sebastian Socianu et al, Chemical Mixtures in the EU Population: Composition and Potential Risks, *International Journal of Environmental Research and Public Health* (2022). [DOI: 10.3390/ijerph19106121](https://doi.org/10.3390/ijerph19106121)

Provided by University of Gothenburg

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