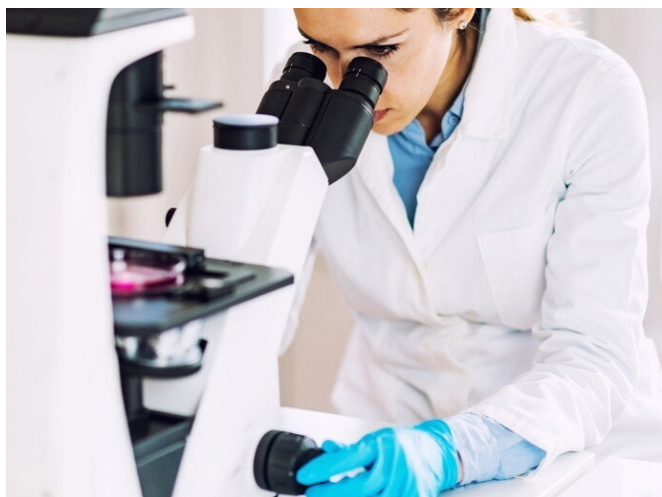


Novel approach to test the adverse impacts of man-made chemical mixtures

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Concerns over our seemingly constant exposure to chemical mixtures of all kinds have been growing in the past two decades. This is because endocrine disrupting chemicals (EDCs) found in various materials such as pesticides, metals, additives in food and personal care products are believed to be associated with various health risks. These include altered reproductive function in males and females, increased incidence of breast cancer, abnormal growth patterns and neurodevelopmental delays in children.

Despite the significant progress in understanding and regulating EDCs, [risk assessment](#) and [management practices](#) have mainly focused on exposure to single substances. As such, it's crucial to also identify the impact of EDC mixtures. Enter the EU-funded EDC-MixRisk project that has studied the effects of prenatal exposure to such EDCs on children's health.

The project's key results and conclusions were recently published in a policy brief. EDC-MixRisk

used epidemiology data from the Swedish pregnancy cohort SELMA and created reference mixtures mimicking real-life exposures. Several cell and animal models were utilised in experimental investigations to test these mixtures. The models included human brain organoids, human cell lines, mice, tadpoles and zebrafish, according to the policy brief.

As explained in the brief, the results demonstrate "that prenatal exposure to mixtures of EDCs was associated with various effects in children's health and development. Some effects were sex specific." It adds: "The tested mixtures affected hormone-regulated and disease-relevant outcomes in a variety of experimental models at the same concentrations found in the pregnant women."

Improved risk assessment

A key conclusion of the project is that health risks associated with combined exposures to EDCs or potential EDCs are systematically underestimated in the existing regulations on these substances. The team argues that single substances are released into the environment or enter a human body where other chemicals are already present. For this reason, legislative measures should take this factor into account for better risk assessment of EDCs. The brief states: "Therefore, we propose that future and ongoing biomonitoring efforts should include (a) analyses on complex mixtures, (b) assessment of adverse health outcomes in the same cohorts, (c) good quality toxicity data to identify hazardous chemicals, (d) long-term resources to follow time trends and evaluate risk management measures."

The EDC-MixRisk (Integrating Epidemiology and Experimental Biology to Improve Risk Assessment of Exposure to Mixtures of Endocrine Disruptive Compounds) project addresses the societal need for better decision-making regarding human exposure risks to mixtures of man-made chemicals

over the whole life span. It focuses on the risk for multiple adverse health outcomes based on molecular mechanisms involved, after early-life [exposure](#) to complex mixtures of EDCs. As stated on the project website, its objective is to encourage the use of safer chemicals for future generations.

More information: EDC-MixRisk POLICY BRIEF.

Stockholm, March 2019. ISBN: print 978-91-87355-75-2; pdf 978-91-87355-76-9.

[edcmixrisk.ki.se/wp-content/up ... k-PRINTED-190322.pdf](https://edcmixrisk.ki.se/wp-content/uploads/2019/03/EDC-MixRisk-POLICY-BRIEF-PRINTED-190322.pdf)

EDC-MixRisk project website: edcmixrisk.ki.se/

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