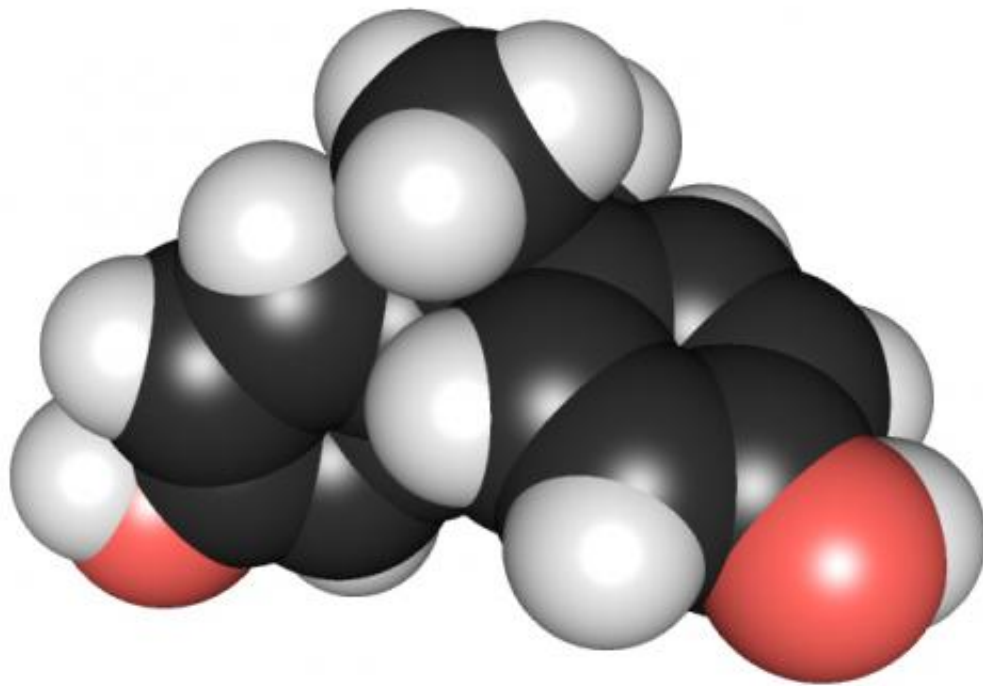


# Maternal exposure to chemicals linked to autistic-like behaviours in children

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3D chemical structure of bisphenol A. Credit: Edgar181 via Wikimedia Commons

A new study by Simon Fraser University's Faculty of Health Sciences researchers—published today in the *American Journal of Epidemiology*—found correlations between increased expressions of autistic-like behaviors in pre-school aged children to gestational

exposure to select environmental toxicants, including metals, pesticides, polychlorinated biphenyls (PCBs), phthalates, and bisphenol-A (BPA).

This population study measured the levels of 25 chemicals in blood and urine samples collected from 1,861 Canadian women during the first trimester of pregnancy. A follow up survey was conducted with 478 participants, using the Social Responsiveness Scale (SRS) tool for assessing autistic-like behaviors in pre- [school children](#).

The researchers found that higher maternal concentrations of cadmium, lead, and some phthalates in blood or [urine samples](#) was associated with increased SRS scores, and these associations were particularly strong among children with a higher degree of autistic-like behaviors. Interestingly, the study also noted that increased maternal concentrations of manganese, trans-Nonachlor, many organophosphate pesticide metabolites, and mono-ethyl phthalate (MEP) were most strongly associated with lower SRS scores.

The study's lead author, Josh Alampi, notes that this study primarily "highlights the relationships between select environmental toxicants and increased SRS scores. Further studies are needed to fully assess the links and impacts of these environmental chemicals on brain development during pregnancy."

The results were achieved by using a [statistical analysis tool](#), called Bayesian quantile regression, that allowed investigators to determine which individual toxicants were associated with increased SRS scores in a more nuanced way than conventional methods.

"The relationships we discovered between these toxicants and SRS scores would not have been detected through the use of a means-based method of statistical analysis (such as linear regression)," noted Alampi. "Although quantile regression is not frequently used by investigators, it

can be a powerful way to analyze complex population-based data."

**More information:** Joshua D Alampi et al, Gestational Exposure to Toxicants and Autistic Behaviors using Bayesian Quantile Regression, *American Journal of Epidemiology* (2021). [DOI: 10.1093/aje/kwab065](https://doi.org/10.1093/aje/kwab065)

Provided by Simon Fraser University

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