

Families with a Higher Socioeconomic Position Have a Greater Risk of Exposure to Chemical Contaminants

A European study analyses the exposure of 1,300 mothers and their children to 41 different chemicals

Barcelona, May 13, 2019-. A **higher socioeconomic position is associated to greater exposure to several environmental chemical contaminants** –such as various per- and polyfluoroalkyl substances (PFAS), mercury and arsenic– during **pregnancy and childhood**. This is the conclusion reached by a new European study carried out by the Barcelona Institute of Global Health ([ISGlobal](#)), a centre supported by “la Caixa”, which has described the relationship between the socioeconomic position of **1,300 pregnant women and their children** of aged 6 to 12 years and exposure to **41 environmental contaminants**.

To date, several studies have shown that there is a relationship between socioeconomic position–income, social status, employment and education– and the level of exposure to a number of environmental risks, but with varying results: **some support while others contradict the traditional hypothesis that disadvantaged groups are at highest risk**. For example, another [study by ISGlobal](#) showed that the socioeconomic level of pregnant women determines the environmental risk they are exposed to, but the nature of the relationship varies according to the urban environment where they live.

The new research, which is part of the [HELIX Project](#), has been carried out using birth cohorts from **six European countries** –Spain, France, Greece, Lithuania, Norway and the United Kingdom–. Researchers collected urine and blood samples from the pregnant women and their children to find mean concentrations of biomarkers of the chemical contaminants. Additionally, the mothers completed questionnaires on their education, employment and family affluence level.

The [results](#), which have been published in the *International Journal of Hygiene and Environmental Health*, showed that pregnant women with a higher socioeconomic level had a higher risk of exposure to several **per- and polyfluoroalkyl substances (PFAS), mercury, arsenic, several phenols and pesticides**, compared to women with lower socioeconomic levels. Similarly, children from families with a higher social position had a higher risk of exposure to **organochlorine compounds, per- and polyfluoroalkyl substances (PFAS), mercury, arsenic and bisphenol A**.

Conversely, in **lower socioeconomic levels**, a higher risk of exposure was only found in the case of **cadmium** during pregnancy and **lead** and **phthalate** metabolites in childhood.

“As far as the exposure of pregnant women and children to **persistent pollutants** is concerned, a **clear trend of higher concentrations in the cases of higher socioeconomic level** was found”, indicates **Parisa Montazeri**, ISGlobal researcher and lead author of the publication. Additionally, she adds that “possible explanations should be sought in differences in diet, smoking, and use of consumer products such as cosmetics, between families of different socioeconomic positions. For example, tobacco

smoking explained part of the higher cadmium concentrations observed in women with lower socioeconomic levels”.

Martine Vrijheid, ISGlobal researcher and coordinator of the study, highlights that “**many of the chemical contaminants studied are suspected to have a negative impact** on child and adult health”. The same health outcomes are also known to be influenced by socioeconomic inequalities. Accordingly, “in future studies, it is important to analyse the effects on health of environmental contaminants taking into account the **role of socioeconomic position**”.

Reference

Montazeri P, Thomsen C, Casas M, de Bont J, Haug LS, Maitre L, Papadopoulou E, Sakhi AK, Slama R, Saulnier PJ, Urquiza J, Grazuleviciene R, Andrusaityte S, McEachan R, Wright J, Chatzi L, Basagana X, Vrijheid M. Socioeconomic position and exposure to multiple environmental chemical contaminants in six European mother-child cohorts. *Int J Hyg Envir Heal* 2019; [doi: 10.1016/j.ijheh.2019.04.002](https://doi.org/10.1016/j.ijheh.2019.04.002)

About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between “la Caixa” and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the institute’s Education and Policy and Global Development departments. ISGlobal a member of the CERCA programme of the Generalitat de Catalunya.

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