

CSIC researchers will analyse the possible relationship between chemical pollutants and the development of diseases in pregnant women

- The study, jointly led by CSIC, analyses the exposure of pregnant women to different chemical compounds in common use.
- Plastic additives, pesticides, insect repellents, and nicotine have been detected. Their exposure should be reduced.
- Wastewater analysis, also carried out during the research, can be a warning system for exposure to chemical compounds.



The study has detected chemical compounds in the blood and placenta of pregnant women. Source: Piquesels

Madrid / Barcelona, 24th November 2021. A study led by the [Institute of Environmental Assessment and Water Research \(IDAEA-CSIC\)](#) in collaboration with the [Barcelona Institute for Global Health \(ISGlobal\)](#), has evaluated chemical pollutants accumulated in pregnant women. A group of 19 women from Barcelona participated in this study, carried out between September 2019 and March 2020, where 42 potentially harmful

chemical compounds of anthropogenic origin were detected. The results have been published in the journal [*Environmental Science & Technology Letters*](#).

Blood and placenta samples from pregnant women were analysed. Among the compounds found there were pesticides, insect repellents, cosmetic derivatives and industrial compounds such as flame retardants or plastic additives. "Although there is no evidence that the levels found pose a risk to human health, this study should raise awareness of the compounds we are exposed to on a daily basis and to which we should reduce our exposure," says IDAEA-CSIC researcher **Pablo Gago Ferrero**, lead author of the study. This is especially relevant in the case of plastic additives such as phthalates, which have been linked to endocrine diseases and which should be monitored in closer detail.

The study also detected nicotine and nicotine-derived compounds in 60% of the women, despite the fact that they did not smoke and had healthy lifestyle habits. This implies that there is a detectable passive exposure to tobacco. Another compound detected in most of these pregnant women is benzododecinium, which is found in some of the best-selling disinfectants that was widely used during the Covid-19 pandemic.

Another study aim was to assess whether the analysis of contaminants in wastewater can provide a good approximation of the levels of contaminants found in the population of a given area. The results have been positive. "Frequent analysis of compounds accumulated in the population is logistically complex and economically unfeasible. In this research we have observed that sewage sludge is a good approximation of human exposure and, therefore, this methodology could be applied as an early warning system that could prevent chemical threats," says **Gago Ferrero**.

This research, carried out in collaboration with ISGlobal, centre supported by the "la Caixa" Foundation, is part of a larger study to be carried out on 1,100 pregnant women in Barcelona to determine the potential cause-effect relationship between the presence of these pollutants and the development of certain diseases or changes in the metabolism of mothers and their offspring. The study, which is funded by the "la Caixa" Foundation and the Barcelona City Council, will increase the existent knowledge of the chemical pollutants to which the population is exposed, even before birth, in order to warn of these compounds and prevent future illnesses. "This will allow us to determine what effects exposure to these chemical compounds can have on newborns. We know that pollutants are present in pregnant women, but we still need to find out what their impact is on babies' development in order to implement preventive measures," concludes **Gago Ferrero**.

Reference article: Rubén Gil-Solsona, Maria-Christina Nika, Mariona Bustamante, Cristina M. Villanueva, Maria Foraster, Marta Cosin-Tomás, Nikiforos Algizakis, Maria Dolores Gómez-Roig, Elisa Llubra-Olive, Jordi Sunyer, Nikolaos S. Thomaidis, Payam Dadvand, Pablo Gago-Ferrero. 2021. *The potential of sewage sludge to predict and evaluate the human's chemical exposome*. Environmental Science & Letters, 2021. [DOI: 10.1021/acs.estlett.1c00848](https://doi.org/10.1021/acs.estlett.1c00848)

Alicia Arroyo / IDAEA-CSIC Communication Department