

New study finds association between insecticide exposure and lower sperm concentration in adult men

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Melissa J. Perry, Sc.D., MHS, dean of the George Mason University College of Public Health, and a team of researchers including Lauren

Ellis, MPH, doctoral student at Northeastern University, have found in a new systematic review that there is a strong association between insecticide exposure and lower sperm concentration in adult men globally.

The paper titled "Adult Organophosphate and Carbamate Insecticide Exposure and Sperm Concentration: A Systematic Review and Meta-Analysis of the Epidemiological Evidence" is published in *Environmental Health Perspectives*.

"Understanding how insecticides affect sperm concentration in humans is critical, given their ubiquity in the environment and documented reproductive hazards. Insecticides are a concern for [public health](#) and all men, who are exposed primarily through the consumption of contaminated food and water," says Ellis.

The team reviewed nearly five decades of [human](#) evidence regarding the health impacts of exposure to two widely used insecticide classes, organophosphates and N-methyl carbamates, and found consistent associations with lower sperm concentration, which warrants concern, particularly in light of observed downward trends in semen quality demonstrated by other studies.

"This review is the most comprehensive review to date, sizing up more than 25 years of research on male fertility and [reproductive health](#). The evidence available has reached a point that we must take regulatory action to reduce insecticide exposure," says Dr. Perry, the senior author on the paper.

The research team systematically reviewed 25 [human studies](#) of occupational and environmental insecticide exposure conducted over the course of nearly 50 years. The study revealed consistent evidence of robust associations between insecticide exposure and lower sperm

concentration.

More information: Adult Organophosphate and Carbamate Insecticide Exposure and Sperm Concentration: A Systematic Review and Meta-Analysis of the Epidemiological Evidence, *Environmental Health Perspectives* (2023). [DOI: 10.1289/EHP12678](https://doi.org/10.1289/EHP12678)

Provided by George Mason University

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