Press Release

Exposure to Chemicals Found in Everyday Products Is Linked to Significantly Reduced Fertility

New York, NY (March 17, 2023) — Exposure to chemicals commonly found in drinking water and everyday household products may result in reduced fertility in women of as much as 40 percent, according to a study by Mount Sinai researchers. In a paper published in *Science of the Total Environment*, the team reported that higher blood concentrations of perfluoroalkyl substances, known as PFAS, were associated with a significant reduction in the likelihood of pregnancy and live birth among a reproductive-age cohort of women in Singapore who were trying to conceive.

"Our study strongly implies that women who are planning pregnancy should be aware of the harmful effects of PFAS and take precautions to avoid exposure to this class of chemicals, especially when they are trying to conceive," says lead author Nathan Cohen, PhD, a postdoctoral research fellow with the Department of Environmental Medicine and Public Health at the Icahn School of Medicine at

Mount Sinai. “Our findings are important because they add to the growing body of knowledge implicating PFAS in the development of adverse health conditions, with children being especially vulnerable.”

PFAS are water- and grease-resistant chemicals found in drinking water as well as in a wide range of consumer products such as nonstick cookware, waterproof clothing, food packaging, stain-resistant coatings on carpets and upholstery, paints, and personal care products. Numerous studies have found that virtually every American has PFAS in their blood. While other studies have demonstrated that PFAS impair reproductive functioning in female mice, the Mount Sinai investigation in collaboration with investigators from the Singapore Institute for Clinical Sciences and from other U.S. institutions is one of the first to show its impact in humans.

The study considered 1,032 women of child-bearing age (18 to 45 years) who were trying to conceive and who were enrolled in the Singapore Preconception Study of Long-Term Material and Child Outcomes (S-PRESTO) led by the Singapore Institute for Clinical Sciences, a population-based prospective cohort. The researchers measured PFAS in plasma collected from the women between 2015 and 2017. They learned that higher exposure to PFAS chemicals, individually and as a mixture, was associated with reduced probability for clinical pregnancy and live birth.

More specifically, the team found 30 percent to 40 percent lower odds of attaining a clinical pregnancy within one year of follow-up and delivering a live birth when the combined effects of seven PFAS as a mixture were considered. The biggest contributor to the PFAS mixture was perfluorodecanoic acid, which was individually linked to reduced fertility. Associations with infertility outcomes were also observed for perfluorooctanesulfonic acid, perfluorooctanoic acid, and perfluoroheptanoic acid.

“PFAS can disrupt our reproductive hormones and have been linked with delayed puberty onset and increased risks for endometriosis and polycystic ovary syndrome in few previous studies. What our study adds is that PFAS may also decrease fertility in women who are generally healthy and are naturally trying to conceive,” notes senior author Damaskini Valvi, MD, PhD, MPH, Assistant Professor of Environmental Medicine and Public Health at Icahn Mount Sinai and a nationally recognized expert on the dangers of PFAS. “We also know that PFAS exposure begins *in utero* and transfers from the mother to the fetus, as many PFAS have been detected in cord blood, the placenta, and breast milk. Preventing exposure to PFAS is therefore essential to protect women’s health as well as the health of their children.”

Additional work by scientists at the Institute for Exposomic Research at Icahn Mount Sinai, which is committed to increasing the public's understanding of how environmental exposures affect health and disease, will explore the biological mechanisms that underlie the impact of PFAS chemicals on reproductive health in women.

"The results of our study should serve as a warning to women everywhere about the potentially harmful effects of PFAS when they are planning to conceive," says Dr. Cohen. "We can minimize PFAS exposure by avoiding foods that are associated with higher levels of these chemicals and by purchasing PFAS-free products."

"It is also important to advocate for policies that ban the use of toxic chemicals, such as PFAS, from everyday products," notes Dr. Valvi.

The study was funded the National Research Foundation under the Open Fund-Large Collaborative Grant administered by the Singapore Ministry of Health's National Medical Research Council and the Agency for Science, Technology and Research and the U.S. National Institute of Environmental Health Sciences.

Tags: Icahn School of Medicine at Mount Sinai (/about/newsroom/news?sites=MSSM), Institute for Exposomic Research (/about/newsroom/news?researchEntities=107987a346e14610VgnVCM1000005715020aRCRD), Mount Sinai Health System (/about/newsroom/news?sites=mshealth), Pregnancy and Birth (/about/newsroom/news?mshealth_medicalService=a0f8be12e71ed510VgnVCM1000005715020aRCRD), Raquel and Jaime Gilinski Department of Obstetrics, Gynecology and Reproductive Science at Mount Sinai (/about/newsroom/news?mshealth_medicalService=ffaf63d7568fb510VgnVCM10000091e7510aRCRD), NATHAN JOSEPH COHEN (/about/newsroom/news?mshealth_personFurl=nathan-joseph-cohen), Research (/about/newsroom/news?subtypes=research), Damaskini Valvi, MD, PhD, MPH (/about/newsroom/news?mshealth_personFurl=valvi-damaskini)

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scientific learning and knowledge; developing safer, more effective treatments; educating the next generation of medical leaders and innovators; and supporting local communities by delivering high-quality care to all who need it.

Through the integration of its hospitals, labs, and schools, Mount Sinai offers comprehensive health care solutions from birth through geriatrics, leveraging innovative approaches such as artificial intelligence and informatics while keeping patients' medical and emotional needs at the center of all treatment. The Health System includes approximately 9,000 primary and specialty care physicians and 10 free-standing joint-venture centers throughout the five boroughs of New York City, Westchester, Long Island, and Florida. Hospitals within the System are consistently ranked by *Newsweek*'s® "The World's Best Smart Hospitals, Best in State Hospitals, World Best Hospitals and Best Specialty Hospitals" and by *U.S. News & World Report*'s® "Best Hospitals" and "Best Children's Hospitals." The Mount Sinai Hospital is on the *U.S. News & World Report*® "Best Hospitals" Honor Roll for 2025-2026.

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