

Study finds connection between air pollution exposure and puberty onset of girls in the US

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A newly published study by researchers from Emory University and Harvard University found a connection between childhood exposure to air pollution and the age at which U.S. girls experienced their first periods.

The study, published in [Environmental Health Perspectives](#), collected data from more than 5,200 girls across the United States—all of whom were children of participants in the Nurses' Health Study II—found that girls who had higher residential exposure to fine [particulate matter air pollution](#) throughout their childhoods tended to have their first periods sooner.

Girls who have their first periods at an earlier age face increased risk for several diseases later during their lifetime, including [cardiovascular disease](#), type 2 diabetes and certain types of cancer.

The reproductive health of young girls can be protected, as early as in utero, through enacting policies and regulations designed to reduce the primary sources of particulate matter air pollution, including emissions from gasoline, oil, [diesel fuel](#), and wood combustion.

More research into potential biological mechanisms is needed to fully understand how exposure to fine particulate matter may cause girls to have their first periods at an earlier age. The study also only investigated a single type of air pollutant—particulate matter—but people are exposed to several different types of air pollutants, so additional research is needed to understand how/if multiple air pollutants interact with each other and if this mixture has a different effect on the reproductive health of girls.

Audrey Gaskins, ScD, the study's senior author and associate professor of epidemiology at Emory University's Rollins School of Public Health, says, "Our study highlights one potential environmental factor—particulate matter air pollution—that may help explain the trend of earlier ages of menarche being observed over the past 50 years. While more research is necessary, it suggests that [early life](#) environmental exposures may play a key role in dictating the pace of reproductive development in girls."

More information: Robert B. Hood et al, Exposure to Particulate Matter Air Pollution and Age of Menarche in a Nationwide Cohort of U.S. Girls, *Environmental Health Perspectives* (2023). [DOI: 10.1289/EHP12110](https://doi.org/10.1289/EHP12110)

Provided by Emory University

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