

Fall in fertility rates may be linked to fossil fuels

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Chemical pollution from burning fossil fuels could play a significant part in global decline in sperm counts, a fresh study finds.

An in-depth analysis in the journal *Nature Reviews Endocrinology* says "industrialized regions now have rates below levels required to sustain their populations."

Results show "reproductive health problems are partly linked to increasing exposures to chemicals originating directly or indirectly from [fossil fuels](#)" plus to pollution from using oil to make plastics and industrial chemicals.

While the global population is at its biggest ever, at 7.7 billion and rising, world fertility rates have nearly halved, from 4.7 in 1950 to 2.4 in 2017. Birth rates started to fall, researchers said, at the same time as industrialisation and its big-scale burning of fossil fuels.

"Most urgently, we need to conduct an analysis of the contribution of simultaneous exposures to cocktails of chemicals to reproductive disorders," said Professor Andreas Kortenkamp at Brunel University London.

"The crisis of male fertility means silent suffering for many who cannot conceive," the molecular toxicologist said. "It is important to define the preventable causes, such as [chemical](#) exposures, to better protect [public health](#) and help reduce the fertility crisis."

Fossil fuels have been found in people's blood, urine, semen, breast milk, and fatty tissue. Many fossil fuel pollutants are [endocrine disruptors](#), which means they scramble hormonal systems and harm reproductive health.

"We know from numerous animal studies that plastics, chemicals, and so forth can cause problems in animal reproduction," said study leader Prof Niels Skakkebaek at the University of Copenhagen. "We cannot do such exposure studies in humans, that would not be ethical, but we know

enough from animal studies to be concerned."

The Centre for Pollution Research and Policy at Brunel is running the first analysis of how much chemical exposure contributes to declines in semen quality. It will highlight exactly which chemicals contribute most, which will help countries prioritize policies to reduce chemical exposure.

"We're on a cliff edge when it comes to chemical exposures," said Prof Kortenkamp, leading the Brunel study.

"Most of the chemicals of concern come from plastic production or burning plastic in waste incinerators. In the future, we must make the link between oil and gas, [carbon dioxide emissions](#) and [chemical pollution](#)."

More information: Niels E. Skakkebaek et al, Environmental factors in declining human fertility, *Nature Reviews Endocrinology* (2021). [DOI: 10.1038/s41574-021-00598-8](https://doi.org/10.1038/s41574-021-00598-8)

Provided by Brunel University

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