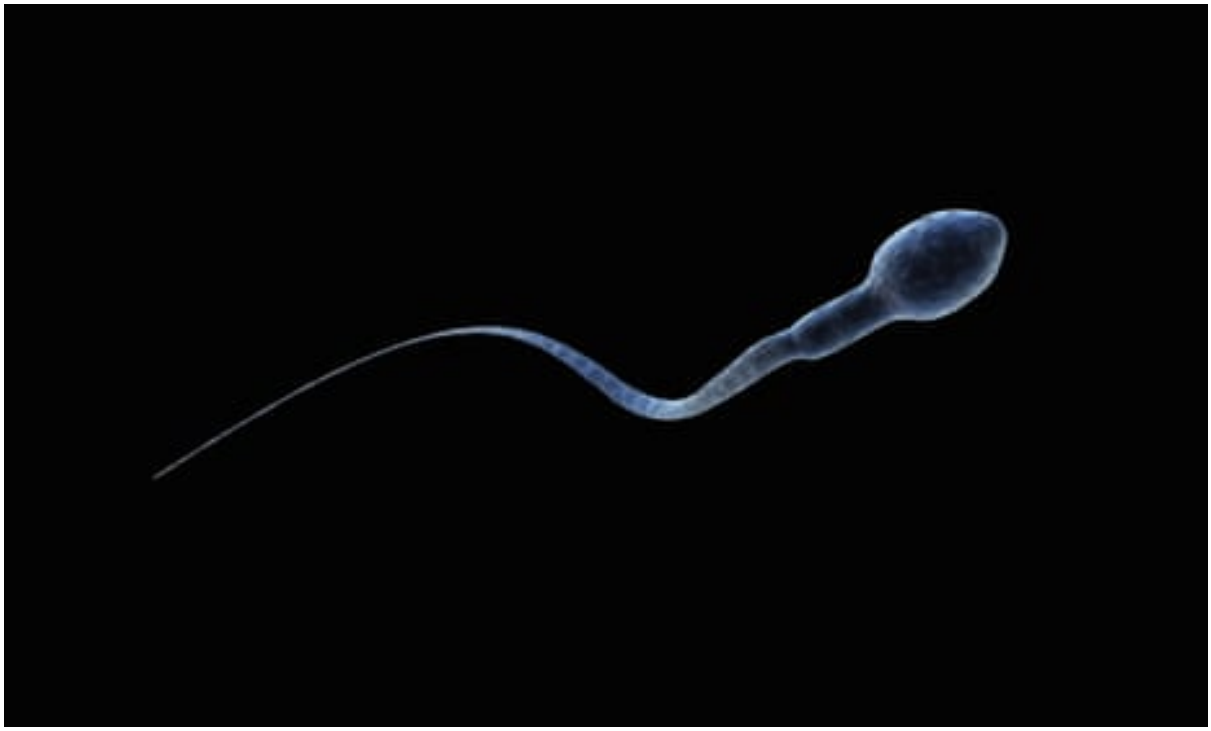
Falling sperm counts 'threaten human survival', expert warns

Epidemiologist Shanna Swan says low counts and changes to sexual development could endanger human species



Swan offers advice on how to protect themselves from damaging chemicals and urges people to ‘do what we can to safeguard our fertility, the fate of mankind, and the planet’. Photograph: Burazin/Getty Images

Miranda Bryant
Fri 26 Feb 2021 07.00 GMT

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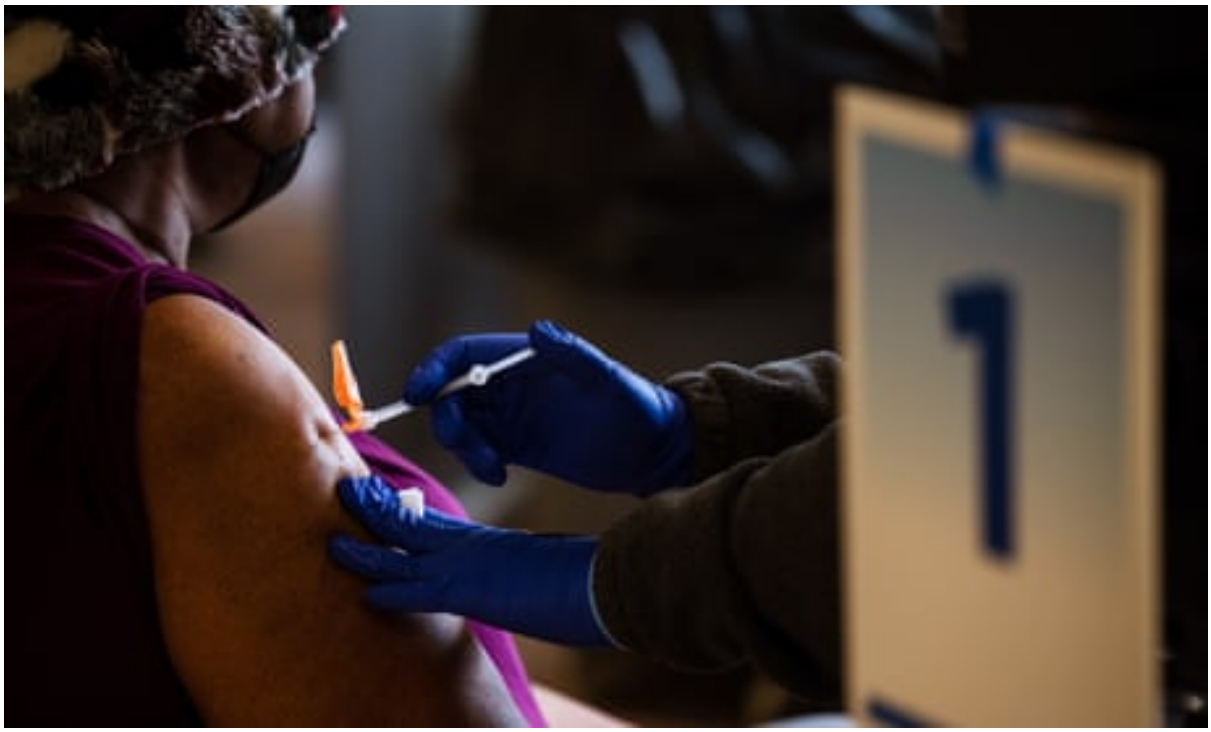
Falling sperm counts and changes to sexual development are “threatening human survival” and leading to a fertility crisis, a leading epidemiologist has warned.

Writing in a new book, Shanna Swan, an environmental and reproductive epidemiologist at Icahn School of Medicine at Mount Sinai in New York, warns

that the impending fertility crisis poses a global threat comparable to that of the climate crisis.



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“The current state of reproductive affairs can’t continue much longer without threatening human survival,” she writes in Count Down.

It comes after a study she co-authored in 2017 found that sperm counts in the west had plummeted by 59% between 1973 and 2011, making headlines globally.

Now, Swan says, following current projections, sperm counts are set to reach zero in 2045. “That’s a little concerning, to say the least,” she told Axios.

In the book, Swan and co-author Stacey Colino explore how modern life is threatening sperm counts, changing male and female reproductive development and endangering human life.

It points to lifestyle and chemical exposures that are changing and threatening human sexual development and fertility. Such is the gravity of the threats they pose, she argues, that humans could become an endangered species.

“Of five possible criteria for what makes a species endangered,” Swan writes, “only one needs to be met; the current state of affairs for humans meets at least three.”

Swan offers advice on how to protect themselves from damaging chemicals and urges people to “do what we can to safeguard our fertility, the fate of mankind, and the planet”.

Between 1964 and 2018 the global fertility rate fell from 5.06 births per woman to 2.4. Now approximately half the world’s countries have fertility rates below 2.1, the population replacement level.

While contraception, cultural shifts and the cost of having children are likely to be contributing factors, Swan warns of indicators that suggest there are also biological reasons – including increasing miscarriage rates, more genital abnormalities among boys and earlier puberty for girls.

Swan blames “everywhere chemicals”, found in plastics, cosmetics and pesticides, that affect endocrines such as phthalates and bisphenol-A.

“Chemicals in our environment and unhealthy lifestyle practices in our modern world are disrupting our hormonal balance, causing various degrees of reproductive havoc,” she writes.

She also said factors such as tobacco smoking, marijuana and growing obesity play a role.

Study links in utero ‘forever chemical’ exposure to low sperm count and mobility

PFAS, now found in nearly all umbilical cord blood around the world, interfere with hormones crucial to testicle development

Photograph: Sebastian Kaulitzki/SCIENCE PHOTO LIBRARY/Getty Images/Science Photo Library RF

Tom Perkins

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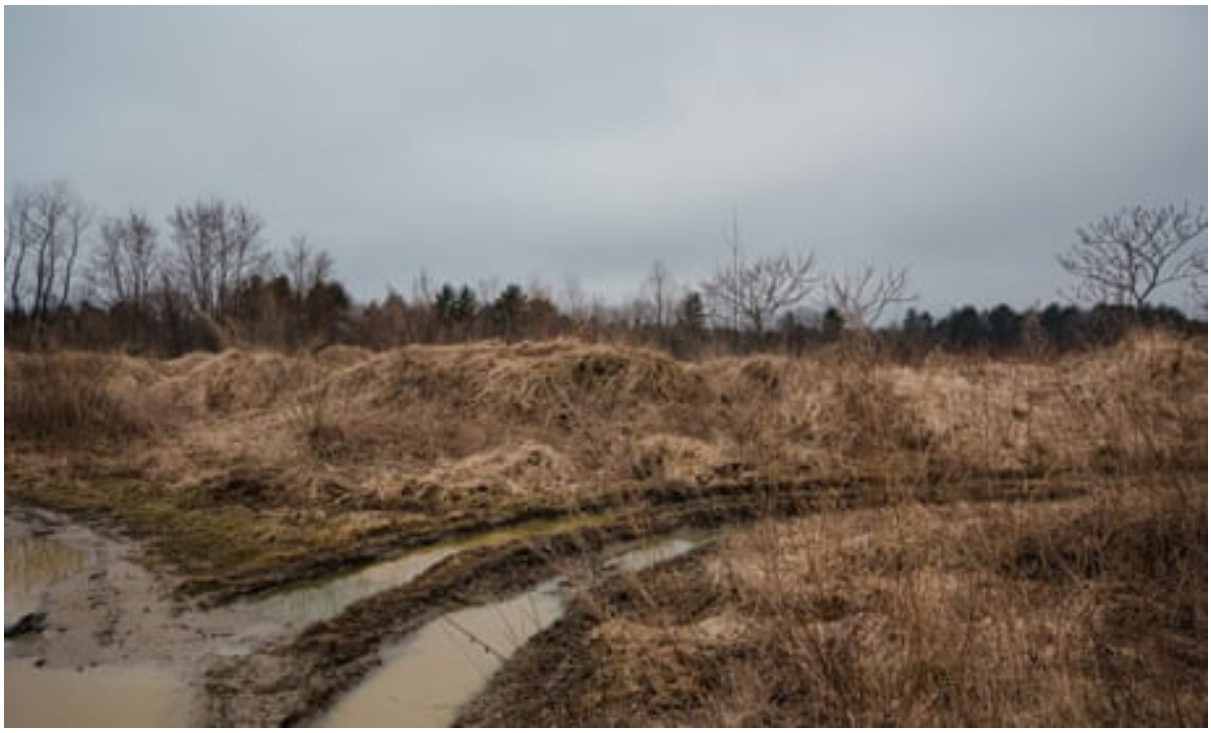
A new peer-reviewed Danish study finds that a mother's exposure to toxic PFAS "forever chemicals" during early pregnancy can lead to lower sperm count and quality later in her child's life.

PFAS – per- and polyfluoroalkyl substances – are known to disrupt hormones and fetal development, and future "reproductive capacity" is largely defined as testicles develop in utero during the first trimester of a pregnancy, said study co-author Sandra Søgaard Tøttenborg of the Copenhagen University Hospital.



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“It makes sense that exposure to substances that mimic and interfere with the hormones involved in this delicate process can have consequences for semen quality later in life,” Søgaard Tøttenborg said.

PFAS are a class of about 12,000 chemicals typically used to make thousands of products resistant to water, stains and heat. They are called “forever chemicals” because they accumulate in humans and the environment and do not naturally break down. A growing body of evidence links them to serious health problems such as cancer, birth defects, liver disease, kidney disease and decreased immunity.

The study, published Wednesday in Environmental Health Perspectives, examined semen characteristics and reproductive hormones in 864 young Danish men born to women who provided blood samples during their pregnancies’ first trimesters between 1996 and 2002.

‘They all knew’: textile company misled regulators about use of toxic PFAS, documents show

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The study builds on others that found similar issues, but it is the first to look for exposure to more than two PFAS compounds and to assess exposure during early pregnancy, which is the male reproductive organ’s “primary developmental period”.

Researchers checked the mothers’ blood for 15 PFAS compounds, and found seven in large enough concentrations to include in the study.

Those mothers with higher levels of exposure more frequently raised adult men with lower sperm counts, as well as elevated immotile sperm levels, meaning their sperm did not swim. This exposure also increased the amount of non-progressive sperm – sperm that do not swim straight or swim in circles. Both issues can lead to infertility.

The ubiquitous chemicals are estimated to be in 98% of Americans’ blood, and they can cross the placental barrier and accumulate in the growing fetus. A recent analysis of 40 studies of umbilical cord blood from around the world found that PFAS were detected in all 30,000 samples collectively examined.

Infertility rates are on the rise worldwide, often for unclear reasons, Søgaard Tøttenborg said.

“The results of our studies are an important piece in that puzzle,” she added. “Equally important: the more we know, the more we can prevent.”