

# The Phthalate Syndrome Is Causing Mass Sterility

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✓ Fact Checked

## STORY AT-A-GLANCE

- › Sperm counts dropped by 59.3% from 1973 to 2011, possibly in large part due to exposure to environmental chemicals like phthalates
- › Sperm count, testosterone and fertility are dropping, and testicular cancer and miscarriage are rising, all at about 1% per year
- › Phthalate syndrome refers to a number of disturbances to male reproductive development that have been observed after exposure to phthalates in utero
- › Women's exposure to phthalates during pregnancy is linked to male babies' anogenital distance (AGD) – the distance from the anus to the base of the penis – with higher exposure associated with shortened AGD
- › Later in life, shorter AGD is linked with a smaller penis and poorer semen quality, such that Swan believes AGD at birth is predictive of adult reproductive function
- › Swan believes that humans, as a species, satisfy several of the criteria for endangerment and our species is threatened due to phthalates and other chemicals' effects on fertility

It was 1992 when Shanna Swan, Ph.D., a reproductive epidemiologist and professor of environmental medicine and public health at the Icahn School of Medicine at Mount Sinai in New York City, first heard about a potential decline in fertility among humans. A study published in the BMJ that year had found evidence for decreasing quality of semen over the past 50 years.<sup>1</sup>

She thought it sounded pretty extreme, and maybe it wasn't true, so she spent six months looking into it and evaluating the 61 studies included in the review. It turned out the decline was real and Swan directed her studies over the next two decades to unraveling this disturbing trend.

Over years of careful research, Swan revealed a smoking gun that is disrupting human development and reproduction to the point that she feels we're threatened as a species.

The culprit is a class of chemicals called phthalates, which are so ubiquitous that the U.S. Centers for Disease Control and Prevention has stated "phthalate exposure is widespread in the U.S. population."<sup>2</sup> An estimated 8.4 million metric tons of plasticizers, including phthalates, are used worldwide each year,<sup>3</sup> with phthalate production amounting to about 4.9 million metric tons annually.<sup>4</sup>

## **Sperm Counts Dropped by 59.3%**

Swan's book "Count Down," is based on a 2017 study she co-wrote, which found sperm counts dropped by 59.3% from 1973 to 2011.<sup>5</sup> The most significant declines were found in samples from men in North America, Europe, Australia and New Zealand, where many had sperm concentrations below 40 million/ml, which is considered the cutoff point at which a man will have trouble fertilizing an egg.

Overall, men in these countries had a 52.4% decline in sperm concentration and a 59.3% decline in total sperm count (sperm concentration multiplied by the total volume of an ejaculate).

There appears to be a synergy occurring as well, which Swan dubs "the 1% effect," because sperm count, testosterone and fertility are dropping, and testicular cancer and miscarriage are rising, all at about 1% per year.<sup>6</sup> In an interview with Mark W. of After Skool, which you can view in its entirety above, Swan said:<sup>7</sup>

*"The 1% effect is a change of 1% per year over a lot of years, so if sperm count declined 50% in 50 years that would be 1% per year ... a 50% decline means*

*cutting it in half. Cut your sperm count in half? I don't think anyone wants to do that, right? It's the same thing with testosterone.*

*It's also been going down at that same rate – 1% per year. Miscarriage or pregnancy loss has gone up in women at that same rate ... Everything seems to be progressing at about the same rate of deterioration of reproductive function.”*

Global fertility rates are also falling, reaching 2.4 births per woman in 2018, down from 5.06 in 1964. Fertility rates in about 50% of countries worldwide are at 2.1, which is below population replacement level, The Guardian reported.<sup>8</sup>

Both men and women are being affected, and so are species other than humans. According to Swan, many species are experiencing significant genital disturbances and decreases in liver size. Species are being endangered by their declining fertility and reproductive function, and the declines are being caused by the same things that are affecting us.

## **Chemicals to Blame for Declining Fertility**

There are two primary causes that could be behind the fertility declines, Swan said – genetics or environment. The changes, however, are too rapid to be evolutionary, which crosses out a genetic factor. Moving to environment, both lifestyle and chemical factors can contribute.

Obesity, smoking, consuming excessive amounts of alcohol or binge drinking – even stress – are examples of factors you can control that are linked to lower sperm count and fertility.<sup>9</sup> Chemicals, however, and phthalates specifically, appear to be the major problem. Swan explained:<sup>10</sup>

*“Reproductive function, sperm production, pregnancy and so on are controlled by the hormones ... now, if you mess that up you can imagine that you're messing up the end product – the sperm, the eggs, the pregnancy – and that's what happens.*

*... A huge class of chemicals are called endocrine, meaning hormone, disrupting (messing up) chemicals, or EDCs. I like to call them hormone hackers because they sometimes pretend to be hacker hormones. They get in there, they hack the hormone system, they mess with it and it turns out that they're in our daily lives in huge numbers."*

Phthalates are used to make plastic soft and flexible, so any time you see rubber tubing, you can assume there are phthalates. They're hidden in foods like milk, too, due to the milking machines used by conventional dairies, which use extensive plastic tubing. A 2013 study published in Environment International found that milk was contaminated with phthalates at "several stages in the milk chain."<sup>11</sup>

In addition to the mechanical milking process, the milk may be contaminated due to phthalate-containing feed consumed by the cattle as well as packaging material.

Beyond milk, items such as vinyl rain coats, boots and shower curtains are high in phthalates, Swan said, and they're also found in cosmetics, personal care and household products such as lipstick, nail polish, perfume, scented laundry soap and air fresheners because they help them retain scent and color.

They also enhance absorption, which is why they're often added to lotions as well as to pesticides – to help them get absorbed into plants. "It's hard to find things that don't have these chemicals in them," she said.<sup>12</sup>

## **Evidence for Phthalate Syndrome**

Phthalate syndrome refers to a number of disturbances to male reproductive development that have been observed after exposure to phthalates in utero.<sup>13</sup> According to Swan:<sup>14</sup>

*"After conception, in utero is the most sensitive time for the development of almost everything ... the building blocks of what's going to be the reproductive system are really laid down early in the first trimester ... what the fetus is exposed to, which really means what the mother is exposed to, because there's*

*no barrier protecting that fetus from what the mother is exposed to. It gets into her bloodstream, goes into the fetus, goes in and does its damage in the fetus.”*

In studies on rats, it’s been found that when a male rat that’s been gestating in a mother rat fed phthalates during the sensitive periods of reproduction, his genitals end up smaller and less developed, his testicles might not be fully descended, his penis may be smaller, and the whole size of the genital area is smaller.<sup>15,16</sup>

Research by Swan and colleagues found that women’s exposure to phthalates during pregnancy is also linked to male babies’ anogenital distance (AGD) – the distance from the anus to the base of the penis – with higher exposure associated with shortened AGD.<sup>17</sup> Later in life, shorter AGD is linked with a smaller penis<sup>18</sup> and poorer semen quality, such that Swan believes AGD at birth is predictive of adult reproductive function.<sup>19</sup>

“We found that when the mother had higher levels of certain phthalates – those that lower testosterone – in her early urine samples that her male child would have genitals that were less completely masculinized,” she said.<sup>20</sup>

The first study on phthalates and AGD was conducted in 2005. They replicated the study in 2015<sup>21</sup> and found the same result. “So now it’s well established that this is going on.”<sup>22</sup> Swan added:<sup>23</sup>

*“The bottom line, the arc of this whole 20 years that I’ve been working on this, is that these chemicals, when the mother’s exposed to them in early pregnancy, result in failures or limitations of reproductive function in adulthood and are undoubtedly part of the explanation of the decrease in sperm count and fertility.”*

What’s more, phthalates represent only one class of endocrine disrupting chemicals. There are many more, including bisphenol-A (BPA), flame retardants, pesticides and PFAS chemicals. “They act together and, often, the whole is worse than the sum of its parts,” Swan said.<sup>24</sup>

# Humans Are Threatened

Changes in sexual development pose a threat to human survival, according to Swan, who also notes that human beings already meet three of the five criteria for what makes a species endangered.<sup>25</sup> “I think we do already satisfy several of the criteria for endangerment, which is a step way before extinction, but we are threatened.” This put’s one of your most basic rights — reproduction — at risk:<sup>26</sup>

*“Remember, if you ... and a partner want to get pregnant that’s a basic human right ... you should be able to reproduce if you want to ... you should have that opportunity and that right and to have that taken away from you from causes that are not within your control is what I’m most concerned about.”*

For those interested in protecting their own fertility — and that of future generations — as much as possible, avoiding hormone-disrupting chemicals is essential. Toward this end, Swan recommends some simple solutions like eating unprocessed foods that you cook yourself as much as possible to reduce your exposure to plastic food packaging, and using only simple, nonscented personal care and household products.

One silver lining is that phthalates leave your body quickly, in a matter of four to six hours, after exposure. They’re non-persistent chemicals — unlike other toxins like dioxin, PCBs or lead, so if you stop taking them in, “you’re done with them.”

If humans would take steps to eliminate the use of phthalates, the damage done to fertility would stop — at least from this class of chemicals — and could eventually be recovered after several generations. Swan said:<sup>27</sup>

*“We can start in that direction if we would stop re-exposing kids that were exposed in utero, during their childhood and during their adulthood, then we would be on the road to cleaning up our reproductive health.”*

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