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Endocrine-disrupting chemicals can get into the human body through both ingestion as well as through the skin and interrupt hormonal processes. Source: SBS News

Life

Plastic may not be so fantastic for those hoping for babies. Here's why

Chemicals found in plastics we come in contact with every day can affect fertility, but is it possible to avoid them?

🕒 7 min read

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Tags

Health

Men hoping to become dads are told to avoid alcohol and limit their intake of unhealthy food if they want to increase their chances, but there is one more thing that may affect fertility, which can be even more challenging to avoid.

Some fertility specialists now warn of the potential that exposure to plastics, common in everyday life, can have.

Certain chemicals within plastics can interfere with the body's hormonal processes and the ever-increasing reliance on plastic in everyday use means human bodies are being exposed to greater amounts of these chemicals.

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So how can people reduce their exposure to such chemicals?

Endocrine-disrupting chemicals in plastic

Many scientists, including Liza O'Donnell, a senior research scientist at Griffith University and Hudson Institute of Medical Research, talk about the 'soup of plastic' humans now exist in.

Companies continue to make more virgin plastic than ever, and because it is relatively cheap, it is often used in favour of other materials.

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Everyone knows single-use plastic is bad for the environment, so why do we keep making more?

Within the plastic people buy their packaged groceries in, store and serve food in, contained in the micro-beads in cosmetics that people apply daily to their bodies and even within children's toys and shopping receipts are endocrine-disrupting chemicals (EDCs).

Ms O'Donnell, who studies the biology of the testis, including how it produces both sperm and androgens, described EDCs as "something in the environment that can impact how our hormones work in our body".

She said that given hormones govern many different processes, including male fertility and the development and function of reproduction, they had the potential to affect a man's ability to reproduce.

How do EDCs get into our bodies?

Ms O'Donnell said research has confirmed EDCs were accumulating in most, if not all, people's bodies.

"Ninety-five per cent of the population have appreciable levels of these endocrine-disrupting chemicals secreted in the urine," she said.

The chemicals get into the human body through both ingestion as well as through the skin.

Ms O'Donnell said the body could be exposed to EDCs by simply touching plastic packaging once for a short time, but such an interaction on its own would likely only expose a person to a small dose of chemicals.

"But it's the cumulative exposure to plastics, and it's that we are exposed to it in so many different sources," she said.

A national public education program funded by the Australian and Victorian governments tells hopeful parents while it is "impossible to completely avoid EDCs" people could take steps to reduce their exposure to them.

The Your Fertility website suggests eating fewer processed, canned, pre-packaged foods, avoiding handling sales receipts, and drinking out of glass or hard plastic bottles, not soft plastic bottles, which use EDCs to make flexible plastic.



Plastic containers and packaging can contain endocrine-disrupting chemicals. Source: Getty / Brett Stevens

It also warns against heating food in soft plastic takeaway containers or covered with cling wrap or foil, as the heating process contributes to the leaching of the chemicals.

Instead, people are told to heat food in a china or glass bowl and cover it with a paper towel or a china plate.

How exactly do EDCs affect reproductive health?

Ms O'Donnell said such chemicals could affect infertility in a male fetus as it grows and throughout the later stages of life up to adulthood, leading to when a man may try for children.

"When a male baby is in utero, and he's starting to develop, hormones are turned on in his body, and tell his body to develop as a male, that is when the testes are forming, and the different reproductive structures are forming in the body," she said.

"We know that that process is very reliant on hormones, particularly androgens; testosterone, so if there's some impact, or alteration of that process, while he's developing, it can result in disorders of his development, and it could mean he could be more likely to be infertile as an adult."

A man's fertility may also be influenced during adulthood.

"Sperm production is governed by hormones, there's a lot of hormones produced around the body and within the testes and these hormones direct sperm production to occur and direct the whole function of the testes. It is possible that hormones that come from outside the body can interfere with this process," she said.

One in six people around the world experience infertility, which is defined as not being able to conceive after at least one year of trying for a baby.



One in six adults around the world are affected by infertility, according to the World Health Organisation. Source: Getty / Catherine McQueen

Research into EDCs in the human body is difficult

While it is not disputed that EDCs are entering human bodies, there is not a lot of research into the impact on human fertility yet.

"It is very difficult to pin down how these influences human male infertility, but there are a lot of studies in animal models, which are quite good at approximating human male fertility," Ms O'Donnell said.

"There's lots of studies that have given certain endocrine disrupting chemicals to adult male mice or rats and shown effects on fertility on their ability to produce sperm and on the sperm quality and even on the DNA within their sperm."

She said such tests were "quite good at approximating human male fertility".

Ms O'Donnell said it would be difficult to carry out studies on humans around plastic exposure and fertility.

"Imagine trying to do it in men, to do a study of BPA, Bisphenol A, which is a known endocrine disruptor, all men are exposed to BPA. How do you get a control population? You can't get men that aren't exposed to it, you have to raise them in a bubble and make sure that their mothers didn't have any exposure to it, it's impossible to do," she said.

She added while it was a concern that it would be difficult to prove the full impact EDCs have on fertility, "as a reproductive biologist, I'm certainly concerned that these things will impact on human reproduction".

Plastic and female fertility

Ms O'Donnell said there was existing evidence that EDCs could affect women's fertility, and there had since been a consumer move away from products containing BPA.

She explained how manufacturers were unable to avoid making changes when reports from a reproductive biologist in America were publicised.

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"She was looking at mice and she was studying their eggs and the DNA quality of their eggs and all of a sudden, all the mice had abnormal eggs," Ms O'Donnell said.

"She figured out that what had happened was the technicians in the lab had changed the detergent that they use to wash the drinking water bottles of the mice and what was happening was it was a really harsh detergent and it was causing BPA to leach into the water.



Women struggling with infertility may opt for IVF treatment to assist them to become pregnant. Source: Getty / Maskot

"The mice all had measurable and observable effects on their reproduction and were unable to get pregnant."

More research and a shift away from plastic

Ms O'Donnell thinks a shift away from plastic usage will continue to be driven by consumers such as those participating in Plastic Free July this month.

"This is the great thing about plastic free July, is acknowledging that these things just can't be introduced constantly. We can't keep we have to start by removing them one by one rather than putting them in one by one," she said.

Reproductive Health Australia (RHA) has called on the Australian government to fund research to identify and understand the specific EDCs in the local environment and their potential to harm the reproductive health of citizens.

In a [submission to the Federal Government](#), it said "One of the great challenges is to pinpoint which EDCs, either individual chemicals or mixtures of chemicals, directly alter fertility and fecundity. Equally, it is unclear the levels or duration of exposure required and across what life stage for effects to be evident."

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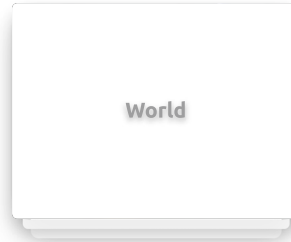
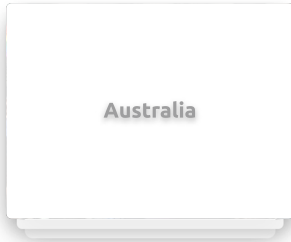
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