

Plastic manufacturing chemical BPS harms egg cells, study suggests

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Allard is assistant professor of environmental health sciences at the UCLA Fielding School of Public Health and the study's senior author Credit: UCLA Fielding School of Public Health

Bisphenol S, a chemical used to manufacture polycarbonate water bottles and many other products such as epoxy glues and cash receipts, is an increasingly common replacement for bisphenol A, the of which was discontinued because of concerns about its harmful effects on the reproductive system. In a new study, UCLA researchers have found that BPS is just as harmful to the reproductive system as the chemical it replaced. BPS damages a woman's eggs and at lower doses than BPA.

While looking for replacements to toxic chemicals, manufacturers tend to choose substitute chemicals that, while technically different, often share similar physical properties. Due to increasing consumer pressure, companies have replaced BPA with other related compounds now found in many "BPA-free" products. However we do not know how safe these substitutes are. These uncertainties led the researchers to ask whether BPS could impart detrimental effects on reproduction similar to BPA's.

The researchers exposed a common laboratory model, the roundworm, to several concentrations of BPA and/or BPS that approximate the levels of BPA and/or BPS found in humans. They followed the worms through the duration of their reproductive periods and measured their fertility.

The researchers observed that compared to the controls, worms exposed to either BPA or BPS, or combination of the two, had decreased fertility. Surprisingly, these effects were seen at lower internal BPS doses than those of BPA suggesting that BPS may be more damaging to the [reproductive system](#). This was especially significant when they examined the viability of young embryos.

These findings are also a cause for concern in humans as the same reproductive processes that are disrupted by BPS in roundworms are found in mammals. Furthermore, as noted above BPS products are already found in a plethora of consumer products.

"This study clearly illustrates the issue with the 'whack-a-mole' approach to chemical replacement in consumer products," said Patrick Allard, assistant professor of [environmental health sciences](#) at the UCLA Fielding School of Public Health, and the study's senior author. "There is a great need for the coordinated safety assessment of multiple substitutes and mixtures of chemicals before their use in product replacement. But the good news is that a number of governmental programs and academic labs are now moving in that direction".

More information: Yichang Chen et al. Exposure to the BPA-Substitute Bisphenol S Causes Unique Alterations of Germline Function, *PLoS Genetics* (2016). [DOI: 10.1371/journal.pgen.1006223](https://doi.org/10.1371/journal.pgen.1006223)

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