

Fracking chemical may interfere with male sex hormone receptor

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Derrick and platform of drilling gas wells in Marcellus Shale - Pennsylvania. Credit: Wikipedia/ CC BY-SA 3.0

A chemical used in hydraulic fracturing, commonly called fracking, has the potential to interfere with reproductive hormones in men, according to research accepted for presentation at ENDO 2020, the Endocrine Society's annual meeting, and publication in a special supplemental section of the *Journal of the Endocrine Society*.

The study found the chemical can block the effects of testosterone and other male sex hormones known as androgens.

"Possible adverse health outcomes associated with anti-androgen exposure are abnormal reproductive function, male infertility and disrupted testicular and prostate development," said lead researcher Phum Tachachartvanich, Ph.D., of the University of California, Davis in Davis, Calif.

Hydraulic fracturing technology has significantly

improved the yield of oil and natural gas extraction from unconventional sources. Fracking involves drilling and hydraulic extraction by injecting mixtures of industrial chemicals at [high pressure](#) into horizontal bore wells. Fracking chemicals contaminate the environment, including lake, groundwater and wastewater, and they are likely to affect everyone that is exposed to this group of chemicals, according to Tachachartvanich.

"The widespread use of fracking has led to concerns of potential negative impacts on both the environment and human health," Tachachartvanich said. "Everyone should be concerned about fracking as the wastewater generated has potential endocrine-disrupting effects, which can adversely affect the general population."

The researchers used a [computer model](#) to rank 60 [hydraulic fracturing](#) chemicals used in California, based on the predicted potential of each chemical to interfere with androgens' ability to bind with cells in the body. Based on the rankings, they used a cell model to verify the top five fracking chemicals that showed the highest potential to interfere with this process.

They then measured the androgen binding activity in the cell model for each [chemical](#). Of the five HF chemicals tested, only one—Genapol-X100—significantly inhibited androgen binding activity. "This suggests Genapol-X100 has endocrine-disrupting abilities," Tachachartvanich said.

Provided by The Endocrine Society

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