

Pyrethroid pesticide exposure appears to speed puberty in boys

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Environmental exposure to common pesticides may cause boys to reach sexual maturity earlier, researchers have found. They will present their study results Saturday at the Endocrine Society's 99th annual meeting in

Orlando, Fla.

Previous research shows that [early puberty](#) increases the risk of diseases in adulthood, for example, testicular cancer in men and breast cancer in women. Early puberty also can stunt growth and cause behavioral problems.

The class of pesticides studied, pyrethroids, accounts for more than 30 percent of global insecticide use, said Jing Liu, Ph.D., lead investigator and an associate professor at Zhejiang University in Hangzhou, China. These chemicals are known endocrine-disrupting chemicals that interfere with the body's hormones.

"We recognize pyrethroids as a new environmental contributor to the observed trend toward earlier [sexual maturity](#) in boys," Liu said.

Today, a boy's body matures into an adult's between the ages of 9 and 14 years on average, the Hormone Health Network reports. Experts believe that many factors, including environmental toxins, are responsible for the decreasing age at onset of puberty for both boys and girls.

Pyrethroids are used indoors and outdoors to kill mosquitoes and other insects, and are sprayed on crops. Humans likely receive most of their exposure to pyrethroids from food and residential use. Evidence of recent exposure to the chemical appears in human urine as a metabolite, or molecule, called 3-phenoxybenzoic acid (3-PBA).

In a study of 463 Chinese boys ages 9 to 16 years, Liu's research team found that a 10 percent increase in 3-PBA was associated with a 4 percent increase in the boys' levels of luteinizing hormone (LH) and follicle-stimulating [hormone](#) (FSH). Both these hormones spur production of testosterone in males.

Having an increased urinary level of 3-PBA raised the odds of a boy being at an advanced stage of genital development by 73 to 110 percent, Liu reported.

Because it is difficult to test the cause of [environmental risk factors](#) in humans, the researchers sought to identify in animals how pyrethroids alter the timing of puberty. After they exposed male mice to cypermethrin, a widely used pyrethroid insecticide, at the relevant levels that are present in humans, they observed an accelerated onset of [puberty](#) in the mice. Liu said they demonstrated that cypermethrin had a direct effect by inducing testosterone formation and interfering with intracellular processes that are critical to male sexual development.

"Given the growing use of pyrethroid insecticides, we must prudently assess these chemicals for their risks to children's health," Liu said.

Provided by The Endocrine Society

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