

Prenatal exposure to pesticide additive linked with childhood cough

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Children exposed in the womb to the widely used pesticide additive piperonyl butoxide (PBO) have heightened risk of noninfectious cough at ages 5 and 6, according to researchers at the Columbia Center for Children's Environmental Health (CCCEH) at the Mailman School of Public Health and of Columbia University Medical Center.

The findings, which appear in the August 31 online edition of the journal *Environment International*, support the premise that the children's respiratory system is susceptible to damage from toxic exposures during the prenatal period. A common symptom, childhood cough can disrupt normal daytime activities and interrupt sleep for both child and parent.

Piperonyl butoxide (PBO) is an organic compound used to bolster the effects of pyrethroid pesticides. Pyrethroids are the most commonly used pesticides for both professional pest control and non-professional residential use, according to a 2011 study by Mailman School researchers. [Exposure](#) to one pyrethroid, a variation of permethrin, was linked with increased risk for cough by age 5 in a 2009 study by Rachel Miller, MD. In the current study, Dr. Miller and colleagues sought to build on these findings by exploring the effects of subsequent exposure during childhood, looking specifically at the effects of PBO exposure.

Researchers looked at 224 mother-child pairs enrolled in the CCCEH [birth cohort](#) study of [environmental exposures](#), examining measures of PBO and pyrethroid in personal air monitors worn by the mothers during pregnancy. Air samples also were collected from the home over the

course of two weeks when children were between 5 and 6 years old. Questionnaires were used to evaluate respiratory outcomes.

Researchers found that children exposed to PBO during pregnancy had increased odds of reporting cough unrelated to cold or flu. Exposures to PBO during childhood were not a factor. There was no observed association between prenatal or [childhood](#) permethrin exposure and cough, something the researchers say may be explained by the fact that PBO is much easier to measure in [air samples](#) than permethrin. There was also no association with PBO or permethrin exposure and other respiratory outcomes like wheeze or asthma. While it is unclear whether the effect is due mainly to PBO itself or residential pyrethroids of which PBO is an indicator, it is important to remember, says Dr. Miller, that "these exposures may be a factor in a very common problem for children—[cough](#)."

Provided by Columbia University's Mailman School of Public Health

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