

## The disturbing airborne allergen in schools that may be exacerbating your kid's asthma

By Ariana Eunjung Cha, November 21, 2016

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If you have a kid diagnosed with asthma, it probably is not news to you that the environment in which children with the condition spend their time can play a major role in how well they are doing. As such, you may have ripped out all of the carpets in your home and banned pets. You may also obsessively wash dust-mite pillow covers and other bedding several times a week.

**But if you are like most Americans, you have little control over what your little one is exposed to during school hours — and that, according to new research, may be a big problem.**

**Asthma is the No. 1 chronic illness in children, affecting 1 out of every 10 youngsters, and that number is growing for reasons no one has been able to explain. There has been a lot of scientific research about allergens at home and how they may trigger symptoms, but there is surprisingly little about the threats at schools.**

In a rare school-based study published Monday in *JAMA Pediatrics*, researchers looked at 284 children with asthma in a city in the northeastern United States. The students, who were between ages 4 and 13 and enrolled in 37 public schools described as being in the “inner city,” were followed by doctors for one school year. The research team, led by Wanda Phipatanakul of Boston’s Children’s Hospital and Harvard Medical School, also took classroom and home dust samples from floors, as well as from desk and chair surfaces, and analyzed them for allergens.

Researchers found cat and dog allergens in common quantities. Dust-mite levels were lower, and cockroach and rat allergens were mostly undetectable. Interestingly, none of these airborne allergies appeared to be linked with worse asthma outcomes.

**The source of the only allergen of significance in the study was a surprise — mice, which showed up in 99.5 percent of the school samples. The concentration of the allergen was significantly higher than in homes. And the children with higher exposure to mouse allergen in schools had increased asthma symptoms and lower lung function after adjusting for variation in exposures at home.**

Previous studies in Germany and Sweden found a similar link between exposure at schools to cat and dog allergens, according to a review in the *Journal of Allergy and Clinical Immunology*. In the United States, a 2003 study in the *Annals of Allergy, Asthma & Immunology* found a link between asthma prevalence rates and levels of cockroach allergen in schools.

The mouse finding has a practical significance, according to the researchers in the latest study.

“A child in a classroom with a mouse allergen level at the 25th percentile exposure of our study will have an estimated 0.6 fewer days of asthma symptoms in a 2-week period compared with a child in a classroom with mouse allergen exposure at the 75th percentile,” they explained. This would translate to 61 days of asthma symptoms versus 73 days during the school year — or 12 fewer days.

Phipatanakul and her co-authors cautioned that generalizing the results to other areas may not be possible because there may be different allergens because of “differing climate and sociodemographic conditions.”

In a commentary piece accompanying the study, researchers Elizabeth C. Matsui and Meredith C. McCormack of the Johns Hopkins School of Medicine wrote that the results raise many important questions about children's health.

“Should school environments be tested for allergens?” they asked. “If so, how should the results be interpreted, given that there are no clear 'healthy' thresholds for allergens? Is it feasible to implement interventions to reduce allergen levels in schools, and how would such interventions be funded? These same questions can apply to indoor pollutants, which are also linked to asthma morbidity.”

Matsui and McCormack noted that the study did not account for dampness, mold, indoor pollution and outdoor pollution that may have affected the children's health. Yet they called the study a “first step” in research on the effects of children’s exposure to allergens in schools and said they hoped it would pave the way for future work on this issue.

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