

# Increased allergen levels in homes linked to asthma

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Results from a new national survey demonstrate that elevated allergen levels in the home are associated with asthma symptoms in allergic individuals. The study suggests that asthmatics that have allergies may alleviate symptoms by reducing allergen exposures inside their homes. The work was carried out by researchers at the National Institute of Environmental Health Sciences (NIEHS), the University of Iowa, Rho Inc., and the Constella Group. The team's findings may help millions of Americans who suffer from asthma.

“Indoor allergen exposures are of great importance in relation to asthma because most people spend a majority of their time indoors, especially at home,” said Darryl Zeldin, M.D., a Principal Investigator in the Laboratory of Respiratory Biology at NIEHS and senior author on the paper.

Asthma is one of the most common chronic ailments in the United States, affecting more than 22 million people. Asthma has been shown to be triggered by a wide range of substances called allergens.

The findings, published online and available in the March issue of the *Journal of Allergy & Clinical Immunology*, show that exposure to multiple indoor allergens was common in U.S. households with 52 percent having at least six detectable allergens and 46 percent having three or more allergens at increased levels. The indoor allergens studied included those from dog, cat, mouse, cockroach, dust mite, and the fungus *Alternaria*.

The researchers used data from the National Survey of Lead and Allergens in Housing (NSLAH) to examine factors that contribute to high allergen levels in homes and to determine whether elevated household allergen levels were associated with occupants' asthma status. The NSLAH, which was the first study to characterize how allergen exposures vary in homes at the national level, surveyed the homes of nearly 2500 individuals in 75 locations throughout the U.S. The survey was jointly funded by the NIEHS and the U.S. Department of Housing and Urban Development.

Several factors were found to contribute to the increased concentrations of allergens, including race, income, type of home, and sources of allergens, such as presence of pets and pests. The study also showed that homes with children were less likely to have high allergen levels. The authors noted that this finding may not be surprising since homes with children may be cleaned more frequently than homes without children. Regular household cleaning is a simple yet effective regimen that helps to reduce the overall exposure burden.

According to lead researcher Päivi Salo, Ph.D., of NIEHS, the study provides useful information to asthma patients. "Our results highlight the importance of reducing exposure to allergens as a fundamental part of asthma management," she said. "Although homes cannot be made allergen free, asthmatics that have allergies may need to do a better job in reducing allergen levels in their homes to improve asthma control."

This finding is the first to provide information on total allergen burden in U.S. homes and how it relates to asthma. "This study confirms that indoor allergens play a major role in asthma," Zeldin stated.

Salo and her co-authors, however, point out that more research is needed to understand the complex relationships between genetic and environmental factors that cause asthma, particularly the role that indoor

allergen exposure plays in the development of asthma. “Although reducing allergen levels in the home may not prevent individuals from developing asthma, reducing exposure levels is crucial for those whose asthma is allergic in nature.” Zeldin concluded.

Source: National Institute of Environmental Health Sciences

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