



Asthma, Pests, and Pesticides

Asthma

Asthma is a long-term, inflammatory disease of the lung airways. Symptoms of asthma include wheezing, coughing, tightness in the chest, difficulty breathing, and itchy neck, throat and ears.¹

Why Be Concerned?



Approximately 25 million Americans have asthma and it is the most common chronic childhood disease, afflicting 5.1 million children nationally.² A bad asthma attack can be fatal. In urban areas around the country, death rates from asthma are disproportionately high. In fact, Black children with asthma

experienced five times the rate of hospital emergency room visits as their white counterparts, signaling a serious health disparity with respect to asthma, the biggest cause of school absenteeism due to chronic illness.³

Asthma Triggers

Asthma attacks are usually caused by inflammation and tightening in the airways of the lungs. This is often caused by exposure to certain substances called triggers. Triggers are either allergens or irritants. Allergens are substances that cause an allergic reaction such as pollen, animal dander, or mold. Irritants can include pesticides, perfume, and cleaning products.

Repeated exposure to certain substances (such as pest allergens) can make people more likely to develop allergic reactions.

Kids living in urban environments have higher exposures to cockroach allergens which can contribute to asthma problems.^{4,5} Cockroaches shed skin scales, leave behind waste, and, when cockroaches are dead, their bodies turn into a dust – all things that can trigger an asthma attack.

To make matters worse, the pesticide sprays, bombs, and fumigants that are used to control roaches can also cause an attack.^{6,7} Rodents can trigger asthma as well. Both rats and mice shed dead skin cells, called dander, that can trigger attacks if someone with asthma breathes them in. Waste products that rodents leave behind can also cause an attack.

What is a pest? “Pests” are unwanted creatures that invade our homes. Most often this means rats, mice, and cockroaches. Once they’ve gotten inside, each of these pests can contribute to an asthma attack – in fact, research is going on to determine whether or not they cause asthma to develop.

Awareness of asthma triggers can help you take steps to reduce them, preventing asthma symptoms or attacks.

Pesticides and Human Health

Pesticides are substances designed to kill, control or repel pests, including insects, rodents, weeds, and molds. Pesticides are listed by the EPA as one of six chemical pollutants that may influence the induction and exacerbation of asthma symptoms.⁸ Pesticides do this by irritating the lungs as they are breathed in.





If used irresponsibly they can result in serious injury or even death, but even following label instructions doesn't guarantee safety. Many commonly-used pesticides have been linked to cancer, birth defects, reproductive disorders, and neurological, kidney and liver damage in laboratory animals. A growing body of evidence indicates that children are especially vulnerable.⁹ A recent review of studies concludes that even low levels of exposure to pesticides can affect young children's nervous system and brain development.¹⁰ Clearly, there's a need for an alternative for people with asthma – as well as everyone else!

What Can You Do?

Integrated Pest Management (IPM) is the best approach to controlling pests like cockroaches and rodents, because it reduces the amount of pests and the pesticides used to control it.

Integrated Pest Management: A Safe, Effective Alternative

Integrated Pest Management is a safe, effective, economical alternative to routine pesticide use. IPM emphasizes prevention and uses knowledge of the pest to identify nonchemical methods that work to control it. As a last step, less toxic pesticides can be used with the nonchemical methods to get a high level of control. Because IPM looks to control the root causes of pest problems, it works better over time than conventional pesticide heavy control.



IPM Methods Include:

MONITORING

Sticky traps or glue boards (traps with adhesives that are set out to catch pests), inspections, and

record keeping of pest sightings helps locate pest problems. The goal is to find out where pests are getting in and where they are nesting, then using that information to choose the best control method for the pest.

CONTROL METHODS

These methods are at the heart of an IPM program:

- Place steel wool or copper mesh in holes, cracks, or crevices, then caulk or spackle to seal it in. The goal is to prevent pests getting into areas, like where pipes come in through the wall.
- Reduce clutter – get rid of the things you don't need such as stacks of newspapers, magazines, etc. (favorite hiding places for pests).
- Store food in sealed containers to prevent pests from eating it, and use chip clips to prevent food crumbs from spilling.
- Keep dirty dishes in soapy water until they can be washed so that pests can't eat the scraps.
- Clean thoroughly – pay attention to the floor under the oven and refrigerator, where food crumbs may be collecting.

CHEMICAL CONTROLS: LESS TOXIC PESTICIDES

After using all the above methods, you may need to consider using a less toxic pesticide. Bait pesticide products for cockroaches, mice, and rats are less likely to trigger asthma than sprays or bombs. Check your local hardware store for baits that are in containers ("roach motels") or in a gel form to prevent people from coming into contact with them. For mice and rats, avoid chemicals and use snap traps instead.

Contact Us

For more information on IPM, visit ElevateNP.org/Pest-Management, or contact Ruth Kerzee at 773-269-4065.



Sources

1. U.S. EPA, Office of Research and Development's Asthma Research Strategy. September 2002
2. Centers for Disease Control and Prevention. (2020). 2019 National Health Interview Survey Data. U.S. Department of Health & Human Services. <https://www.cdc.gov/asthma/nhis/2019/data.htm>
3. Respiratory Health Association of Metropolitan Chicago. *Racial Disparities in Childhood Asthma in Chicago, 2016-2021*. May 2022.
4. Watcharoot Kanchongkittiphon, Mark J. Mendell, Jonathan M. Gaffin, Grace Wang, and Wanda Phipatanakul: Indoor Environmental Exposures and Exacerbation of Asthma: An Update to the 2000 Review by the Institute of Medicine. *Environmental Health Perspectives*. Jan. 2015; 123(1): 6-20.
5. Wang, J., Visness, C. M., Calatroni, A., Gergen, P. J., Mitchell, H. E. and Sampson, H. A. Effect of Environmental Allergen Sensitization On Asthma Morbidity in Inner-City Asthmatic Children. *Clinical & Experimental Allergy*, Volume 39, Issue 9, Pages 1381–1389. September 2009.
6. Gordon, T.: Amdur, M.O. Responses of the Respiratory System to Toxic Agents. *Casarett and Doull's Toxicology: The Basic Science of Poisons*, 4th ed.; Amdur, M.O., Doull, J., Klaassen, C.D., Eds.; Pergamon Press, Inc.: New York, 1991; pp 383-406.
7. Infante-Rivard, C., Weichenthal, S. Pesticides and Childhood Cancer: An Update of Zahm and Ward's 1998 Review. *Journal of Toxicology and Environmental Health, Part B*, Volume 10, Issue 1 & 2, pages 81-99. March 2007.
8. U.S. EPA 2022, Asthma Triggers: Gain Control. <https://www.epa.gov/asthma/asthma-triggers-gain-control#chemical>
9. Jianghong Liu, PhD, Erin Schelar, BSN. Pesticide Exposure and Child Neurodevelopment: Summary and Implications. *Workplace Health and Safety*. 2012; 60(5): 237-242.
10. Tarmure S, Alexescu TG, Orasan O, Negrean V, Sitar-Taut AV, Coste SC, Todea DA. Influence of pesticides on respiratory pathology – a literature review. *Ann Agric Environ Med*. 2020; 27(2): 194–200.