Environmental Asthma Triggers: 
*Current Science and Educational Tools*

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What We Do

Train professionals

Technical assistance to partners

Develop educational materials
Addressing all possible environmental asthma triggers is most effective in controlling asthma.

Dr. David Peden, UNC, 2010
NHLBI Asthma Guidelines, 2007
Indoor Asthma Triggers
Development of Asthma

Dust Mite

Cockroach

Secondhand Smoke
Indoor Asthma Triggers

- Dust Mites
- Cockroach and Pests
- Secondhand Smoke
- Unvented Gas Stoves
- Animal Dander
- Mold
Indoor Asthma Triggers

Wood Smoke  

Pollen

Chemical Irritants
Mold Study

North Carolina: 19 homes

• 20% of participants reported visible mold.
• 74% actually had mold measured from vacuum samples, finding high amounts of different types of mold from water damage.

United States: 176 homes

More mold detected!

- Vesper et al., 2007
Unvented Gas Stoves Study

150 Baltimore homes

20 point NO2 increase

- No2
- CO
- VOCs
- Formaldehyde

• 10% more days of coughing
• 15% more days of limited speech/wheezing

-Hansel, 2008
Humidifiers

“Use of humidifiers and evaporative (swamp) coolers is not generally recommended in homes of patients who have asthma and are sensitive to house-dust mites or mold.”

-NHLBI Guidelines, 2007
Indoor Trigger Solutions: *What Patients Can Do*
Dust Mites

• Use dust mite covers on pillows, mattress, and box springs.
• Keep humidity levels between 30-50% by using a humidity detector (~$15, purchased at hardware store or online).
• Avoid humidifiers

Cockroaches and Pests

• Block any entry points to your home.
• Remove sources of food and water for pests.
• Remove clutter and places for pests to hide.
• When necessary, use pesticide bait stations instead of sprays or bombs.

✓ Keep out
✓ Starve out
✓ Give no place to hide
Secondhand Smoke

- Quit smoking.
- Never smoke in the home or car.
- [www.smokefreehousingnc.com](http://www.smokefreehousingnc.com) provides steps to protect yourself from neighbors’ secondhand smoke.

Animal Dander

- Keep pets out of sleeping areas.
- Vacuum furniture with HEPA vacuum weekly.
- Bathe/groom pet’s coat regularly and outside the home.
- Consider finding the pet a new home.
Mold

• Find the source of moisture and fix it.
• Clean any visible mold with soap and water.
• Use a dehumidifier or air conditioning to keep humidity between 30-50%.
• Use an exhaust fan in the bathroom and kitchen vented to the outside.

Chemical Irritants

• Limit use and open windows to ventilate.
• Use low-toxic cleaning and personal care products.
• Avoid air fresheners and candles.
**Unvented Gas Stoves**

- Use the overhead fan above the stove when a burner is on.
- Be sure the vent goes to the outside, and open a window.
- Never use the stove to keep you warm or heat your house.

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**Wood Smoke**

- Burn only dry wood.
- Make sure chimneys are clean and working properly.
- Limit use of fireplace and open windows, if possible.
Outdoor Asthma Triggers
Outdoor Asthma Triggers

- Factory Pollution
- Auto and Truck Traffic
- Wood Smoke
- Mold
- Pollen
Living near a major highway and regular exposure to ozone, PM, and NOx can cause asthma and stunt lung growth.

-Gauderman et al., 2007
UNC COEC
Educational Materials
<1% of children and 5% of caregivers asked questions about environmental triggers

-Sleath et al., 2011
Do you do one-on-one education in a clinic or a home?

Asthma Trigger Kit

These things can make it hard to breathe.
Education Tools

Do you do home visits?

YES

• Training: Healthy Homes for Community Health Workers
• Asthma Trigger Kit
• Resource Guide for Referrals
Education Tools

Do you teach community workshops?

Train-the-Trainer Toolkit
- Power Point presentation
- Hands-on activities
- Evaluation materials

[Image of a presentation slide with the text: Pests, Food, Water, Shelter, and a woman standing next to it]
Fact Sheets

Asthma and Allergy Triggers

Over 1 million people in North Carolina have been diagnosed with asthma during their lifetimes.

Follow these steps to prevent or eliminate indoor and outdoor asthma and allergy triggers.

DUST AND DUST MITES
- Use a humidistat. Remove sheets when changing the home.
- Replace windows with Andersen screens; where possible, or regularly wipe down blinds to remove dust.
- Reduce dust often with a duster.
- Cover mattresses and pillows with dust mite-impermeable covers.
- Wash bedding, sheets, pillowcases, and curtains regularly.
- Avoid pet hair.

CHEMICAL IRRITANTS
- Avoid smoking in your home or a rental home.
- Keep household chemicals out of children's reach.
- Use ventilation, exhaust fans, and fume hoods when using chemicals.
- Use fragrance-free products.

OUTDOOR TRIGGERS
- Avoid being outdoors during peak pollen periods.
- Keep pets in the house when possible.
- Avoid areas with high levels of airborne allergens.

Indoor Air Quality
- Use air purifiers.
- Keep doors and windows closed.
- Use high-efficiency particulate air (HEPA) filters.
- Use natural ventilation.

Asthma and Allergy Triggers

Outdoor Air Pollution

Children and people with asthma should not play or to other outside activities on days when the air is hazardous to avoid aggravating asthma and allergies. Take these steps to protect yourself and others:

Check Air Quality Forecasts
These forecasts alert you to pollutants in the air that may make symptoms worse or trigger an asthma attack.

- Particulate matter pollution created by smoke, oil, soot, and other air pollutants.
- Ozone levels are highest from early afternoon to early evening (about 2 to 6 p.m.) on hot, sunny days.
- Nitrogen dioxide, sulfur dioxide, and nitrogen oxides are a mixture of gases and fine particles from burning trees and plants.

Check Pollen Counts
- Use air purifiers.
- Keep pets in the house.
- Avoid being outdoors during peak pollen periods.
- Use high-efficiency particulate air (HEPA) filters.
- Use natural ventilation.

Getting Rid of Pests

1. Keep Pests Out
   - Look for entry points in your home and seal all cracks and holes. Use caulk, copper mesh, and steel tape, door sweeps, etc.

2. Remove Food and Water
   - Check for leaking pipes and make necessary repairs.
   - Remove any food or waste materials from your home.
   - Clean dirty dishes by the end of the day, store food in sealed containers, and clean up any spills quickly.
   - Use a trash can with a tight lid and take the trash out often. Store trash and recycling away from the home.

3. Clean and Reduce Shelter
   - Clean all surfaces with soap and water to wash away any waste from pests.
   - Get rid of clutter and throw away unused cardboard.
   - Keep cupboards closed so you can see signs of pests.

4. Treat Problem Safely
   - Avoid using pest control sprays, foggers, and fog bombs when curing ants or pests.

Asthma and Allergy Triggers

Mold and Moisture

Molds are everywhere and can be found through the air inside and outside all of the time. When mold spores are present where there is moisture and food, they grow. Molds can cause allergy symptoms and trigger an asthma attack when breathed in.

What Does Mold Need to Grow?
Molds grow very easily and need only moisture and food to break down the source of moisture and food. Common places are Theta include: water, air conditioners, spaces, wainscoting, and parts of your home. The moisture sources include:

- Leaky pipes
- Leaky roof
- Leaky windows
- Humidity from outside and inside (shoveling, cooking)
- Splits
- Floods
- Paint
- Window air conditioning units
- Fixed sources include:
  - Paper products
  - Ceiling tiles
  - Drywall
  - Wall paper
  - Insulation
  - Molding
  - Fabric

Prevent: Keep it Dry Inside
- Prevent mold growth by controlling the source of moisture and daily life. Common places to consider include: water, air conditioners, spaces, wainscoting, and parts of your home.
- Keep the humidity of your home at 30-50%. If you can purchase a humidity control for about $50 at a hardware store or online to help you monitor.
- In damp places like the kitchen and bathroom, use an exhaust fan or open a window to control moisture.
- Wear damp clothes after cooking, washing machine, and laundry.

GREEN CLEANING

You can clean your entire house and save money with these basic household ingredients:
- White vinegar: An antiseptic that also kills germs and bacteria
- Baking soda: Eliminates fats and works as a gentle cleaning agent
- Borax: Eliminates dirt, removes dirt, and is a safe alternative to disulfur. Used with care around children and pets, as it can be toxic if swallowed
- Hydrogen peroxide (3% concentration): A natural bleach and stain remover
- Club soda (acid): A natural remover and polish
- Lemon juice: A natural bleaching agent, grease cleaver, and stain remover
- Liquid castile soap: An all-purpose cleaner, grease cleaver, and stain remover
Addressing all possible environmental asthma triggers is most effective in controlling asthma.

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NHLBI Asthma Guidelines, 2007