Asthma and Allergy Foundation of America

Environmental Control for Asthma

Part 2: Advanced Techniques for the Whole Home

Montana Asthma Control Program
August 2011

WELCOME

Host

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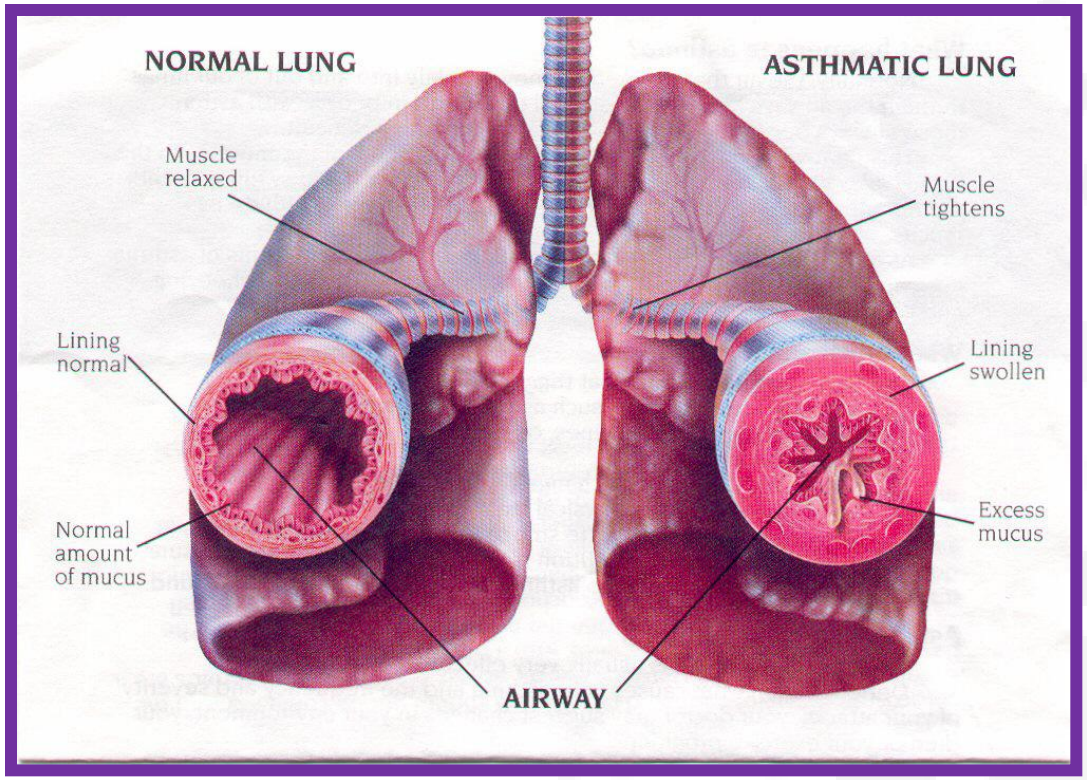
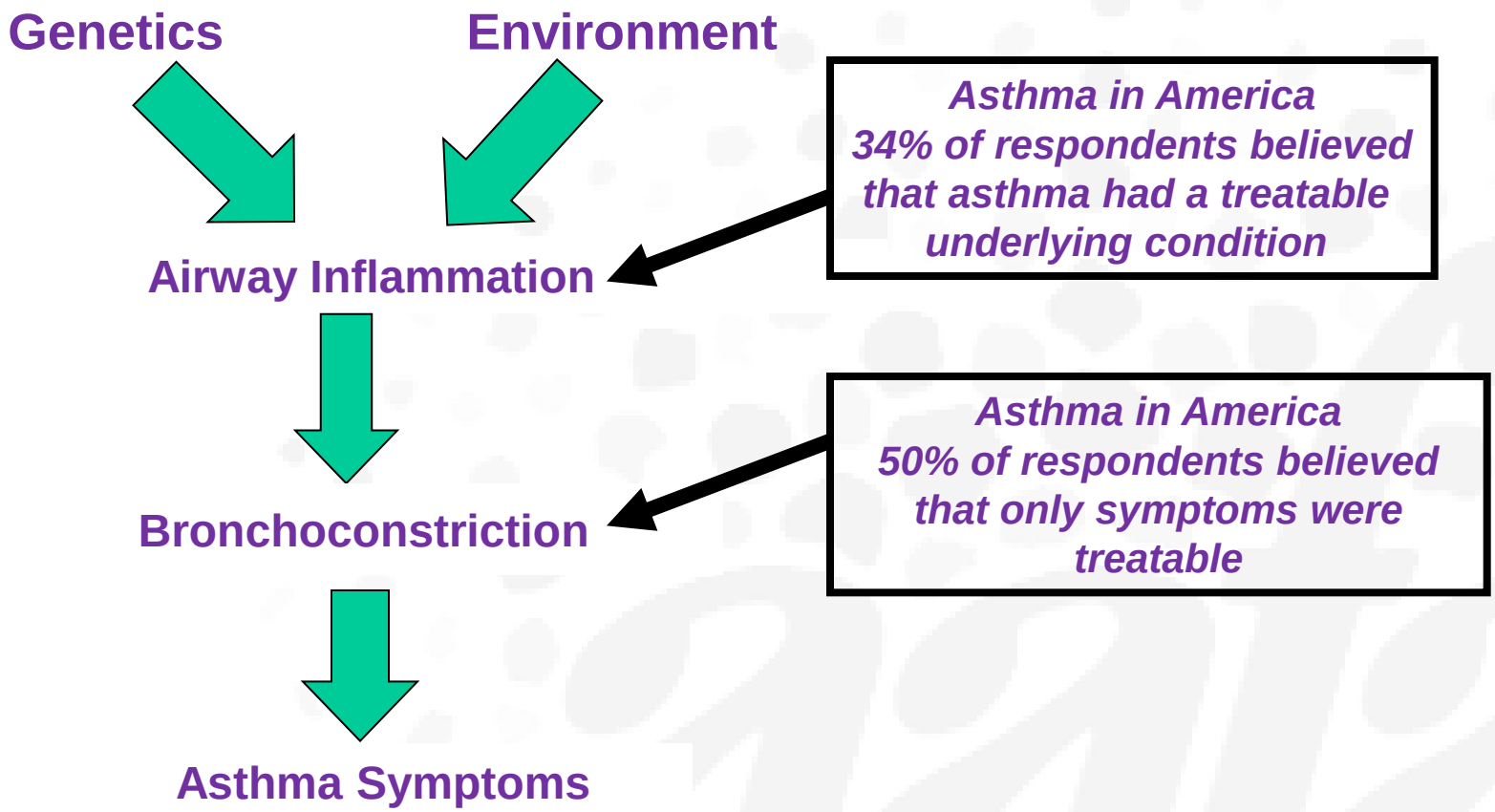
AGENDA

1. **Overview of Asthma and Allergic Disease**
   a. Asthma Overview
   b. Statistics Overview
2. **Allergen Avoidance and Environmental Control**
   a. Environmental Triggers
   b. Multifaceted Approach to Avoidance and Control
   c. Advanced Techniques for the Whole Home
   d. Need for 3rd Party Certification of Control Products
   e. Review of Resources
3. **Questions and Answers**

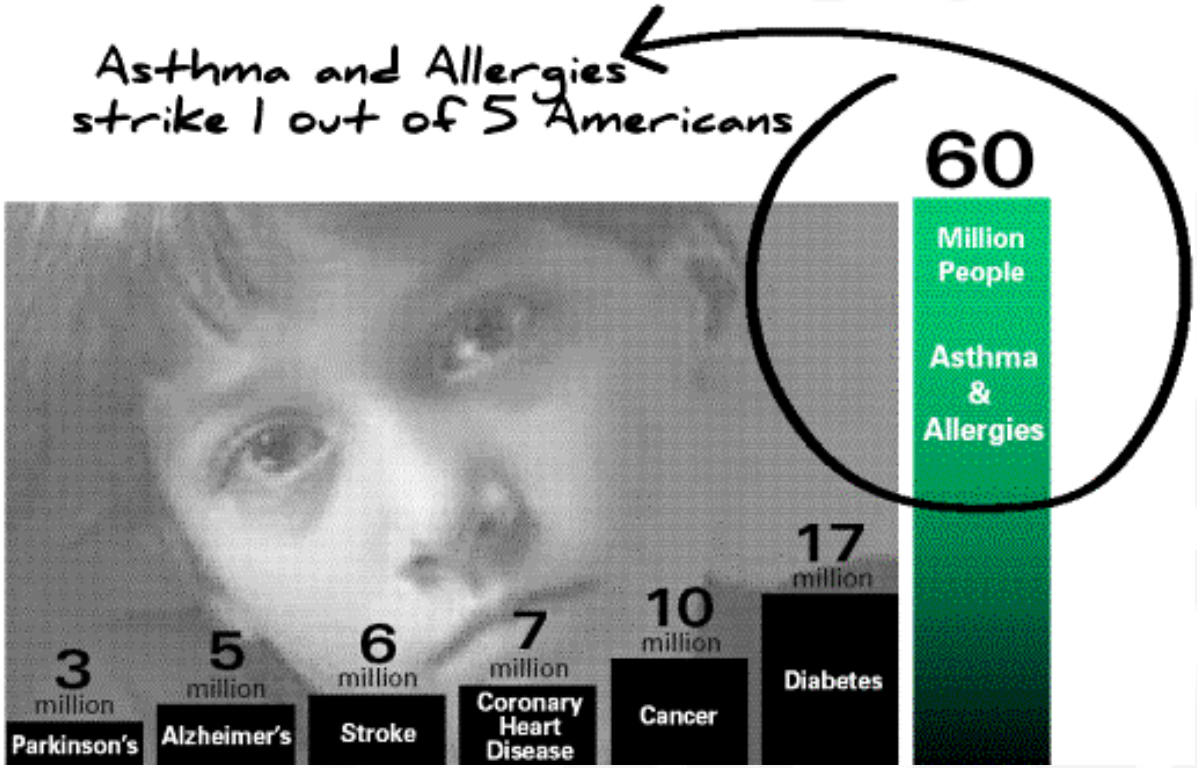
WHAT IS ASTHMA?



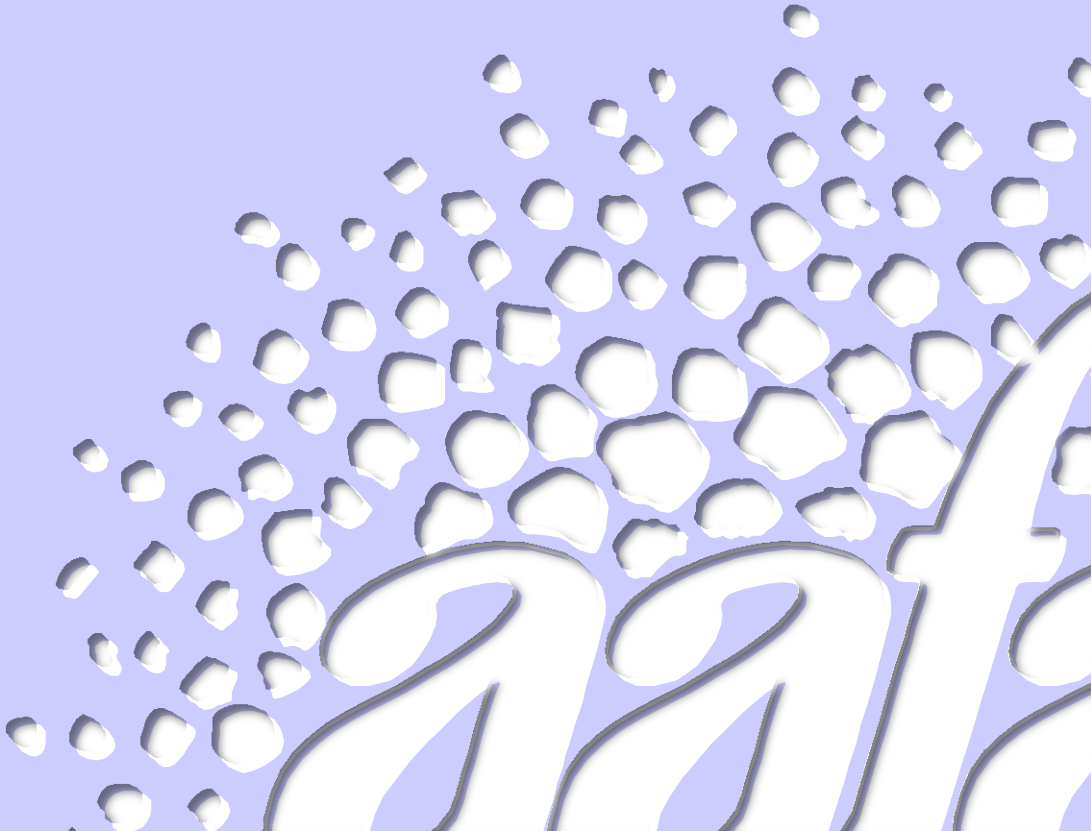
DEVELOPMENT OF ASTHMA



ASTHMA PREVALENCE



CONTROL OF ENVIRONMENTAL FACTORS



CONTROL OF ENVIRONMENTAL FACTORS

What is "Environmental Control" ?

- Exposure to **allergens** or **irritants**, known as "triggers", has been shown to increase asthma symptoms and precipitate asthma exacerbations**.**

- Eliminating or reducing the sources of triggers, and avoiding exposure to triggers is called "**Environmental Control**," and it is a cornerstone of modern asthma management.

CONTROL OF ENVIRONMENTAL FACTORS

- Allergens, unlike irritants, elicit an allergic reaction from the body, however exposure to either can increase the risk of asthma symptoms

Allergens

- Dust mites
- Pet dander
- Pollen
- Rodents
- Mold
- Natural oils
- Organics, etc.

Irritants

- Smoke
- Strong fumes
- Pollution
- Ozone
- Chemicals
- Petroleum, etc.
- **VOCs**

VOLATILE ORGANIC COMPOUNDS (VOCs)

- Gases from certain solids or liquids commonly found around the house
- Examples:
  - Aldehydes (cleaning products and manufactured wood)
  - Benzenes (lubricants and detergents)
  - Chlorobenzenes (pesticides)
  - Polychlorinated biphenyl (paint and sealants)
  - Toluene (lacquers and disinfectants)
  - Trichloroethane (aerosols)
  - Xylene (fuels and varnishes)

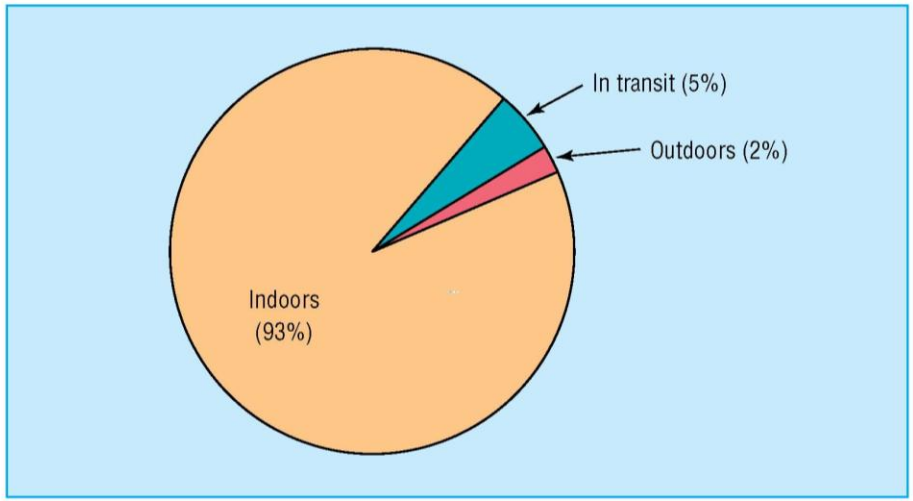
EPA Tools for Schools website
http://www.epa.gov/iaq/schools/

CONTROL OF INDOOR ENVIRONMENTAL FACTORS

- The most logical area to focus on is Indoors

Why?

Because we spend the majority of our time Indoors



Amount of time that most Americans spend indoors, outdoors, and in transit

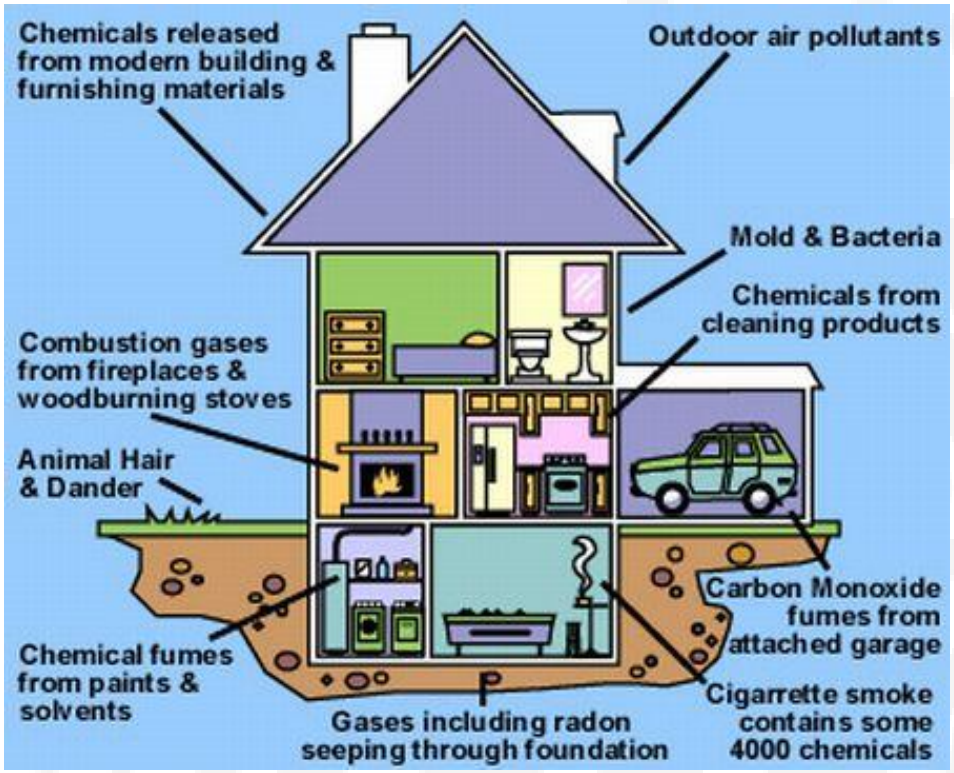
BMJ VOLUME 316 4 APRIL 1998

CONTROL OF INDOOR ENVIRONMENTAL FACTORS

- Floors, walls, window sills, toys, pets, bedding, carpets, curtains, furniture, basements, attics, air ducts, and garages can all be sources of asthma triggers

SOURCES OF INDOOR ALLERGENS AND IRRITANTS

- Concentrations of VOCs Indoors can be **10 times** higher than Outside



Creating an Environmental Control and Allergen Reduction Plan

Important to note:

Effective allergen avoidance requires a multifaceted, comprehensive approach; individual steps alone are generally ineffective

CONTROL OF ENVIRONMENTAL FACTORS

Creating an Environmental Control and Allergen Reduction Plan

Meeting current recommendations to decrease environmental allergens is labor and time intensive. These measures often require the asthma patient and his/her family to change habits and home surroundings.

Identifying patient-specific allergens through the use of allergy diaries or testing may be helpful.

BUILDING OR REMODELING A HOME

When building or remodeling a home, the dust debris and fumes can wreak havoc on your eyes, nose and skin especially if you have asthma. But the raw materials used to build a new home can also have an effect on people with asthma.

It is important to remember that

Environmentally Friendly ("Green") or Organic/Natural

does NOT necessarily mean

Asthma and Allergy Friendly

The "green" term is ambiguous.

Often, VOCs and other chemicals are used in the recycling and repurposing of bulk materials like particle board and plastics. Many organic/natural products such as oils and scents can still be triggers

BUILDING OR REMODELING A HOME

Sub-Floors & Wall Frames – Be aware of plywood or pressed wood wall paneling, particleboard, frames, fiberboard and insulation. Certain chemicals, such as urea, phenyls and formaldehyde emitted from these materials can irritate the skin and airways.

Windows & Doors – Most of the moisture in your home makes its way in through windows and doors. Condensation on windowpanes, poor weather-stripping along windowsills and doors, and infrequent cleaning of these areas can allow water to pool and collect, making it easy for mold and mildew to grow.

Wallboard – Use types of backer boards and wall coverings that are moisture- and mold- resistant, especially for bathroom and kitchen walls and ceilings. Whenever possible, avoid products, such as glass mesh cement backer boards, which generate unnecessary debris during handling and installation. Be cautious of using gypsum wallboard in wet areas. Gypsum disintegrates with continuous moisture and even treated gypsum is subject to moisture penetration and system failure.

BUILDING OR REMODELING A HOME (CONTINUED)

Flooring – Choose hard-surface flooring and avoid wall-to-wall carpeting. Carpet is a common home for dust mites, which can trigger an allergic reaction in many people. Carpet is also difficult to keep dry and persistent hidden moisture is a breeding ground for mold. Instead, opt for bare floors with small, washable area rugs, which are much easier to keep trigger-free. If the home already has wall-to-wall carpeting it should vacuum frequently with a certified vacuum cleaner and immediately clean up spills and other moisture.

Criteria that should be kept in mind when selecting flooring

- It has a low capacity for retention of allergen.
- Allergen that does accumulate can be removed by the recommended cleaning technique.
- Recommended cleaning of the flooring will not result in exposure of the operator to airborne allergen.
- Installation of flooring does not result in elevated levels of chemicals such as:
  - Formaldehyde
  - Acetaldehyde
  - Other VOCs.

BUILDING OR REMODELING A HOME (CONTINUED)

Ventilation – In addition to air conditioning and air filtration, house ventilation is important to ensure that moisture from certain spaces – such as bathrooms, laundry room, kitchen – is minimized. In addition, ventilating basements, garages and attics, where solvents, chemicals and fuels are often stored, is an important step in keeping those types of fumes from getting into your living spaces. Make sure that all ventilation carries the air completely outside, not just to the attic, basement or garage.

BUILDING OR REMODELING A HOME (CONTINUED)

Humidity Control – Keep household relative humidity (RH) lower than 50%. Higher humidity levels make dust mite proliferation much easier and high humidity creates a welcome environment for mold and mildew. Room de-humidifiers and whole-house humidity control system are available.

Waterproofing – Keep moisture from getting into the home. Wet or leaky pipes, windows, doors, basements, walls, etc. can allow water to collect making it easy for mold and mildew to grow.

Storage – Do not keep solvents, chemicals, paints, fuels and other such compounds in your garage, attic or basement. If possible, keep these types of items in sheds or other buildings that are exterior to your house. If you don't have off-site storage options, reconsider or at least reduce your need to store such items and make sure they are kept in well-insulated, temperature-controlled spaces.

BUILDING OR REMODELING A HOME (CONTINUED)

Landscaping – Since some of the most common indoor allergens are pollens from the outdoors, the plantings near your house do matter. You can't change Mother Nature, but you can work with her to manage immediate landscaping.

- Many species of wind-pollinated trees and grass are highly allergenic, so informed choices about shrubbery and plantings should be made.
- Avoid planting oak, birch and maple trees, and make sure that you plant the female (i.e. the non-pollinating) forms of plant species to keep pollen from easily getting into your home.

BUILDING OR REMODELING A HOME (CONTINUED)

Other special considerations can be taken when remodeling or refinishing parts of your home to protect your family from potential asthma triggers.

- If you are doing the work yourself, always remember to wear a facemask approved by the National Institute of Occupational Safety and Health (NIOSH).
- Hang plastic sheeting over doorways leading to the area where work is being done. When you remove the sheeting, don't carry it through the house. Rather, make a chute in an open window to push out debris into a trash can so fine particles will not re-enter the room.
- Cover yourself with protective clothing, including a mask, goggles, and hairnet or cap. Put these things on as soon as you enter the work area and take them off before you leave the room being remodeled.
- Leave windows in the work area open after the project is finished. Air-out the area for at least three weeks after the work has been completed. Set fans in windows and exhaust indoor air to the outside.
- Stay out of your home during days of maximal dust/fume exposure and, if possible, until fumes have diminished or disappeared completely.

OUTFITTING A HOME

When outfitting or decorating a home, there are sensitive choices you can make if you have asthma. Make sure to look products have been laboratory tested and determined to be more suitable types of products for people with asthma.

Selecting the right kinds of items to put into a house to help reduce your exposure to asthma triggers can help improve the quality of indoor air, and overall quality of life.

The following items should be considered when outfitting a home:

OUTFITTING A HOME (CONTINUED)

Appliances – Make sure to avoid unvented stoves of any kind (kerosene, wood or coal-burning) and gas space heaters. When installing large appliances, make surer proper ventilation minimizes back drafting.

Finishes & Coatings – Paints, stains, waxes, floor coatings, adhesives for certain flooring, wallpaper or carpeting, floor sealants, and other substances can bring VOCs and gases into your home environment that may trigger asthma symptoms. Look for low-VOC and low-off-gassing products to keep irritants low.

Criteria that should be kept in mind when selecting paint

- Has been scientifically tested for chemicals such as
  - Formaldehyde
  - Acetaldehyde
  - Other VOCs.
- Has been reviewed for content of sensitizing or allergenic chemicals.
- Meets performance standards such as
  - Cleanability
  - Scrubbability
  - Drying Time
  - Adhesion.

OUTFITTING A HOME (CONTINUED)

Window Treatments – Blinds and shades are generally more preferable for asthma patients, than heavy drapes and curtains. Large fabric window treatments easily trap dust, dirt and allergens and they are not easily – or frequently – cleaned. Wood blinds and simple shades do not promote as much allergen accumulation and can be more easily wiped and managed from week to week.

Room Air Filters – In addition to whole-house HVAC systems, portable room air filters can be helpful in some cases to remove allergens and irritants from the air. Not all devices are created equal, however, so first be sure to find portable air cleaners that have HEPA filters. Remember to clean or replace the HEPA filters according to the manufacturer's instructions to keep it in working condition.

Criteria that should be kept in mind when selecting an air cleaner

- It removes a specified and significant amount of allergen from the air.
- Allergen that is removed from the air is retained within the air cleaner.
- The removal of the allergen is as a result of the action of the air cleaner and the allergen is not simply re-distributed.
- It does not produce ozone.

OUTFITTING A HOME (CONTINUED)

Mattress & Pillow Encasements – Millions of dust mites live in your mattresses and pillows, so use dust-mite-resistant mattress encasements to keep new mites from getting into the mattress/pillows, and others from crawling up into your sleeping space. Also, replace mattresses every ten years and replace pillows every five years.

Pillows – Since some old or poorly constructed pillows can harbor dust mites, look for high-quality pillows that have mite barrier properties. Also make sure pillows can stand up to frequent washing so you can continue to keep dust mites at bay.

Criteria that should be kept in mind when selecting bedding

- It is a barrier to allergen.
- Allergen that accumulates can be removed by washing.
- It has been tested for sensitizing or allergenic chemicals such as:
  - Formaldehyde
  - Toluene
  - Volatile organic compounds
  - Pesticides
  - Azo Dyes/Allergenic dyestuffs*
- It is manufactured from a breathable fabric.
- The quality of construction and materials used allows it to withstand the recommended washing frequency.

OUTFITTING A HOME (CONTINUED)

Furniture - Avoid if possible furniture and shelving made from chipboard or manufactured wood as these may contain formaldehyde and other VOCs, which may give off a colorless gas that can irritate the airways. Keep soft surfaces dry and clean, and keep pets off furniture.

Washing Machines – Dust mites and pet dander from cats and dogs are among the most common allergens at home, and all of these can be found in your bed. Millions of mites and their eggs live in your pillows and linens and they can only be killed at high water temperatures. Washing machines must be able to reach a 130-degree hot water temperature to kill mites and eggs, and machines must also be able to remove most of the dead mites after they are killed. Make sure to ask manufacturers if their appliances can do this.

Criteria that should be kept in mind when selecting a washing machine

- It reduces the total allergen burden of contaminated items
- It induces mite mortality through the attainment of elevated temperatures
- It achieves target temperatures for a set period of time
- It does not produce ozone

OUTFITTING A HOME (CONTINUED)

Plush Toys – Stuffed animals and other plush products are very similar to pillows. But more importantly, stuffed animals are carried around the house and taken to bed by children so keeping them allergen and irritant free is very important. Look for plush that contains no allergenic materials or irritating chemicals, dyes or preservatives. Also, make sure to buy toys that can withstand frequent washing.

Criteria that should be kept in mind when selecting toys

- Allergen that accumulates can be removed by washing.
- The quality of construction, and materials used, allows it to withstand the recommended washing frequency.
- It has been tested for sensitizing or allergenic chemicals such as
  - Formaldehyde
  - Toluene
  - Volatile organic compounds
  - Pesticides
  - Azo Dyes/Allergenic dyestuffs*
- Any dyes on the fabric remain colourfast.

OUTFITTING A HOME (CONTINUED)

Pets – Cat and dog dander can cause serious asthma symptoms for many people, but so can bird down and other types of pets. Pets also carry many outdoor allergens inside on their coats. Make sure to keep pets in well-ventilated rooms. Never let your pet sleep on the beds or furniture: dog and cat dander is a primary food source for dust mites. Make sure to wipe down pets after long walks and wash pet bedding weekly.

Indoor Plants – The most allergenic pollen comes from wind-pollinating plants, and some indoor plant pollen can be problematic. Speak with garden experts at the local plant story to find the best plants for indoors. But planters, soil, tree trunks and old leaves can be hiding places for indoor mold. Keep potting soil moist, but not soaked, wipe down plant leaves inside regularly with a dry cloth, and check for mold growth on the trunks of decorative indoor trees and wipe it off as soon as you find it.

CLEANING AND MAINTAINING A HOME

After new construction, remodeling or renovations, it's a good idea to have your home professionally cleaned to remove any remaining dust, debris, fumes or other triggers before you move in. But when cleaning and maintaining your home on your own, consider the following tips to help you keep triggers at bay.

CLEANING AND MAINTAINING A HOME (CONTINUED)

Dusting

- Use slightly moist cloths or special dry cloths to trap and lock dirt on hard surfaces.
- Avoid a feather duster as it will simply spread dust and allergens, rather than remove them.

Cleaning Products – Cleaning sprays can be helpful or harmful depending on their ingredients and uses. Make sure to find products with little to no chemical smells, scents or odors, no VOC's or gases and other potential irritants.

Criteria that should be kept in mind when selecting cleaning products

- It can remove allergen from hard surfaces to a significant level.
- The removal of allergen does not result in aerosolisation.
- It is of the lowest possible toxicity according to a literature review.
- Airborne chemicals that are tested for include
  - Formaldehyde
  - Acetaldehyde
  - Other VOCs.
- There is an extremely limited and specified allowable increase of chemical and allergen content in the breathing zone.
- Particle concentration in the air remains below limit levels.

CLEANING AND MAINTAINING A HOME (CONTINUED)

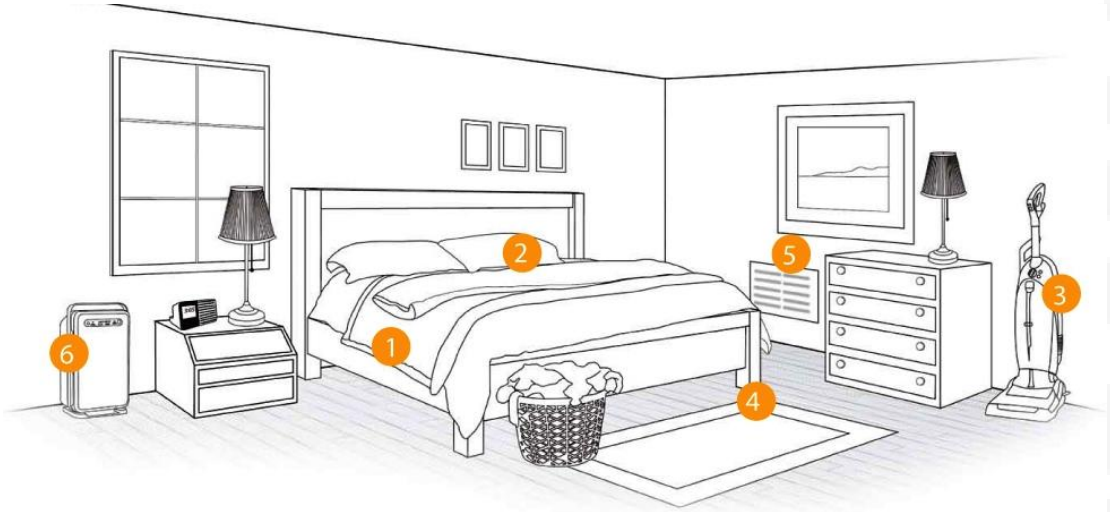
Pesticides – Although rodents and insects are common household asthma triggers, using some pesticides to kill them isn't good either. Talk to an exterminator about traps and solvents that are more suitable for people with asthma.

Vacuum Cleaners – Vacuum cleaners can be useful tools in managing indoor asthma triggers, but make sure you are not using a machine that leaks more allergens and irritants than it picks up. Make sure the vacuum has a HEPA filter and that it has tight seams and seals so particles don't leak out while vacuuming. Also, make sure the vacuum requires minimal exposure during canister emptying whether it's a bag or bagless model.

Criteria that should be kept in mind when selecting a vacuum cleaner

- It removes a specified and significant amount of allergen from carpeting.
- Allergen that is removed is retained within the vacuum cleaner.
- The removal of the allergen is as a result of the action of the vacuum cleaner and the allergen is not simply re-distributed.
- The vacuum cleaner does not experience a reduction in allergen pick-up in the presence of a partly filled bag (or receptacle).
- The operator is not excessively exposed to allergen upon bag (or receptacle).

The Bedroom



In the Bedroom**:**

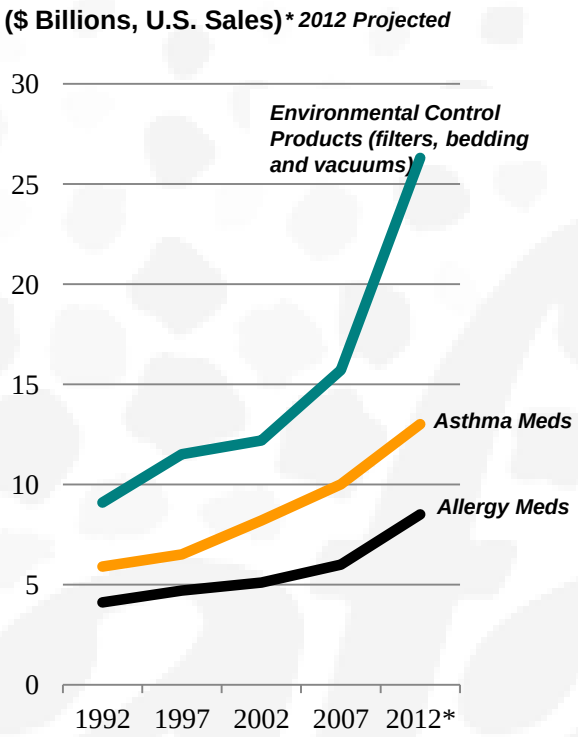
1. Use certified allergen barrier bedding, Wash sheets once a week in 130º+ water
2. Replace mattresses every 10 years, pillows every 2 years
3. Vacuum floors and mattresses weekly
4. Never allow moist clothing to pile up, Keep pet sleeping areas out of the bedroom
5. Keep windows closed and use an air conditioner with replaceable filter
6. Use a certified air cleaner with HEPA filtration

ASTHMA & ALLERGY MARKETPLACE

- **$10 Billion Annually on Asthma Meds**
- **$6 Billion Annually on Allergy Meds**
- **Plus "Environmental Control" products:**

  ✓ ***Air filters***
  ✓ ***Bedding products***
  ✓ ***Vacuum cleaners***
  ✓ ***And others...***

- **More "allergy benefit" claims than ever**



SOURCE: U.S. Census Bureau Economic Census; The Cost of Asthma and Allergies in America - National Pharmaceutical Council (NPC) and AAFA Joint Report; BCC Research; Packaged Facts, Inc.; Mintel International Group

The **asthma & allergy friendly®** Certification Program

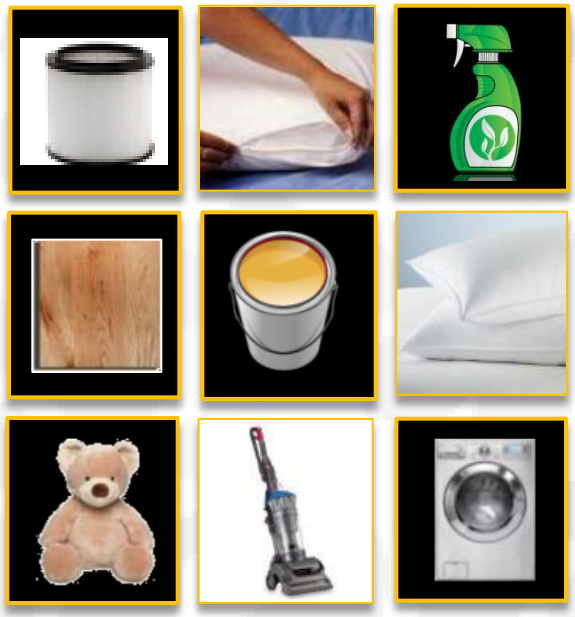
Experts agree that allergy and asthma triggers can be found throughout the home all year long.

They recommend having a good plan for allergen avoidance, and using the right kinds of tools to remove and reduce exposure to indoor triggers.

The Asthma and Allergy Foundation of America (AAFA) has created a new resource for people who are concerned about allergens in the home. AAFA has partnered with the international research and testing organization Allergy Standards Limited (ASL) to test and certify household products asthma & allergy friendly® .

CERTIFICATION CATEGORIES

- HEPA Air Filters
- Bedding Barriers, Encasings
- Cleaning Products
- Flooring
- Indoor Coatings, Paints
- Pillows, Comforters, Encasements
- Plush Toys
- Vacuum Cleaners
- Washing Machines
- Others in Development:
    - *Dehumidifiers*
    - *Furniture*



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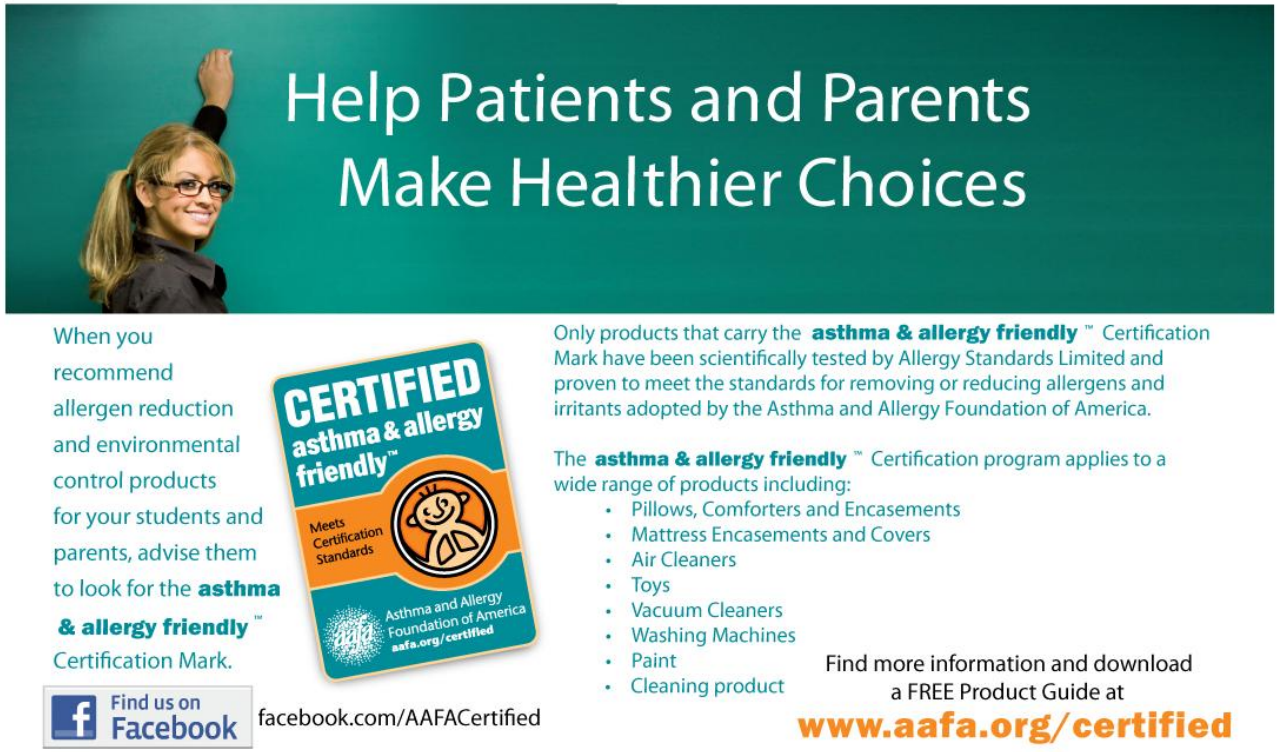

The asthma & allergy friendly® Certification Program

All of the tips from today are available to download online at

www.aafa.org/certified

QUESTION AND ANSWERS

THANK YOU!

for life without limits