Allergy & Asthma NETWORK

INDOOR AIRepair™

at Home, School and Play

5th Edition

aanma.org

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Our Mission: Founded in 1985, Allergy & Asthma Network is the leading nonprofit patient- centered organization dedicated to eliminating needless death and suffering due to asthma, allergies and related conditions through education, advocacy, outreach and research.

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Indoor AIRepair™
at Home, School and Play

Every breath we take contains millions of particles of dust, allergens, chemicals, pollutants and other tiny molecules. And while pollen and outdoor air pollution get most of the attention, Environmental Protection Agency (EPA) studies show that pollutant levels inside homes and buildings are two to five times higher than outside!

When you have asthma and allergies, that puts clean indoor air at the top of your must-have list.

Welcome to Indoor AIRepair at Home, School and Play, a family-friendly magazine developed by Allergy & Asthma Network.

Inside:

Asthma – What's it all about?

Take a **Deep Cleansing Breath**

Breathe in. Oxygen just passed through your nose, sinuses and throat. It branched into a system of smaller and smaller air tubes in your lungs, then entered your blood through tiny air sacs – billions of them! Circulating red blood cells picked up the oxygen and carried it to your brain, heart, kidneys, muscles and skin – every organ of your body.

Now breathe out. Used oxygen, which has become carbon dioxide, just left your blood, reentered those air sacs and traveled back through your airways into the room where you sit.

That breath contained more than just oxygen – mixed in were 25 million tiny pieces of dust, allergens, irritants and other air pollutants. If you could see these tiny molecules floating in the air, the air would be so thick with them they would hide your hand. So where did they go when you inhaled them?

Many stuck to the hairs inside your nose and sinuses. Others got trapped in mucus inside your airways. Each time you swallow, cough, sneeze or blow your nose you get rid of a few million. It's nature's filter system.

But for people with asthma, some inhaled particles go too far. As they hit the airways, they signal the body to make more mucus and release fluids. Breathing tubes and nasal passages swell and clog. Muscles that usually keep the airways open begin to twitch and squeeze, trying to make room for the air.

This is what some people call an asthma attack or episode. In the early stages, aside from a slight cough or sniffle, the person's breathing may look normal. But within minutes or hours, the picture changes, as used air gets trapped inside the air sacs and fresh air can't get in.

Asthma Symptoms

Signs that an asthma episode is underway and needs treatment:

- **coughing** – with or without throat clearing, sniffling. The cough may come every few minutes or within seconds.
- **wheezing** – this whistling sound can sometimes be heard as the person breathes out. Wheezing is a sign the asthma episode is becoming dangerous. However, not all people with asthma wheeze during an asthma episode. Others may always sound wheezy – not a good thing.
- **breathing** – becomes rapid and difficult.
- **talking** – may be difficult, but the person with asthma will usually use full sentences when symptoms first show up. As the episode gets worse, he or she will use fewer and fewer words.
- **energy level** – may decrease slowly or suddenly. If the person has been running, he may stop, lean forward and place his hands on his knees while trying to catch his breath.

Each person responds to asthma differently and may display any or all of these symptoms during an asthma episode.

Steps to take if a person shows the above symptoms:

- **take the person away from any obvious irritants** that are making it difficult to breathe (such as animals, smoke or chemical smells).
- use the prescribed inhaled **bronchodilator** immediately. This medication relaxes twitchy airways so the patient can breathe more easily.
- help the patient **drink water** to keep airways hydrated.
- allow him or her to **rest** long enough to recover.

It is important for the patient to use the prescribed bronchodilator (albuterol or levalbuterol) at the first sign of symptoms. Most often, people will recover quickly as the medication takes effect. However, the longer the symptoms continue without medication, the more dangerous the episode becomes.

Signs the person needs **emergency medical assistance:**

- **breathing doesn't become easier** within 5 minutes after inhaling the bronchodilator medication. The skin around the person's neck, collarbone and ribs may appear to suck in with each breath or the stomach may contract.
- **skin color** – may become pale or dusky. Lips may lose color or fingernails may look slightly blue. Dark circles may form around the eyes.
- **talking** – the person may become very agitated, talking in single words only.
- **wheezing** – is louder and longer. Sometimes, wheezing may disappear altogether, if the airways are so clogged with mucus that airflow is not strong enough to produce wheezes.

Steps to take if you notice any **one** of these symptoms:

- **call 911** for emergency assistance
- **call the parents, if the patient is a child**

Allergy & Asthma NETWORK

INDOOR AIRepair™ AT HOME

Helping Others Breathe Easier

Get ready to roll up your sleeves and pinch the dust mask tight on your face because we're going in – into your home, that is – hunting for airborne invaders that can make you sneeze, wheeze, itch and drip!

That's right – Allergy & Asthma Network's Indoor AIRepair™ guide will help you find and remove allergens and irritants that can trigger asthma, allergies and other health conditions. Every home has them, whether tent, mansion or anything in between, but we don't always recognize them.

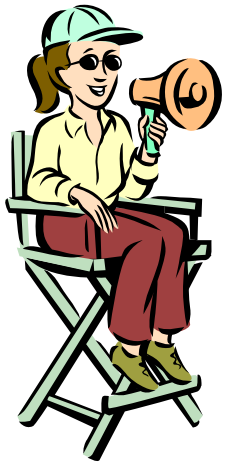
The point is, even if you think the air inside your home is clean, it may not be as healthy as you'd like. So use this Indoor AIRepair guide as a starting point. Shine your flashlight in every nook and cranny, searching for the clues we list room-by-room, then fill in your Checklist and use our AIRepair tips to clean things up. Need outside help? Consult the Friends and Neighbors resource list and don't despair! As intimidating as the process can seem, there's always help.

Visit Allergy & Asthma Network's website, *www.aanma.org*, to find additional resources and help and to join our network of families, care-givers, consumer advocates, and healthcare professionals.

Share your AIRepair stories and tips -- write to *editor@aanma.org* or Allergy & Asthma Network, 8229 Boone Blvd., Suite 260, Vienna, VA 22182.

Join us on *Facebook.com/aanma* or follow us on *twitter.com/aanma*

Your opinions are important!
Let's stay in touch!



Calling All **Neat Freaks** and **Messies**

Your home is your castle, be it an apartment, mobile home, single-family dwelling or townhouse in the bustling city, suburbs or rural countryside. And whether you consider yourself a neat freak or a creatively cluttered person, if you or someone in your family has asthma or allergies, the air inside your home may be making you sick.

Americans spend nearly 90 percent of our time inside – and often take indoor air quality for granted. But Environmental Protection Agency (EPA) studies show air pollutant levels may be two to five times higher indoors than outdoors!

If we could color the tiny air specks and chemicals we breathe each day, we'd be amazed at all the particles that constantly bombard our airways. Allergens such as animal dander, dust mites, cockroaches and mold; irritants such as smoke, chemical odors and dust; and biological pollutants such as viruses and bacteria swirl in, often causing headaches, stuffy nose, tickly throat, nagging cough, wheezing, shortness of breath, itchy eyes and more. And while medications can sometimes relieve these symptoms, the best way to prevent them is to remove the offending elements from our home, school and play environments.

Asthma and allergies are the most common health conditions linked with indoor pollutants. Others include rhinitis, chronic sinusitis, eczema, skin rashes, fungal infections, headaches and eye irritations.

How healthy is the air inside your home? Let's find out. Grab a dust mask, a pair of gloves, a flashlight, a pencil and this Indoor AIRepair at Home guide. Start at the kitchen sink (or any other convenient point in your home) and take the Room-by-Room tour to look for indoor allergens, irritants and pollutants. Record your findings on the handy Checklist on page 18.

Tell Allergy & Asthma Network how your self-tour went, what you did and the results you expect. ***editor@aanma.org***

Find it **Fix** it

How good is your home's indoor air quality?
Even the cleanest homes have room for improvement.
Take this quick quiz – the answers may surprise you!

FIND IT?			FIX IT!		
Friends and/or family use lighted tobacco products in my home.	Yes ☐	No ☐	My family and I have taken the EPA Smoke-Free Home Pledge.	Yes ☐	No ☐
It has been more than one month since I cleaned or replaced the air filter on our heating/cooling unit.	Yes ☐	No ☐	I've marked the calendar to check the filters once a month.	Yes ☐	No ☐
We use bleach indoors and other scented cleaners in our home.	Yes ☐	No ☐	We use only unscented or nontoxic cleaning products.	Yes ☐	No ☐
My shower enclosure seems impossible to keep free from mold.	Yes ☐	No ☐	I've reminded my family members to run the exhaust fan during and after their showers, and I'm now using a mildew-free shower curtain.	Yes ☐	No ☐
I often wake up with an itchy nose and eyes.	Yes ☐	No ☐	I've put dust-mite-proof covers on my mattress, box springs and pillows.	Yes ☐	No ☐

Indoor AIRepair **Room-by-Room**

Getting Started

Like a detective, you will be looking and sniffing for clues pointing to indoor allergens, irritants and pollutants. Some things to look for:

- Pets
- Tobacco smoke
- Odors
- Accumulated house dust
- Cockroaches
- Rodent droppings
- Mold
- Pollen
- Leaky pipes
- Cleaning products

Start your investigation in the room where symptoms happen most often or where you know a problem exists. For example, if your child coughs at night or you are congested every morning when you wake up, tackle the bedrooms first. Your problem could be dust mites, feather pillows or mold.

But don't stop there – continue on through each room of the house, spreading the hunt over several days, if necessary. Tackle one project or room one day, week or month at a time. And do yourself a favor: Give up the impossible dream of a germ-free, sterile home. You'll wear yourself out and drive your family crazy if you try to create it.

KITCHEN: SINK/CABINET

Common allergens and irritants: Mold, cockroaches, rodent droppings, cleaning supplies

Clues that there may be an indoor air problem:

- Water puddles or leaks around or near the faucet or hardware
- Loose or missing grout where the sink meets the countertop
- Black or brown mold on the backsplash or countertop or around the drain
- Dirty dishes
- Scum or discoloration under the dish drain mat
- Odors coming from the garbage disposal
- Damp or wet plumbing pipes or flooring under sink
- Musty or damp smell inside cabinet
- Black, brown or rust-colored areas on back wall, pipes or flooring under sink
- Gaps between pipes and wallboard
- Warped or rotting wallboard or flooring
- Black or brown rodent droppings (about the size of rice)
- Dust clumps containing insect parts (cockroach nests)
- Silverfish
- Open or overflowing trash bin
- Pet food, bird seed
- Cleaning products, particularly those containing perfumes or other strong smells

AIRepair:

- Repair leaking faucets (a simple "o" ring or washer may do the trick) and pipes to discourage mold growth, rodents and other pests.
- Wash dishes immediately after use; dry and replace in cupboard.
- Place thin lemon slices in the garbage disposal and turn it on while running cold water into the sink to keep it smelling fresh and clean.
- Limit clutter under the sink; wipe the area clean monthly to discourage pests and mold growth.
- Never store wet sponges or dishrags under the sink.
- Stuff steel wool in gaps left around plumbing pipes to prevent rodents from entering the kitchen from behind the wall.
- Use nontoxic, childproof insect and rodent traps or baits to reduce pests.
- Use a lid on your trash bin. Empty trash daily. Clean the inside and outside of trash bin weekly.
- Store pet food and bird seed in airtight containers. Wash and put away pet food dishes each night.
- Replace odor-masking, fragranced and expensive cleaners with nontoxic, fragrance-free and inexpensive alternatives using ingredients you probably already have in your kitchen! (page 11)

Allergies at a Glance

- Allergies are the 6th leading cause of chronic disease in the U.S. and each year more than 50 million Americans experience symptoms of allergic diseases, including rhinitis, sinusitis, dermatitis, asthma, and food allergy.[1]

- Allergic rhinitis, often called hay fever, causes symptoms such as itchy eyes, nose, throat or ears; watery eyes; runny nose and congestion; wheezing; sneezing; headache; and fatigue.

- Perennial (year-round) allergic rhinitis is generally caused by sensitivity to indoor allergens such as house dust mites, animal dander, cockroaches and/or mold spores. Seasonal allergic rhinitis occurs in spring, summer and/or early fall, usually caused by tree, grass or weed pollens or airborne mold spores.[2]

- Allergic asthma is the most common form of asthma. Indoor environmental factors that can trigger symptoms include dust mites, molds, cockroaches, pet dander, and secondhand smoke.[3]

- Some allergies can trigger anaphylaxis, a life-threatening reaction that can cause swelling of the throat and/or tongue and a severe drop in blood pressure.

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1. The Allergy Report, American Academy of Allergy, Asthma & Immunology, 2000
2. Allergy Facts, American College of Allergy, Asthma & Immunology *http://www.acaai.org/allergist/news/Pages/Allergy_Facts.aspx*
3. Asthma Facts, Environmental Protection Agency, *http://www.epa.gov/asthma/pdfs/asthma_fact_sheet_en.pdf*

KITCHEN: REFRIGERATOR

Common allergens and irritants: House dust, mold, cockroaches, rodent droppings

Clues that there may be an indoor air problem:

- Dust or slimy dark spots on top of or beneath the refrigerator
- Mold, dust and water in the drip pan (if you have one, the drip pan is usually beneath the refrigerator a few inches off the floor behind a kick plate)
- Sticky substance left from liquid spills underneath the refrigerator
- Dusty backside of the refrigerator and wall
- Black or brown rodent droppings (about the size of rice) on the floor
- Moisture on refrigerator surfaces
- Black growth on the door or door seal (the flexible rubber gasket)

AIRepair:

- Keep the refrigerator top clutter-free to make dusting an easy part of your cleaning routine.
- Sprinkle salt in the drip pan to inhibit mold growth.
- Pull the refrigerator out from the wall. (You may want to wear a dust mask if it's been a while since you did this!) Vacuum dust off refrigerator coils and fan; it will help reduce energy costs, too!
- Damp mop the floor under the refrigerator each season.
- Place nontoxic, childproof rodent bait or traps behind the refrigerator. Check them often!

KITCHEN: OVEN/STOVE

Common allergens and irritants: Dust, mold, cockroaches, rodent droppings

Clues that there may be an indoor air problem:

- Dust, dust clumps containing cockroach eggs and decaying insects, decaying food and rodent droppings found on the floor or in the drawer
- Sticky, greasy filters on oven exhaust fan
- Roaches appear when oven is turned on

AIRepair:

- Periodically remove and clean the drawer at the base of the oven and vacuum or mop the floor area underneath the oven.
- Use nontoxic, childproof cockroach and/or rodent traps or bait.
- Use an exhaust fan when cooking to reduce moisture and odors.
- Clean exhaust fan filter or screen to remove cooking grease build-up.

KITCHEN: WASTE CANS, COMPACTORS, RECYCLE BINS

Common allergens and irritants: Mold, cockroaches, rodent droppings

Clues that there may be an indoor air problem:

- Food clinging to waste can, compactor or recycle bin surfaces
- Odors
- Black or brown rodent droppings in or near waste can, compactor or recycle bin

AIRepair:

- Remove kitchen waste daily.
- Do not use odor-masking products. Odor alerts you to an allergen or irritant, rotting food and/or moisture.
- Keep waste can, compactor and recycle bin surfaces and areas clean.
- Wash or rinse out bottles and cans before placing in recycle bins.

KITCHEN: CUPBOARDS AND COUNTERTOPS

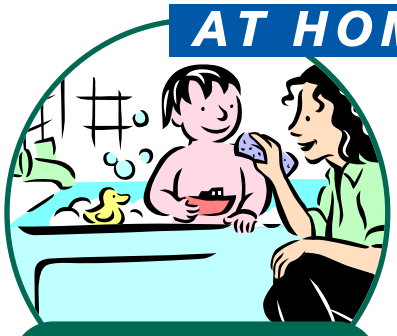
Common allergens and irritants: Mold, cockroaches, rodent droppings

Clues that there may be an indoor air problem:

- Green, gray, brown fuzzy growth on bread or yeast-containing products
- Ashtrays
- Spilled food or crumbs
- Cockroaches, silverfish
- Black or brown rodent droppings on shelving or in drawers
- Paper grocery bags

AIRepair:

- Discard bread and other bakery foods when no longer fresh.
- Never allow anyone to smoke in your home. (See page 14.)
- Store all food in airtight containers or bags when not in use.
- Keep countertops clean and free of crumbs or spills.
- Place childproof, nontoxic cockroach and/or rodent baits in your kitchen. Follow package directions carefully.
- Throw away stacks of old paper bags. (They're perfect hiding places for cockroaches!)



BATHROOM

Common allergens and irritants: Mold, fragranced cleaners, personal care products

Clues that there may be an indoor air problem:

- Black or brown growth on grout or surfaces, particularly in corners (check around shower, tub enclosure, floor near shower, tub or sink, under sink or on backsplash, behind toilet tank or on floor at base of toilet)
- Missing grout in bath, shower or sink areas
- Musty smell
- Dust/mold clinging to the exhaust fan vent cover
- Fragranced or strong-smelling cleansers, personal hair and body care products

AIRepair:

- Remove obvious signs of mold growth. (See page 11 for cleaning solution suggestions.) Mold stains may be difficult or impossible to remove from white grout or caulking. While they can be unsightly, stains do not pose a health problem.
- Replace missing grout. Repair or replace leaky faucets and pipes immediately. Your local home hardware expert can help do-it-yourselfers or this may require plumbing skills.
- Use an exhaust fan or open a window while showering to remove excess humidity. Vacuum or wash exhaust fan vent covers to remove accumulated dust which may also contain mold.
- Wipe the shower walls and tub toys dry after use.
- Use a mold-proof shower curtain. Keep enclosure doors and tracking clean and free of mold build-up.
- Dry your feet and legs before stepping onto the bathmat. Use a towel-style bathmat instead of a plush carpet. It is easier to clean and does not retain moisture as much as thicker or rubber-backed mats.

Clues that there may be an indoor air problem:

- Humidity levels above 50 percent
- Upholstered furniture or carpet in bedroom
- Moldy smell from clothes hamper or dark spots on inside surfaces
- Moisture or dark areas on window glass and/or window frame
- White powdery coating on shoes in closet
- Empty food containers, crumbs
- Pets
- Ashtrays
- Hobby products
- Stacked books and magazines
- Deodorant sprays, room deodorizers, talc powders, perfumes, hairspray

AIRepair:

- Purchase an inexpensive humidity gauge to measure indoor air humidity. Keep humidity levels between 30 and 50 percent to minimize mold growth and dust mite populations.
- Limit upholstered furniture, which becomes a breeding ground for dust mites.

Many factors affect indoor air humidity. For more, visit: www.epa.gov/iaq/homes/hip-moisture.html.

- Choose washable stuffed toys; wash with bedding in hot water. Dry completely. Keep stuffed toys off the bed.

- Use washable throw rugs and curtains (or use window shades or blinds instead).
- Put pillows and mattress inside specially designed dust-mite-proof covers.
- Wash bedding weekly in hot (130°F) water.

You can purchase a HEPA vacuum cleaner or use replaceable filter bags designed to trap allergens as small as .03 microns.

- Vacuum and dust the bedroom once each week. Use a HEPA (high efficiency particulate air) filtered vacuum.
- Vacuum mattress dust-mite covers when changing sheets or cleaning room.
- Avoid carpeting in bedroom if possible. Existing carpet should be in good condition with no signs of mold or dust accumulation. Padding should be in good condition – no signs of crumbling or rotting. Simply walking across a carpeted floor sends tiny allergens into the air.

BEDROOM AND SLEEPING AREAS

Common allergens and irritants: Dust mites, mold, cockroaches, pet dander, chemical fragrances

- Empty clothes hamper daily. Never store wet items inside.
- Do not allow clothing to pile on the floor or in corners.
- Water droplets form on windows and window frames when air temperatures inside and outside the house vary greatly. There are numerous ways to fix the problem – some are very inexpensive. See your local home hardware experts for suggestions.

- Find and stop the source of humidity in the closet causing powdery mold to form on shoes. Leave light on in closet.

Never let anyone smoke in your home. (See page 14.)

- Keep food out of the bedroom.
- If allergic to pets, keep them out of the bedroom. (Pets usually adjust to this change faster than their owners!)
- Avoid using the bedroom for hobby projects as these increase exposure to allergens, irritants and pollutants.
- Limit bedroom reading material; stacked books and magazines retain humidity and encourage mold growth.
- Whenever possible, use unscented personal hygiene and hair care products. Do not use scented candles and odor-masking room deodorizers.
- Keep potted plants (a source of mold growth) out of the bedroom.
- Use paints or wallpaper treated with mold inhibitors when redecorating.

Dust mites look like ferocious monsters, but thousands could sit on a pinhead. They thrive in pillows, mattresses, upholstered furniture, stuffed toys and carpets: wherever they have a steady supply of human dander (shed flakes of skin). When inhaled, tiny dust-mite droppings trigger coughing, stuffy nose, itchy eyes or wheezing. Keep dust mites at bay by reducing room humidity levels below 50 percent; washing bedding frequently; and using dust-mite-proof encasings on your mattress, box spring and pillows.

More information:
www.epa.gov/asthma/dustmites.html.

Photograph courtesy of Precision Fabrics Group, Inc. maker of Pristine®

Recipes for **Success**

Clean mold and mildew with:
- 1 tablespoon baking soda + 2 tablespoons white vinegar + 1 quart water

Disinfect with:
- 1/2 cup borax + 1 gallon hot water

or…

- 1/4 cup baking soda + 1/2 cup white vinegar + 1 gallon warm water (for toilet bowls)

Remove rust from countertops with:
- A paste of cream of tartar and lemon juice (allow paste to sit on rust spot for 15-30 minutes, scrub with sponge, rinse)

Clean shower soap scum with:
- Undiluted, heated white vinegar (put in spray bottle, spray on, let soak for 15 minutes, apply dry borax, scrub)

Clean dirty shower grout with:
- 2 cups baking soda + 1 cup borax + 1 cup hot water

Clean glass and mirrors with:
- 3 tablespoons white vinegar + 3/4 cup water

Deodorize and freshen musty areas with:
- Baking soda in an open container
- White vinegar in an open container

Clean drains monthly with:
- Baking soda and vinegar (pour 1/2 cup baking soda into drain followed by 1/2 cup white vinegar; let sit 30 minutes, then flush with cool water)

Cleaning recipes from 101 Ways to Reduce Allergens in Your Home *by Jayne Ruppenkamp*

Living Room

Common allergens and irritants:
Dust mites, pet allergens, mold, secondhand smoke, firewood, coal dust, kerosene

Clues that there may be an indoor air problem:

- Ashtrays
- Fabric upholstered furniture
- Pets
- Carpeting and padding
- Food crumbs on carpet and underneath couch cushions
- Stacked firewood or kindling, ashes or burned wood smell in the fireplace
- Kerosene heaters, wood stoves, coal stoves

AIRepair:

- Never permit any person to smoke inside your home. (See page 14.)
- Secondhand, upholstered furniture or antiques may contain mold, dust, dust mites and pet allergens. Replacement alternatives to consider include vinyl, leather or other washable-surface furniture.
- Keep pets off the furniture and out of the family room.
- If family members are diagnosed with pet allergies, consider finding a new home for your pet or create safe and weather-protected living space outside the home for your animal.
- Vacuum underneath and behind furniture and underneath couch and chair cushions at least once a month.
- Vinyl beanbag chairs provide kid-friendly seating for watching television and playing games.
- Replace moldy carpet and padding (check in front of doors leading to the outside of your home, in corners, etc.), preferably with hardwood or other hard-surface flooring. Avoid products requiring toxic glues or fumes when possible.
- If the floor beneath the carpet is concrete, make certain the concrete was sealed or a moisture barrier or wood planking was placed between the padding and floor before the carpet was installed. If the basement has ever flooded, don't install carpet or wood flooring.
- Use paints or wallpaper treated with mold inhibitors when redecorating.
- Eat meals in the kitchen/dining area. Enjoy snacking while watching television, but remember to clean under couch, chairs, and cushions after eating.
- Use water-filled radiant electric heaters as a supplemental heat source in place of wood or coal stoves, fireplaces and kerosene space heaters.

Keep Indoor Humidity Low

If possible, keep indoor humidity between 30 and 50 percent relative humidity. Relative humidity can be measured with a moisture or humidity monitor, a small, inexpensive ($10-$50) instrument available at many hardware stores.

Basement FINISHED AND UNFINISHED

Common allergens and irritants: Mold, cockroaches, pet dander, rodent droppings

Clues that there may be an indoor air problem:

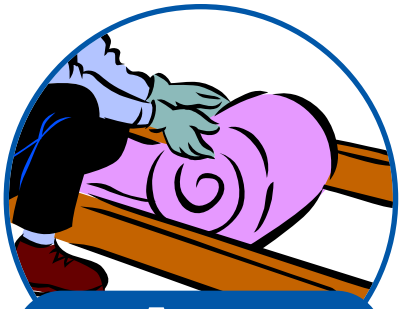
- Dampness
- Temperature and humidity differences from the rest of the house
- Musty smell; rodent or pet urine smell
- Silverfish, crickets, spiders or other insects
- Black or brown rodent droppings, particularly in corners or along the perimeter
- Mold spots or dust on coils of dehumidifier

AIRepair:

- Look for the cause of dampness. Use a flashlight to look for cracks in the foundation or warped wallboard or paneling. Lift carpeting along the edges to check for mold growth. If interior walls are exposed, look for cracks in the foundation. If found, you may need to contact your landlord or an expert to repair the foundation of your home.

- If you plan to remodel an unfinished basement, contact your heating and air-conditioning contractor to ensure your existing system can handle the increased demand of heating and cooling finished spaces.
- Do not block air vents or restrict air flow around air handling equipment (furnace, swamp cooler, air conditioner, etc.). Keep area clean and dry.
- Use a dehumidifier when humidity climbs over 50 percent.
- Clean dehumidifier drip pan according to manufacturer's instructions.
- Leave the lights on (mold prefers dark spaces) in basements with limited windows.

- Avoid using carpet on concrete basement floors.
- Ideally, apply a water sealant to outside walls before finishing basement interior.
- Replace cardboard storage boxes with plastic containers with lids.
- Wash mold off hard surfaces and dry completely. Moldy ceiling tiles, carpets, wood, furniture, etc., should be removed (wear a dust mask and goggles) and replaced.
- Be certain to fix the cause of the mold!
- Use childproof, nontoxic cockroach, insect or rodent bait or traps.
- Do not use the basement for sleeping purposes. Family members with asthma or allergies should minimize time spent in the basement.



Attic UNFINISHED

Common allergens and irritants: Mold, insulation fibers, dust, bird and/or rodent droppings

Clues that there may be an indoor air problem:

- Sounds of birds or animals in the eaves
- Birds flying into eaves
- Bird or other animal droppings, carcasses
- Wet or warped interior walls, studs, flooring
- Daylight visible in areas that should not be exposed
- Moldy, damp or rotten smell
- Matted or moldy-looking insulation

AIRepair:

- Bird and animal proof your attic.
- Seal any gaps leading to living spaces, such as around light fixtures or heating and air-conditioning vents. You may want to contact a heating and air-conditioning contractor to do this for you.
- Determine cause of wet or warped walls, studs or flooring.
- Repair cause (construction faults or storm damage) of problem and replace damaged insulation and structures. Check your homeowner's insurance policy. Damages may be covered. If you do not own your home, notify the landlord as soon as you discover the problem.

Laundry Area

Your laundry area may be down the hall of your apartment building, in your kitchen, outside your bedroom door, in the basement or in the garage. However, always keep your laundry area clean and dry to eliminate mold, a sign of high air moisture content and possible hidden water damage.

Common allergens and irritants: Mold, dust

Clues that there may be an indoor air problem:

- High humidity or moisture levels
- Wet clothes left in the washing machine
- Wet clothing piles
- Clothing lint and dust on floor and walls near washer and dryer
- Cleaning agents such as bleach or heavily scented fabric cleaners and softeners

AIRepair:

- Pull the washing machine away from the wall. Use the flashlight to look for plumbing leaks. Tighten pipes and hoses if needed. Clean the floor before replacing the washing machine.
- Pull the dryer away from the wall. Use the flashlight to check the exhaust hose. It should be vented to the outside of the house. Turn the dryer on while the exhaust hose is still attached to the wall. Then go outside your home and find the exterior vent. Do you feel warm air coming out? If so, that's good news. If it is weak or you don't feel any air at all, you have a problem that needs to be fixed. Either your exhaust hose is clogged with lint or it is not properly vented to the outside of your home. Clean the floor and walls before replacing the dryer.
- Ask your landlord to keep your laundry facility neat and dry with plenty of fresh air ventilated into the area.
- Bleach is an airway irritant known to produce symptoms in some adults and children with asthma. Avoid using bleach.
- Use unscented laundry products.

Know Your **Allergens**

A board-certified allergist can provide allergy testing and consultation to help you find out which things in your home may be causing your symptoms or making them worse.

Focus your indoor air repair actions and budget on those areas most likely to cause symptoms. For example, if your biggest problem is dust mites, concentrate on reducing humidity and allergy proofing the bedroom first.

Garage

Home builders increasingly attach the car garage directly to the home – sometimes off the kitchen, underneath a bedroom or next to the family room.

When used to store old paint cans, gasoline, lawn mowers, pesticides, wood stains, woodworking projects and/or household cleaners, the garage becomes the most toxic room in the house. Chemicals seep into your breathing space through tiny cracks and gaps between the home's foundation and walls.

Families also often put recycling bins and trash cans inside the garage; however, failure to keep this area clean will attract rodents, cockroaches and other unwelcome allergens and irritants.

Common allergens and irritants: Chemicals, cockroaches, rodent droppings

Clues that there may be an indoor air problem:

- Attached garage
- Car(s) inside garage
- Gasoline-powered tools and equipment
- Cleaners, pesticides and other strong-smelling chemicals
- Trash cans, recycle bins

AIRepair:

- Switch to electric or human-powered lawn mowers, hedge cutters and other tools.
- Paint should never be stored in the garage; temperature extremes cause it to go bad rapidly. When finished painting a room, pour a small amount of paint into a clean glass jar with a tight-fitting lid. Label with date, color, manufacturer and room it was used in before storing in a part of your home where it will not be exposed to temperature changes.
- Dispose of unused lawn and garden powders, sprays and pellets.
- If using the garage for hobbies or fix-it projects, make sure it is well ventilated.
- Do not leave car running in garage.

Why is it so important to have a **Smoke-free home?**

Secondhand smoke is a mixture of the smoke given off by the burning end of a cigarette, pipe, or cigar, and the smoke exhaled by smokers. It contains more than 4,000 substances, several of which are known to cause cancer in humans or animals.

EPA has concluded that exposure to secondhand smoke can cause lung cancer in adults who do not smoke. It has also been shown in a number of studies to increase the risk of heart disease.

Children are particularly vulnerable to the effects of secondhand smoke because they are still developing physically, have higher breathing rates than adults, and have little control over their indoor environments. Children exposed to high doses of secondhand smoke, such as those whose mothers smoke, run the greatest relative risk of experiencing damaging health effects.

If you smoke at home, consider how it affects your child's health:

More frequent and severe asthma attacks

Secondhand smoke irritates the airways and triggers asthma symptoms. According to the Centers for Disease Control and Prevention, children with asthma who breathe secondhand smoke have more severe asthma episodes and lower lung function than children with asthma who are not exposed to smoke. Inhaling secondhand smoke may actually cause asthma in some children. A study in the *American Journal of Respiratory and Critical Care Medicine* found that the number of children diagnosed with asthma at age 6 or younger was twice as high in families who smoked as in nonsmoking families.

Greater risk of lower respiratory tract infections (bronchitis and pneumonia)

According to the Environmental Protection Agency, secondhand smoke exposure causes 150,000 to 300,000 lower respiratory tract infections every year in children 18 months or younger, resulting in as many as 15,000 hospitalizations per year. Secondhand smoke can also aggravate sinusitis, bronchitis, cystic fibrosis and chronic respiratory problems like cough and postnasal drip.

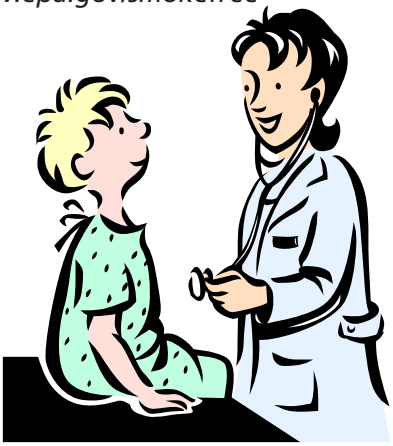
More frequent ear infections

Inhaled secondhand smoke irritates the Eustachian tube (the tube connecting the back of the nose with the middle ear) and causes a build-up of fluid in the middle ear.

Greater risk of Sudden Infant Death Syndrome (SIDS)

Mothers who smoke while pregnant are more likely to have their babies die of SIDS. Babies who are around secondhand smoke—from their mother, their father, or anyone else—after they are born, are also more likely to die of SIDS than children who are not around secondhand smoke.

www.epa.gov/smokefree



What do most children with asthma who are treated in hospital emergency departments have in common?
They live with family members who smoke at home.

What is the best way to eliminate tobacco smoke from the home?
Do not allow any person to smoke in your home or near windows and doors leading to your home.

U.S. Asthma Statistics

- Asthma prevalence increased from 7.3% in 2001 to 8.6% in 2011, when 25.9 million persons had asthma.[1]
  - 18.9 million adults aged 18 and over [2]
  - 7.1 million children aged 0–17 years [3]
- Females have higher asthma prevalence than males (9.9% compared with 6.2%) [2]
- Adults of multiple races have the highest asthma prevalence (14.5%) [2]
- 14.2 million physician office visits[4]; 1.3 million outpatient visits[5]; and 1.8 million emergency department visits for asthma [6]
- Number of deaths per year: 3,404 [7]
  - 34% higher among females than males [8]
  - 75% higher for black persons than white persons [8]
  - 6.3 times higher for adults (over 18) than children [8]
- Number of hospital discharges with asthma as first-listed diagnosis: 439,000 [9]
- Average length of hospital stay: 3.6 days [9]
- 10.5 million school days and 14.2 million work days missed by people who experienced at least one asthma attack during the year [8]
- Medical expenses associated with asthma increased from $48.6 billion in 2002 to $50.1 billion in 2007 [10]
- 3 in 5 people with asthma limit their physical activity [11]
- 1 in 5 children with asthma went to an emergency department for asthma-related care in 2009 [11]

1 Summary Health Statistics for the U.S. Population: National Health Interview Survey, 2011; National Center for Health Statistics data brief Series 10, Number 255; Centers for Disease Control and Prevention;

2 Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2011; National Center for Health Statistics data brief Series 10, Number 256; Centers for Disease Control and Prevention;

3 Summary Health Statistics for U.S. Children: National Health Interview Survey, 2011; National Center for Health Statistics data brief Series 10, Number 254; Centers for Disease Control and Prevention

4 National Ambulatory Medical Care Survey (NAMCS): 2010 Summary Tables, table 13; Centers for Disease Control and Prevention

5 National Hospital Ambulatory Medical Care Survey (NHAMCS): 2010 Outpatient Department Summary Tables, table 11; Centers for Disease Control and Prevention

6 National Hospital Ambulatory Medical Care Survey (NHAMCS): 2010 Emergency Department Summary Tables, table 12; Centers for Disease Control and Prevention

7 Deaths: Final Data for 2010, tables 10, 11; National Vital Statistics Reports, Vol. 61, No. 4; May 8, 2013; Centers for Disease Control and Prevention

8 National Surveillance of Asthma: United States, 2001-2010, Vital and Health Statistics, Series 3, Number 35, November 2012, Centers for Disease Control and Prevention

9 National Hospital Discharge Survey: 2010 table, Average length of stay and days of care; Centers for Disease Control and Prevention

10 Vital Signs: Asthma Prevalence, Disease Characteristics, and Self-Management Education – United States, 2001-2009; Morbidity and Mortality Weekly, May 6, 2011; Centers for Disease Control and Prevention

11 Asthma's Impact on the Nation, 9/23/2013; National Asthma Control Program, National Center for Environmental Health, Centers for Disease Control and Prevention

Asthma at a Glance

- Exposure to allergens, irritants, respiratory infections, dry or cold weather or exercise can cause asthma symptoms to become more noticeable.
- When asthma happens, swollen airways fill with fluid and mucus, restricting breathing space. The muscles surrounding the airways tighten (bronchospasm).
- Asthma medications treat and prevent inflammation, swelling and bronchospasm, but the first step to controlling asthma is avoiding exposure to allergens and irritants in your environment that set off symptoms.
- Children exposed to second-hand smoke have more severe asthma episodes and lower lung function than those not exposed to smoke.[1]

1 "Involuntary Smoking and Asthma Severity in Children," *Chest*, 2002, 122(2):409-415

AIRepair **Friends** and **Neighbors**

Most of Allergy & Asthma Network's AIRepair tips are easy to make part of your cleaning routine. Some suggestions take more time than others. You may discover serious problems that require expert help. Then again, you may have friends who will swap their plumbing or carpentry skills for your babysitting and cooking talents.

Once you've completed your inspection, create a plan for tackling the to-do list using Allergy & Asthma Network's AIRepair Checklist. Don't try to accomplish everything in one day. For those items that cost more money than you've currently budgeted, look for creative ways to save money to make the repairs as soon as you are able.

You are not alone! One-third to one-half of all buildings have damp conditions that may encourage mold and bacteria. Every home has dust mites. And no area of the U.S. is immune to rodent or cockroach infestations.

There is a wealth of fascinating and helpful information, photographs, links and services that can be found FREE on the Internet. If you don't have Internet access at home, visit your local library and ask someone to teach you how to go online.

Helpful **Resources**

Allergy & Asthma Network Mothers of Asthmatics
800.878.4403
aanma.org
Spanish resources available

U.S. Environmental Protection Agency
Indoor Air Quality Information Clearinghouse
www.epa.gov/iaq/ia-intro.html
Spanish resources available

Centers for Disease Control and Prevention
www.cdc.gov/nceh/airpollution
Spanish resources available

American Industrial Hygiene Association
703.849.8888 www.aiha.org

American Society of Home Inspectors
847.759.2820 www.ashi.org
Spanish resources available

American Lung Association® Health House® Program
800.788.5864 www.healthhouse.org
info@healthhouse.org

Other useful **Web sites:**

www.buildingforhealth.com – Building for Health Materials Center
800.292.4838

www.ecomall.com – search engine/directory for environmentally friendly products

www.nari.org - National Association of the Remodeling Industry provides consumer information on remodeling, including help finding a professional remodeling contractor
847.298.9200

www.ascr.org - Restoration Industry Association
301.231.6505

www.HomeMoisture.org – North Dakota State University Extension Service

www.nadca.com – The HVAC Inspection, Maintenance and Restoration Association

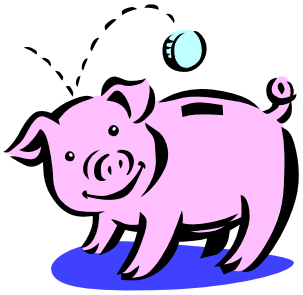
www.nclr.org – National Council of La Raza (Spanish resources)
202.785.1670

www.hispanichealth.org – National Alliance for Hispanic Health
866.783.2645

Room **Air Filters**

Room air cleaners are found on department, variety and hardware store shelves throughout the country. Do they really reduce symptoms? If you buy one, will it clean your indoor air well enough that can you sleep with your cat and dog and smoke in your home?

Air cleaners do *not* replace the need to eliminate or reduce indoor air allergens and irritants known to produce symptoms. Be wary of any manufacturer making health claims. Ion generators and electronic air cleaners may produce ozone, a lung irritant. For more information on room air filters, visit *www.epa.gov/iaq/pubs/airclean.html*.



Financial aid

Medical insurance company – call your benefits office; ask if your insurance covers physician-recommended devices like air cleaners or dust-mite-proof mattress covers to improve your health.

Local utility company – ask if they offer financial help for renovations to improve air quality.

State, county or city health departments – call your Public Health Department; ask what division can help you with indoor air quality renovations. Check online or look in the government pages of your local telephone book for offices that deal with family health; environmental health; preventive health; community and family health services; primary care and family health.

For a state-by-state list of public health officials and telephone numbers, visit *www.statepublichealth.org*, or call the Association of State & Territorial Health Officials (ASTHO), 202.371.9090.

Places of worship – local churches, synagogues, mosques and other religious groups often have compassionate aid for people in need; you do not always need to be a member of the congregation.

National service organizations offer personal and financial help to people in need. Look in your telephone book for local chapters of the American Red Cross, Kiwanis International, the Lions Club, Rotary International, or the Salvation Army.

Help dealing with insurance companies, builders or landlords

Find out about neighborhood associations, tenants' rights groups and community groups dealing with asthma. Local asthma coalitions may be able to provide resources.

Check online or in the telephone book for Consumer Affairs organizations; try your local government, newspapers or television stations.

The nonprofit Patient Advocate Foundation can provide help with insurance claims and other financial problems: 800.532.5274; www.patientadvocate.org. Spanish resources available.

For information on federal and state regulations, contact U.S. Department of Housing and Urban Development (HUD), 800.669.9777; *www.hud.gov*. Spanish resources available.

States and counties have their own tenant laws. Contact your local government Housing department to find out about your laws; ask about Housing Rights Committees.

Home improvement assistance

To locate contractors: check the Internet or telephone book for organizations that can provide professional services or recommendations:

- Local Home Builders Association
- Local Board of Realtors
- Local remodelers' or contractors' organizations
- Local Better Business Bureau

Construction or drainage matters: Contact your city or county planning office, building inspector's office, or library for information on applicable building codes and inspection/permit requirements; local stormwater ordinances; local subdivision and zoning ordinances; and local flood damage protection ordinances and maps required by the National Flood Insurance Administration (NFIA). Other sources:

- Local/county Soil Conservation Service Agency
- City/county hydrologist or engineer
- Agricultural Extension Service
- Professional engineer or hydrologist
- University Civil Engineering or Agricultural Engineering departments; ask about experts in drainage, foundation and structures
- Professional/commercial house inspectors

Indoor AIRepair **Checklist**

Use this chart to note allergens and irritants found in your home and create a to-do list of clean-up actions.

Date	Room	Clue/Source	Action	Date Fixed
10/23/13	Joey's Room	Moisture and mold on window frame	Removed mold, caulked windows, cleaned rain gutter outside window	11/15/13

Allergy & Asthma NETWORK

INDOOR AIRepair™ AT SCHOOL

Helping Parents, Students and Teachers **Breathe Easier**

When children with asthma go off to school each day, they carry more than just their backpack and lunch – they also tote a load of worries: Will I cough during gym today? Will I need my inhaler during the math test? Will I get that tight feeling in my chest again while I ride the bus?

It's no wonder they have trouble concentrating. What can you do?

Working together, parents, teachers and other school staff can create a healthy learning environment.

Five tips:

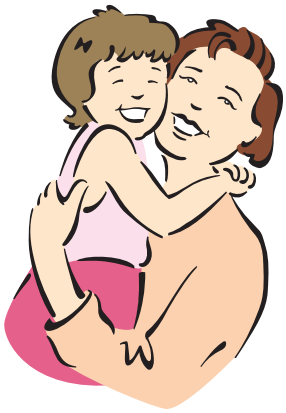
1. Recognize asthma is a serious, potentially life-threatening condition. Establish a plan to prevent and respond to emergencies.
2. Follow the written asthma management plan provided by the child's healthcare provider. Identify and avoid activities and irritants that set off breathing problems. Treat symptoms when first noticed.
3. Teach the child to listen to his body's early warning signals and use medications responsibly.
4. Identify and eliminate allergens and irritants in the classroom.
5. Maintain clean indoor air throughout the school building.

Indoor Air Pollutants

Finding the **Source**

Allergens, irritants and indoor air pollutants are everywhere. It is impossible to rid a school of every germ, pollen grain, dust mite, mold spore or pest. However, there are common-sense precautions to take. Some can be taken by parents and teachers in the classroom; others require school maintenance.

Asthma affects each person in a different way. Some people react when they inhale or touch things to which they are allergic, such as animal dander, dust mites or mold. Others cough when the air is full of irritants such as smoke or strong odors. Still others find it hard to breathe during exercise.



Asthma symptoms can develop rapidly within minutes, or gradually, over hours or even days. Don't assume that because the child didn't begin coughing when the puppy came to visit it was not a problem. The irritation from the animal dander could grow slowly, turning into breathing problems that keep the child up half the night.

Some common factors that set off asthma symptoms:

Allergens in the air: animal dander, mold, pollen, dust mites, cockroach and rodent allergens

Irritants in the air: smoke, household chemicals, strong odors, air pollution, including fumes from idling school buses and cars

Activities: exercise

Weather-related factors: changes in air temperature and humidity levels

Food allergens

Other illnesses: rhinitis, sinusitis, gastroesophageal reflux, viral infections

Emotions: stress, crying, laughing

Common Allergens and Irritants Found in the Classrooms

Even the most perfectly maintained system cannot protect students and staff from allergens, irritants and other airborne pollutants that start in the classroom.

- chalk dust
- dry erase markers
- paints and glues
- strong odors, such as perfumes or room deodorizers
- chemicals from science or art projects
- upholstered furniture
- rug mats or nap pads
- classroom pets or visiting furry animals

AIREPAIR

The EPA has identified five steps to reduce asthma triggers in schools:

1. **Clean up mold and control moisture**
2. **Control cockroach and other pest allergens**
3. **Remove animal allergens**
4. **Eliminate secondhand smoke exposure**
5. **Reduce exposure to dust mites**

1. Clean Up Mold and Control Moisture

Molds are a natural part of our world. Outdoors, they break down organic matter such as fallen leaves and dead trees. Indoors, they stain and damage walls and furnishings. Mold growth can also attract cockroaches, dust mites and other pests and cause health problems.

Molds reproduce by sending billions of tiny spores into the air, traveling on breezes until they land on a damp surface where they can multiply. Invisible to the naked eye, as many as 250,000 spores could fit on the head of a pin.

Inhaling or touching mold spores may cause sneezing, runny nose, red eyes, coughing, wheezing or skin rash (dermatitis), even among people not allergic to it. Symptoms can be immediate or delayed.

Moisture control is the key to mold control.

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Clues that indoor mold might be present:

- Black spots in dark, warm, humid areas such as
  - Bathrooms
  - Locker and shower rooms
  - Basements
  - Under sinks
  - Utility areas and mechanical rooms
- Musty smell among stored papers or books
- Black or brown spots in closed-in areas:
  - Underneath and behind furniture
  - Behind cabinets
  - In coat closets
- Discolored or damp carpeting and/or padding, especially underneath windows, against outside walls and under water fountains

AIRepair:

- Fix the water or moisture problem. The mold will return if you don't. It could be as simple as moving a cabinet away from the wall, storing papers in plastic bins, or cleaning the area around the water fountain daily. Other times, it may require caulking around leaky windows, removing mold-infested carpets, or fixing a plumbing problem behind a wall.
- Dry water-damaged areas and items within 48 hours to prevent mold growth.
- Clean up the mold. If the moldy area is on a washable surface, clean it using equal parts of white vinegar and water. Avoid using bleach as this can irritate breathing passages. Use a dust mask and goggles to shield nose, mouth and eyes from airborne spores while cleaning. Larger areas of mold (greater than 10 square feet) should be cleaned by a professional following guidelines established by the Environmental Protection Agency.

Schools Breathe, Too

Many factors affect indoor air quality in schools:

- Building design and building materials used
- Number of students and staff in each classroom and building
- Types of activities performed inside
- Size, type, location and age of air handling equipment
- Maintenance and cleaning processes

Maintained properly, the school's air handling system traps and filters many particles but does not purify dirty, polluted air. So, for example, if school buses or cars pick up and drop off students in the back of the school near air handling equipment, exhaust fume particles will travel throughout the school's supply lines. And that's not healthy for anyone.

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Clues that your school's air handling system needs servicing:

- Black or gray powdery dust on ceiling tiles, walls and vent covers
- Standing water underneath or near the air handling unit
- Dead animals, insects, bird or rodent nests in or near outdoor units

2. Control Cockroach and Other Pest Allergens

Found in just about any school in America, cockroaches, mice and rats are often-overlooked causes of allergy and asthma symptoms among schoolchildren and school staff.

Microscopic proteins from pest waste (urine and fecal pellets) and saliva can travel through the air and cause allergy and asthma symptoms when inhaled. Symptoms may be immediate or delayed.

Because these lightweight particles remain in the air hours after being stirred up, the best pest management programs begin by removing the problem at its source, repairing damage, and making the school environment less attractive to pests.

To fight pests, remove their food and water source; fix plumbing leaks, moisture or mold problems; and enforce safe food handling and storage policies.

Pesticide tips:

- Use Integrated Pest Management (IPM) practices instead of pesticides whenever possible. Visit *www.epa.gov/pesticides/ipm.*
- Notify parents and school staff before applying pesticides.
- Schedule pesticide applications when areas will be unoccupied and can be well ventilated before occupants return.
- Use pest control chemicals in strict accordance with regulations and follow instructions on the container.

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Clues that pests are in the classroom:

- black or brown pellets about the size of rice or slightly larger (mouse droppings)
- dead cockroaches
- urine stains or smell
- dust clumps that have insect droppings and decaying insect parts in them
- nests
- greasy smears on walls (which could indicate possible rat runs)

Pest treatment in the schools is best left to professionals, but teachers can do their part to keep pests away from their classrooms.

AIRepair:

- Store food and water in tightly closed containers in the classroom overnight; this includes items for class or science projects.
- Fix plumbing leaks.
- Remove clutter where cockroaches and other pests can hide.
- Seal cracks in walls and under sink areas.
- Use poison baits, boric acid or traps before using pesticide sprays.
- Store dumpsters away from the school building.

3. Remove Animal Allergens

Whether they live in the classroom or visit for show-and-tell, warm-blooded animals such as hamsters, birds, rabbits, cats and dogs can cause allergy and asthma symptoms in sensitive students and teachers.

Allergy symptoms (immediate or delayed) range from itchy eyes or skin to red welts (hives) on the skin, sneezing, nasal congestion, shortness of breath, wheezing or coughing.

Even so-called "safe" pets such as lizards, chameleons and snakes can cause problems, particularly if they eat live foods such as grasshoppers, mealworms, mice and rats. The pets and their food sources produce waste products that decay and provoke allergy or asthma symptoms.

The tiny protein particles from the animal's urine, saliva and dander fly into the air when the pet or its cage is handled or cleaned. If they get into the school's air handling systems, the allergens move from one part of the school to another.

Parents:

Take a good look around your child's school and classroom. Note the problems you see and share this information with teachers and school administrators.

4. Eliminate Secondhand Smoke

Secondhand smoke – whether from the burning end of a cigarette or exhaled by a smoker – is an irritant that can set off asthma symptoms.

A 2011 Center for Disease Control and Prevention (CDC) report found that 18.1 percent of high school students and 4.31 percent of middle school students polled said they smoked. Despite federal and state laws prohibiting smoking on school grounds, secondhand smoke continues to be a problem.

AIREPAIR

- Prohibit smoking on school grounds (indoor and outdoor), on school buses and at school-sponsored events.
- Clearly communicate the school's smoking policy to students, staff and visitors, including punishments for violations.
- Develop smoking prevention programs and education on how to stop smoking for students and school personnel.

The Pro-Children Act of 1994 prohibits smoking in kindergarten, elementary and secondary schools that receive federal funding.

5. Reduce Exposure to Dust Mites

Many children with asthma also have allergies to dust mites.

Too small to be seen with the naked eye, dust mites set up housekeeping wherever they find humidity and a steady food source. They particularly like to dine on shed flakes of human skin (dander), decaying food crumbs and mold. In schools, they're likely to be found in carpets, naptime floor mats, pillows, stuffed toys and upholstered furniture.

Tools for Schools

The Environmental Protection Agency (EPA) Indoor Air Quality Tools for Schools program has helped hundreds of schools throughout the country maintain healthy air in their facilities and create a safe learning environment. Find out how this innovative program can help your school. Visit www.epa.gov/iaq/schools *or call 800-490-9198 to order.*

AIRepair

- Use only washable stuffed animals in the classroom and wash them weekly in hot water.
- If your child uses a nap pad or pillow at school, take your own and cover it with a dust-mite-proof zipped cover. Keep a washable cotton cover to use over the nap pad. Take covers home and wash in hot water at least twice a month.
- Replace upholstered furniture. A wooden rocking chair with washable cushions and a collection of vinyl bean-bag chairs make good alternatives.
- Encourage your school to consider replacing carpeting with solid surface flooring. Carpets hold onto fine dust particles, animal dander, mold, dust mites, food crumbs, dirt and bacteria. Even with daily vacuuming, these particles are impossible to remove. (Just lift a carpet's edge and look underneath.) People walking across the carpet send powdery allergens swirling into the air where they can be inhaled.

Managing Medications at School

Tips

Steps parents can take to manage asthma at school:

- Get a written asthma management plan from your child's doctor before each school year begins. The plan will list:
  - allergens, irritants and activities that cause asthma or allergy symptoms in your child
  - your child's early warning signs that an asthma episode is progressing and needs medical attention
  - names and dosages of medications to be used at home and at school
- Ask your healthcare provider to check your child's inhaler technique to be sure he is using it correctly.
- Complete and return all emergency care forms before the first day of school.
- Give a copy of the management plan to your child's teachers, coaches and school nurse and discuss any questions.

Many asthma medications can be given daily at home to control symptoms at school. However, since breathing problems can appear unexpectedly, children with asthma need immediate access to prescribed quick-acting inhaled bronchodilators.

Oral medications should be stored in the school clinic.

Some asthma medications cause children to feel sleepy, irritable, shaky or unable to sit still in the classroom. Teachers should tell parents if these are a problem in the classroom, so they can talk with the child's healthcare team about adjusting medications.

While asthma medications are important, they do not eliminate the need to maintain healthy indoor air quality.

Anaphylaxis

Some children with asthma also have anaphylaxis, a life-threatening allergic reaction. The throat, tongue and lips swell and block breathing passages. Usually caused by a bee sting or food allergy, the reaction must be treated immediately. The key to preventing serious problems from anaphylaxis – including death – is using epinephrine as soon as possible.

Auto-injectable epinephrine can be self-administered or be given by an adult. Afterward, the child should be taken immediately to the hospital. The medication wears off after 20 minutes. A second injection may need to be given on the way to the hospital, so two auto-injectors should be with the child at all times.

All states have laws that protect students' rights to carry and use their prescribed lifesaving asthma medications at school and 49 have similar laws regarding anaphylaxis. Check the laws in your state and find more resources to help students breathe easier at *BreatheAtSchool.org*

When is a child old enough to handle his own medications?

There is no magic age when a child automatically becomes ready to carry his medications at school and take them on his own or with adult supervision. It is a gradual learning process. Teach your child to take responsibility for his own medications at home, where you can watch and help, before taking them to school. To get your child ready, teach him to do the following:

- Know the names of each medication and when to use each
- Know how to avoid allergens and activities that cause his symptoms
- Know what to do when symptoms first appear and when to ask for help
- Show his healthcare provider that he can use the inhaled medication correctly

Common Medication Myths

Myth #1: *Inhaled asthma medications make students high.*	Inhaled bronchodilators are the inhaled medication used most often by students at school. Common names include, ProAir™, Ventolin®, Proventil® and Xopenex®. Bronchodilators relax twitchy airways and make it easier for the student to breathe; they are not intoxicating and do not make students high.
Myth #2: *Inhaled bronchodilators can be dangerous if used by classmates who do not have asthma.*	Inhaled bronchodilators will not improve the breathing or harm the airways of students who do not have asthma. Users may feel jittery, as if they just drank a cup of strong coffee, but only for a short time. Most will not like the taste of the medicine.
Myth #3: *Students with asthma often say they need to use inhaled medications as an excuse to get out of the classroom, doing school work or participating in physical education classes.*	Students with asthma are no different from their classmates when it comes to avoiding things they don't like. However, restricting a student's access to lifesaving medications is dangerous, so teachers should assume the student needs it when asking for it. Students who've developed the skills and maturity to carry and use inhaled bronchodilators by themselves do not need to leave the classroom to get them.
Myth #4: *Inhaled medications should be locked in a cabinet in the school clinic.*	Most children with asthma will experience symptoms at school from time to time, but they're not likely to begin while the student is standing in front of the clinic with a trained healthcare worker standing nearby. More often, symptoms will begin in the classroom, playground, gym, or even on the bus, or while walking to and from school. Sending a coughing or wheezing student on a trek to the clinic or making him wait as a classmate retrieves the prescribed inhaler from a locked cabinet wastes precious time and may place the student at risk of death. Keep the bronchodilator inhaler with the child at all times and store back-up medication labeled with the child's name and prescribing instructions in the locked cabinet with the asthma management plan.

Experienced Voices

Allergy & Asthma Network's volunteer Outreach Service Coordinators work with schools and communities across the country. We asked them what parents, teachers and school administrators need to remember to keep students healthy at school.

Advice for Parents

Take information around the school to all personnel who will come in contact with your child. Don't forget the school librarian! Don't assume that the office or the nurse will reach everybody who needs to know.

Cathy Boutin

From the time they are little, teach your children to know early warning signs and how to take care of their own asthma symptoms.

Christy Olson, RN

If you want the right message to be given about the care of your child at school, deliver it yourself. Don't leave this job to your child or scribble a note onto a piece of paper.

Christy Olson, RN

Teach your child to keep track of the number of doses used in inhalers, and not to exceed the number of doses listed on the canister even if it seems medication remains. Always keep a back-up inhaler in the clinic at school. Check the expiration date on each inhaler.

Dianne Danzig

It is the nature of asthma symptoms to change periodically. When this causes a change in your child's medications or the overall treatment plan, contact the school nurse and your child's teachers right away. Let them know when your child is heading into an episode but is healthy enough to attend school. And tell them when your child has been to the emergency department or hospitalized for symptoms.

Sue Cook

Notify the school if you have changes to the Emergency Contact Information Card. Provide telephone numbers, names, at least two back-up contacts, and the name and phone number of your child's physician.

Connie Carcel

Teach your child to know and stay away from asthma triggers and when to ask for help.

Lisa Blemmer

Advice for Teachers

Remember that what you do in the classroom makes a huge impact on the air quality in the classroom and on your students' health. Furry classroom pets, stuffed animals, floor pillows, carpeted rest mats, large area rugs, stuffed animals, pet visitation days, smelly science experiments and perfumes can cause breathing problems for some students.

Cathy Boutin

Tell the parents if their child is experiencing cough, shortness of breath, wheezing or chest tightness or using their bronchodilator inhaler more often than their management plan suggests.

Darcy Ellefson

Please don't think I am overprotective or obsessed with my child's allergies and asthma. I am not trying to isolate my child from others, but when a classmate gets a cold, he has a runny nose for five days. When my child gets a cold, he has to be on oral corticosteroids, take nebulizer treatments four times a day, and stay home from school.

Cassie Kelly

Children must have fast, easy access to their bronchodilator inhaler.

Dianne Danzig

Talk with the parents; let them voice their concerns and work with them to meet their children's needs.

Pat Smith

Advice from a Teacher

Make sure you know which children in your class have allergies and asthma (and other chronic health conditions). Have the information readily available for substitute teachers and for specialists that may visit or work with your class.

Theresa Grill

It's important for parents of children with asthma to communicate with the school. If I know what sets off a student's asthma I can plan ahead to prevent problems. Most teachers are willing to do anything they can to help students stay healthy and safe so they can come to school and learn. I know that students with asthma have an increased struggle when they catch a common cold. Parents should remind their children to wash their hands regularly and to dress in layers because the temperature fluctuates in buildings and outside and students should be prepared to go out.

Christine Whitley, special education teacher

Indoor AIRepair **Notes**

Breathe Better Together!

Allergy & Asthma Network engages, educates and empowers families to win over allergies and asthma.

Since 1985, it's been our mission to end needless death and suffering due to asthma, allergies and related conditions.

Join at no cost to you by visiting ***www.aanma.org/join.***

Allergy & Asthma NETWORK

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Allergy & Asthma NETWORK

INDOOR AIRepair™ AT PLAY

The Business of Being a Kid

Who doesn't like to play? No matter what your age, playing is great fun!

Play gives children a chance to learn about themselves and other people – how to share and take turns, how to be patient and fair, how to be a good sport. It also builds creativity, imagination and physical skills.

However, a playmate's runny nose can lead to your child's asthma attack. A simple birthday party invitation can set your mind racing about allergens, irritants and other pollutants that can make your child sick. And holidays leave family members thinking you're simply overprotective.

How do you keep asthma symptoms from interfering with fun? How do you safely let children explore the world through their own eyes, outside your protective reach?

When children with asthma can't escape the allergens, irritants and pollutants that set off breathing problems, play loses its fun. When was the last time you felt like playing when you couldn't breathe?

Children with asthma don't want to live in a bubble. They want to run and play with their friends; go to parties and sleepovers, take dance classes and drum lessons, and simply HAVE FUN !!!

The good news is – they can, with planning and communication.

The key is to minimize risk and maximize fun.

Sensible Crafts

No scents

Many children's products are scented – art markers, paints, crayons, disposable wipes, bubble baths, shampoos and more. However, even the unscented products may have masking fragrances that cover unpleasant odors. Masking scents added at low concentrations are not always listed on the label.

Healthy hobbies

Woodworking, sanding, using spray paints, sculpting and other creative hobbies send tiny pieces of dust into the air. The ones that fall to the ground quickly are actually less of a problem than those that stay in air for longer periods.

Whenever possible, keep indoor work or hobby spaces well ventilated and wear dust or vapor masks to protect the airways. Seal off rooms under renovation from the rest of the house: Cover air vents and seal off windows and doors with plastic.

Take stinky or dusty projects outside!

Asthma and Allergy Fun Busters

Nothing can ruin a play day at the community center or a sleepover at a friend's home faster than overwhelming exposures to these symptom-starters:

Dust mites

- in carpets, upholstered furniture, bedding, pillows and stuffed animals

Cockroaches, mice and other pests

- in family rooms and bedrooms as well as kitchens – anywhere traces of food, water and dirty dishes are allowed to linger

Mold

- wherever humidity levels are high; if you smell something musty, it's moldy

Pets

- not just dogs and cats – all furry animals produce dander, including mice, guinea pigs, gerbils, hamsters, rabbits and ferrets
- birds and reptiles – as well as their food and cages – also release allergens and irritants

Secondhand smoke

- a powerful irritant that can quickly set off coughing and wheezing

Other irritants

- strong scents, including art supplies and candles
- dust from construction and remodeling projects
- offgassing (chemical smells) from new carpets, flooring and cabinets
- latex balloons
- pesticide sprays and toxic chemicals, often as irritating as the pests they kill
- cosmetics, such as perfumes, nail polish and nail polish remover

AIRepair Tips from Allergy & Asthma Network Members

Play Dates and Birthday Parties

When we go to someone's house in the winter, I always ask them not to have a fire going in the fireplace. So far nobody has seemed offended. The request usually opens a dialogue about asthma. I have found that most people don't realize the seriousness of asthma.

Beth Allen, Palatine, IL

If our son is invited to play at someone's house or go to a party, we ask about smoking; if it's not nonsmoking, he doesn't go.

Gigi Gerben, Venetia, PA

Before we make a play visit, we invite the mother and child to our home. That way we have a pretty good idea of the other family's feelings about helping with exposure to things that might cause a reaction. If we don't feel good about the other family's attitude, we just politely invite the child to come to our house.

Gayle Schroader, Taylor, SC

It is really difficult if the inviting friend has a parent who smokes. We taught our children to assert themselves to ask the smoker to smoke outside because of their asthma. If that wasn't possible, our child would go to another level of the house to wait out the smoke. While that wasn't ideal, it did help. We have asked parents not to smoke while driving our children in their vehicle; they don't get offended when they understand what could happen.

Laura Smith, Dallastown, PA

It is important to know about cultural practices that may exist at a friend's house, such as use of incense or candles. You can nicely tell the parent: "Jeremy's asthma acts up when I use strong perfumes or soap....he'd really love to come over and play at your house, but I just wanted to know if you sometimes burn candles or use any special scents at your house to make sure he can stay away from them and enjoy the playdate!"

Lois Wessel, RN, CFNP, Tysons Corner, VA

Slumber Parties and Overnights Away from Home

Parties and sleepovers can be stressful. To make sure our daughter enjoys the event without worry we make sure the host of the event thoroughly understands the significance of her allergies and understands what measures to take if an outbreak begins. If we are still not comfortable, we go to the event with her or do an alternative "special outing" of her choice.

Michael Cason, Centreville, VA

For parties, we send her own blankets and pillow with an allergy pillow cover on it, request she does not sleep on carpeted floor, make sure she takes all her meds with her, and wash all her bedding and clothing when she comes home. For family vacations, we make sure there are no feather pillows in motel rooms and do not use the big comforter on tops of beds.

Cindi Shea, RN, BA, AE-C, Beckley, WV

When he goes to a friend's home overnight or just to birthday parties he always carries his inhaler. We let the adults in charge know about his asthma and they always know how to reach us if he has a problem. Our son has never been embarrassed or had problems with anyone; in fact, he will tell you anything you need to know about asthma and why he has to do what he does every day to stay healthy.

DaLynn Walker, Windsor, CO

Community Center Classes and Events

I have my daughter enrolled in ballet, swimming and basketball classes. Since she needs a change of clothing for each of these activities, I separate them into sealed plastic bags inside of her individual carrying bags. I do this to prevent any allergens from accumulating inside gym lockers, since you don't know what gets thrown inside those lockers.

Ivette Davila-Richards, Brooklyn, NY

When my son was invited to a laser tag party, I had no idea what it really was. When I went with him to check it out, the first sign I read was a warning to patients with asthma that there is a fog that the players run around in that could be hazardous. We sat down and did a treatment prior to the game, just in case, and I talked to several of his buddies who agreed to keep an eye on him. I was very nervous, but his friends were wonderful and very proud to have been given such an important task which they took very seriously. I generally hang around quite a few parties and help.

Andrea Holka, Malcolm, NE

Our sons wanted to join a children's bowling league after school on Mondays. To our dismay the parents' smoking became a huge problem for them. They approached the manager and told her that the smoke left them sick and had even led to an ER visit. They talked her into requiring the parents to keep the general bowling area smoke-free during the children's league time. Others could go outside or to the enclosed bar area to smoke. "No smoking" signs were posted each Monday and parents caught lighting up were asked to leave.

Maureen Damitz, Chicago, IL

Our daughter takes karate and gymnastics, both held indoors. To prevent problems, we tote our 'medicine bags' everywhere. These are insulated (particularly important on an extreme weather day) lunchbags that easily hold all the necessary medicines. The pocket on the outside holds an emergency letter listing her medications, doses and times to be given.

Donna Biroczky, Fontana, CA

Travel

When we visit relatives we bring along our son's dust-mite-proofing gear – including mattress cover, pillows and blankets. Often our family and friends understand how sensitive he is to dust and take the extra initiative to specially dust-proof the bedroom or even the entire house for him. When renting a vacation home, we always request accommodations that have no animals or smoking allowed, with a minimum amount of carpet.

Jennifer Frey, Millbrae, CA

We contact hotel managers and museums before a trip to find out if there is any painting going on. If so, we don't go. Once, a museum manager told us there was a small amount of trim being painted. We explained our situation and she sent the painters out of the building to return on a day when the museum would be closed. Because of the excellent ventilation system, we were able to enjoy the museum with the boys and no one could tell that there had been any painting done earlier that day.

Gayle Schroader, Taylor, SC

Fun-tastic Activities

Just for Kids

Word Jumble

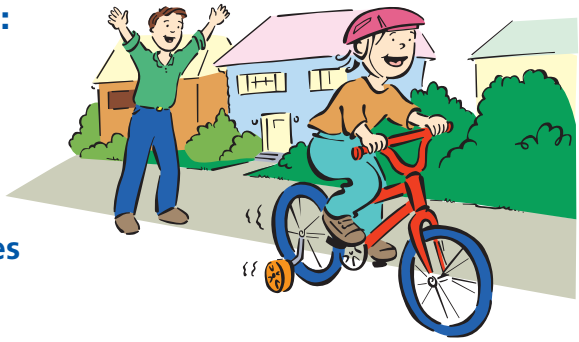
Unscramble the **words,** then **unscramble** the circled letters to **answer** the clue.

T I **B** H A	_____
X **E** I T	_____
E N A L I **H**	_____
X A H L **E** E	_____
W **R** A A Y I	_____
M **A** R S T	_____
H M A S A **T**	_____

Clue:
What clean air helps you do...

_____ _____ _____ _____ _____ _____ _____

Check out these additional "kids" resources on environmental controls:



Games, Quizes and Projects
www.epa.gov/students

National Institute of Environmental Health Sciences
kids.niehs.nih.gov

Answers to Word Jumble: Habit, Exit, Inhale, Exhale, Airway, Smart, Asthma
Answer to the Clue: Breathe

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