



Allergy & Asthma Network

Mothers of Asthmatics

INDOOR

AIRRepair™ AT SCHOOL

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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 that 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 physician. 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.



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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, sniffing. The cough may come every few minutes or within seconds.
- **wheezing** – this whistling sound can sometimes be heard as the child 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 child will usually use full sentences when symptoms first show up. As the episode gets worse, the child will use fewer and fewer words.
- **energy level** – may decrease slowly or suddenly. If the child has been running, he may stop, lean forward and place his hands on his knees while trying to catch his breath.

Every person responds to asthma differently. A child may display any or all of these symptoms during an asthma episode.

Steps to take if a student shows the above symptoms:

- **take the child 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 child can breathe more easily.
- help the child **drink water** to keep airways hydrated.
- allow the child to **rest** long enough to recover.

It is important for the child to use the prescribed bronchodilator at the first sign of symptoms. Most often, the student will recover quickly as the medication takes effect. However, the longer the symptoms continue without medication, the more dangerous the episode becomes.

Signs the child needs emergency medical assistance:

- **breathing doesn’t become easier** within 5 minutes after inhaling the bronchodilator medication. The skin around the child’s neck, collarbone and ribs may appear to suck in with each breath or his 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 child 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:

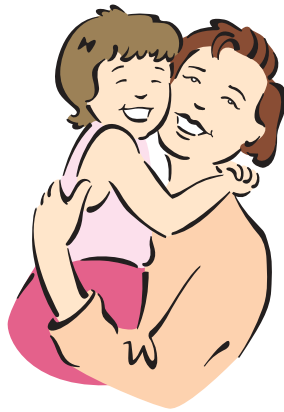
- **call 911** for emergency assistance
- **call the parents**

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

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.

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 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.

AIRREPAIR

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



AIRrepair:

- 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.

AIRREPAIR

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.

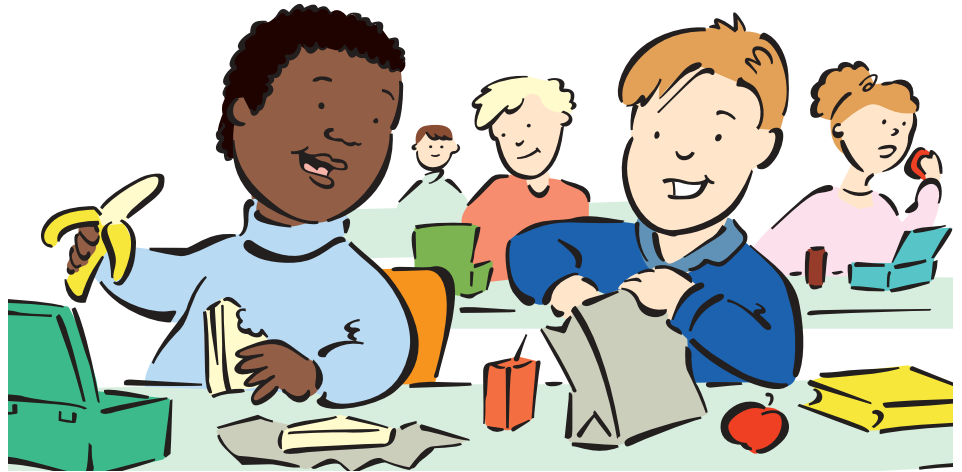
Microscopic proteins from pest waste (urine and fecal pellets) and saliva can travel through the air and cause allergy and asthma symptoms when inhaled. Symptoms may be immediate or delayed.

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.



AIRepair

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.

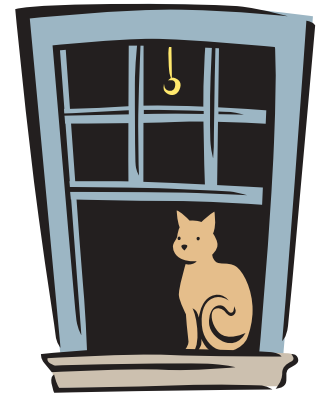
3. Remove Animal Allergens

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.

The 2004 National Youth Tobacco Survey found that 22.3 percent of high school students and 8.1 percent of middle school students polled said they smoked. Despite federal and state laws prohibiting smoking on school grounds second hand smoke continues to be a problem.



AIRREPAIR

- 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.

www.cdc.gov/tobacco/research_data/youth/464119.htm

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.

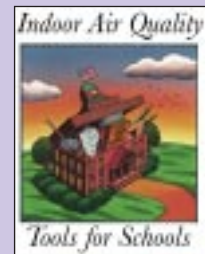


AIREPAIR

- 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.



Tools for Schools



Since 2000, the Environmental Protection Agency (EPA) Indoor Air Quality Tools for Schools (IAQ TFS)

Program has helped hundreds of schools throughout the country maintain healthy IAQ 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 800.438.4318. For access to the EPA's full range of materials for schools, visit their Healthy School Environments Web site at www.epa.gov/schools.

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. Emergency medications usually include auto-injectable epinephrine (such as EpiPen®), oral antihistamines or inhaled bronchodilators.

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 on hand at school.

Many states have laws that protect students' rights to carry and use their prescribed lifesaving asthma and anaphylaxis medications at school. 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 albuterol, 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 health-care 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.





Advice for Parents

Experienced Voices

AANMA'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.

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

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

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

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

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

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



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

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

Pat Smith

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



Please don't think I am over-protective 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

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

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

Dianne Danzig



Advice from a Teacher

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

Welcome to Breatherville, USA!

Where learning about allergies
and asthma is a positive experience!



Copies of the **Indoor AllRepair™ at School** newsletter
can be downloaded at breatherville.org/schoolhouse.



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