

Indoor Air Quality Issues for Child Care Facilities



TRAIN - THE - TRAINER GUIDE



CHILDREN'S ENVIRONMENTAL HEALTH PROJECT

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Introduction

As a childcare provider, you have been entrusted by parents with their most valuable asset – their children.

You may spend more time with a child than any other adult. Helping to raise the children in your care, you can have a huge impact on their health and well-being. Do you know how to protect each child from the harmful effects of the environment we live in? Do you know what harmful things are actually in the environment you provide?

Basic common sense tells you when something just isn't right. Little Johnny keeps coughing the day after pesticides have been sprayed near his crib or Sarah just looks really tired and gray right after the room has been vacuumed. These are examples of what could be patterns. Patterns do not emerge overnight. You may see pieces of what is happening, and the family may see other pieces. Neither of you realizes that the other has the missing piece. It is important that you write down observations about a child's health, and share this information with the parents.

Childcare facilities and schools often have problems with indoor air quality because there are a lot of people in a small space. Money to maintain or upgrade buildings may be limited. Childcare providers and parents may not even be aware of the environmental risks children may experience in outdated buildings. Poor indoor air quality can increase the spread of communicable diseases and cause discomfort such as congestion and coughing for children and adults. Children and childcare workers may miss school far too often by our failure to recognize and correct environmental health risks.

Conditions that trigger asthma attacks can lead to hospitalization and even death for some children and adults. The number of children with asthma is increasing, and we need to protect children by reducing triggers that can cause an asthma attack. It is important to know how to recognize an asthma attack and what action to take.

This guide is meant to help childcare providers improve the indoor air quality at their centers by providing information on harmful indoor air and how to achieve a healthy environment.

Lung Development

Children's lungs are still developing until they reach about 6-8 years of age. During this time, children's lungs can easily be damaged by pollution or infection. Children breathe 4 times as much air per pound of body weight as adults! This means that children breathe in more pollutants than adults.

Children living in cities are exposed to pollution from cars and industry, while children living in the country may be exposed to dust and pesticides from farming. Parents and teachers can take action in the home and classroom to protect children's lungs. This section will explain what our lungs do, and how they are affected by the quality of our air.

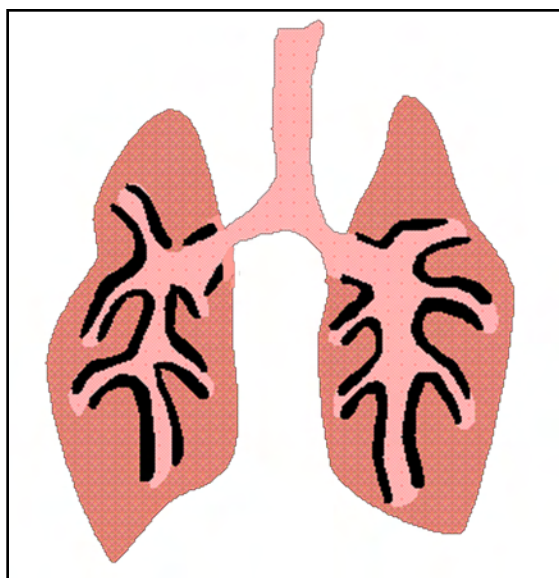
What do our lungs do, how do they work and how big are they?

Breathing is an automatic function that supplies the body with the oxygen necessary to run all of the body's systems. Our lungs inhale and exhale about 20,000 quarts of air every day. (Visualize a 16-wheel semi truck carrying milk.) The lungs are the largest organ inside the body. If you were to unfold all of the lung tissue it would stretch to almost the size of a tennis court. We breathe in oxygen through very thin sac like objects called lungs that give oxygen to the blood received from the heart. The blood then carries the oxygen to the rest of the body and exchanges it for carbon dioxide, which is expelled when we exhale.

For a long healthy life, all of us need to protect our lungs.

What do they look like inside?

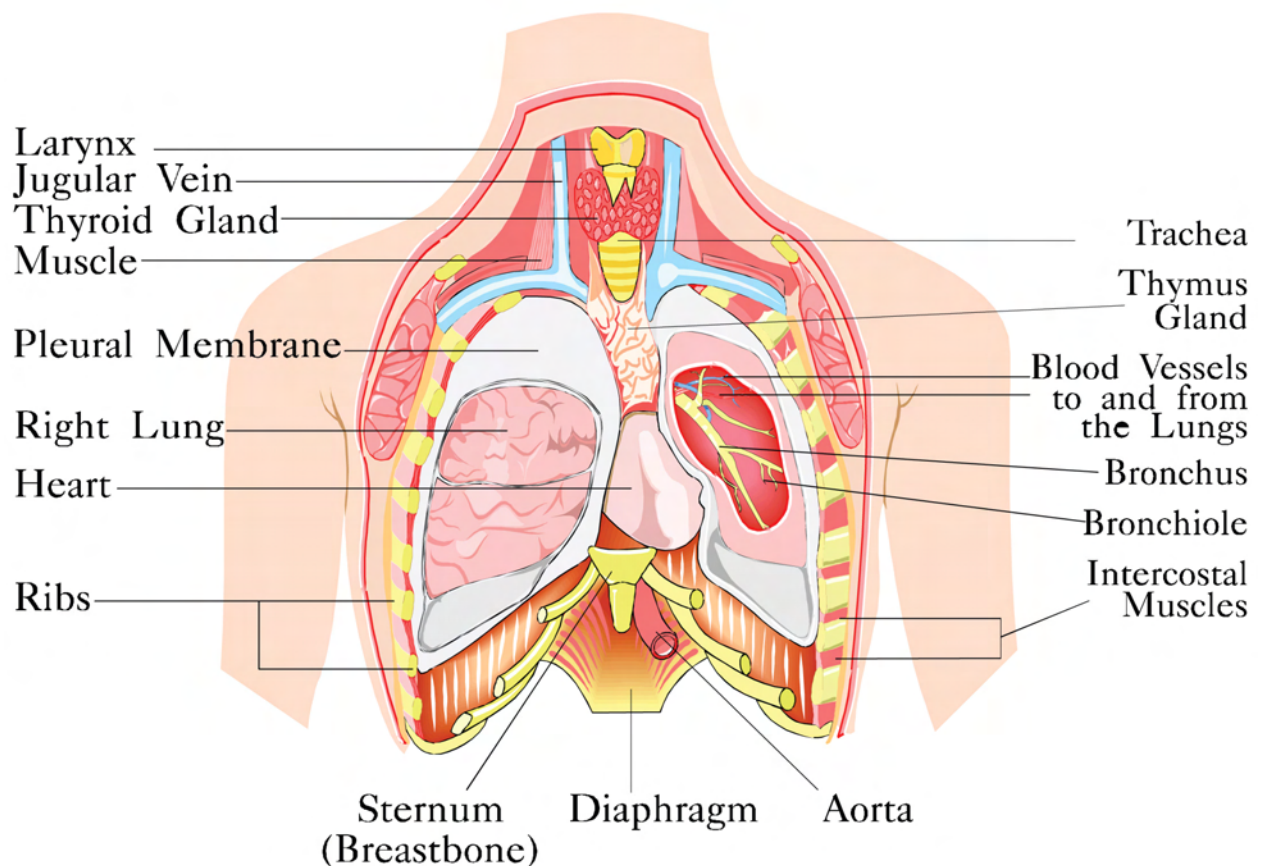
See the difference between healthy and unhealthy lungs. The quality of the air can make a difference. Smoking is a real culprit.



Each Part of our Respiratory System Plays a Role

Many parts of the respiratory system serve as air filters. Our nose, mouth and lungs filter incoming oxygen as we breathe. The air passes through the windpipe (also called the trachea) and into the lungs, through smaller and smaller branches, until it reaches tiny sacs (alveoli) which are surrounded by blood vessels. The oxygen moves from the alveoli, into the blood, and the heart pumps the oxygen-containing blood to the rest of the body. The more dirty the air we breathe, the more difficult it is for our body's filtering (respiratory) system to protect our lungs and other body parts from harm.

ORGANS



Air Quality

Air pollutants

Our air quality is measured by the number and kinds of pollutants in the air. Sometimes we can see the air pollution, and sometimes we can't. Today's technology allows us to determine whether the pollutants are there and if they pose environmental health risks. Air pollution is made up of big particles (called PM₁₀ Particulate Matter), small particles (PM_{2.5} Particulate Matter), Carbon Monoxide (CO), Carbon Dioxide (which comes from our own systems), and Ozone (O₃).

What does each type of air pollution do and how does it affect my lung capacity?

Big particles (PM₁₀) are made up of items that are about 10 microns in size (the thickness of a strand of hair). PM₁₀ particles plug up your lungs by sticking to the inside of the branches, forcing your lungs to make mucous to trap these particles. Your body then coughs to get rid of the mucous. These particles are found in windblown or construction dust, tire dust created when a tire hits the pavement, wood stoves and fireplaces, wildfires and trash burning. PM₁₀ is often responsible for the haze we see.

Small particles (PM_{2.5}) are about the size of bacteria. Bacteria are so tiny they aren't visible to the eye. These very tiny particles can come from smoke from brush fires, heavy metals or toxic chemical fumes. Because these particles are so small, they can go very deeply into the lungs. They stay there and can cause continuing irritation, sometimes even leading to death by cancer.

Carbon Monoxide (CO) is created by car exhaust. This is especially dangerous to our lungs because Carbon Monoxide can travel through the very thin sac-like lung walls and mix with the blood. The body will not get enough oxygen to the blood because the body thinks that the Oxygen and CO are the same. Slowly the body replaces Oxygen with Carbon Monoxide, and it can restrict the flow of oxygen to other organs and even can cause death.

Carbon Dioxide is the gas that is released from our bodies after oxygen has been absorbed within our bodies. Simply put, we take in oxygen and release carbon dioxide. It is the leftovers after our body is done absorbing oxygen into the system. If too much carbon dioxide is in the air, we can get too little oxygen, which can give you a headache; make you sleepy, or dizzy.

Ozone created when all the pollutants and particles in the air are exposed to heat and sunlight. That is why High Ozone days are more frequent in summer months than in winter. Exposure to ozone basically sunburns the inside of your lungs by inflaming your lung lining. Constant exposure can result in decreased lung capacity, premature aging of lungs, increased asthma, and other lung diseases.

Children and the Outdoors

Outside play time is important for children to get exercise and to learn motor skills. However, when children are playing outside, they take in more air than adults, and can be exposed to a lot of pollution. Children should be kept inside when air quality is poor, or should at least be discouraged from intense outdoor activity. Educators and parents should be aware that nearby construction and traffic can increase pollution. Mowing school lawns should never occur during school hours, since this can cause an allergy or asthma attack. Insecticides should also never be sprayed during the same time you are caring for children.

Outdoor air can include odors, pollutants from vehicles, and fumes from stored trash, chemicals, and plumbing vents. These pollutants travel freely with the wind and invade our day care facilities, schools and homes through windows and doors. Smoke and dust can also travel with the children, their families and you and your employees as the particles stick to clothes, particularly with dirt from shoes.

TIPS:

- ♥ Keep children indoors during high traffic times when there is a lot of car exhaust in the air.
- ♥ Keep windows/doors closed during high ozone or windy days or if you are in an area with lots of traffic.
- ♥ On high pollution days, create educational opportunities outside that do not require lots of intense physical exercise.
Remember: Little bodies take in a lot more oxygen than an adult which means that they risk taking in more polluted air as they breathe in the essential oxygen.
- ♥ Use the air conditioning in your car. If your car doesn't have air conditioning, try to plan your trips for times when there is less traffic.
- ♥ Try to keep little children from eating dirt since the soil could have pollutants in it. Have them wash their hands while singing "Happy Birthday to you". That takes about 20 seconds, the time it takes to wash the "bugs" off their hands and stop the spread of unhealthful contaminants.
- ♥ Place a dirt catching mat outside the door so that dirt gets left outside. Ask everyone to please wipe their feet as they enter.
- ♥ Check your air filter frequently. Perhaps a washable filter might be more affordable if frequent replacements are necessary. A filter that has ripples in it can catch smaller particles than the flat ones.

What is indoor air quality?

Indoor quality is determined by how clean our air is inside our buildings. You ask yourself, “How do I know what’s in the air my kids are breathing?” This is a very good question. The only way to be sure about the indoor air quality in your child care facility is to have an environmental assessment done by a company that can test the air. However, you can improve the indoor air quality by following the steps outlined in this guide.

The most common cause of poor indoor air quality is lack of proper ventilation. “Ventilation” refers to the vents which allow air to enter and exit the building. Without enough ventilation, pollution stays inside the building and builds up to create poor indoor air quality.

Ask yourselves:

Is the thermostat set properly?

Is the room comfortable?

These two questions address room temperature because some children could have their respiratory problems made worse by cold temperatures in the room. The room should be comfortable to be in. Temperature extremes place additional strain on hard-working lungs.

Is the air flowing into the rooms?

Is there a strong odor present?

If the room isn’t receiving enough new fresh air then the old air could get stagnant. This could lead to decreased oxygen levels and can make you very tired and could cause particles to settle in the room. A strong smell could trigger a respiratory problem or an asthma to flare up, which might indicate that there is an air movement problem.

What is in the air?

Building supplies that were used when the house or center was built, along with processed wood in furniture, often emit fumes that pollute our inside air. Linoleum and vinyl sometimes emit odors because of the preservatives in them.

Bleach and ammonia are commonly used when added to water to clean kitchen and bathroom areas but they must be used with care around children. Vacuuming or sweeping should not be done when kids are present because they create dust. Permanent markers, glue, air fresheners, aerosol can sprays, and strong perfumes can also create fumes that may be environmental health risks for small bodies. Pollution brought in from outside air can also add to poor indoor air quality.

Air temperature extremes can also affect people with respiratory problems by causing additional respiratory stress.

Major Indoor Pollutants

Pollutant Name	What Is it? What could it look like?	Where can you find it?
Asbestos	mineral fiber	Insulation which is falling apart, and other deteriorating materials such as floor tiles, siding and roofing. Construction materials used before 1979.
Biological Contaminants	mold, mildew, pollen, cockroaches, dander, dust mites	Wet or moist walls, humidifiers, wet or moist carpet or padding, bedding, your furry pet.
Carbon Monoxide	colorless and odorless gas	Motor vehicles, furnaces, fireplaces, gas stoves, gas space heaters.
Environmental Tobacco Smoke	smoke	Secondhand smoke from cigarettes, cigars, pipes and other tobacco products
Formaldehyde	chemicals used in making of furniture and clothing	Pressed wood products, glues, cabinets and furniture, cigars, cigarettes, pipes, and permanent press clothes
Lead	toxic metal	Lead-based paint, solder in food cans and pipes, drinking water. Buildings constructed before 1979.
Nitrogen Dioxide	colorless and odorless gas	Cigars and cigarettes, pipes, gas stoves and furnaces.
Organic Chemicals	ingredients in household chemicals	Paints, aerosol sprays, dry cleaned clothing, disinfectant, arts and craft supplies.

It is important that an educator (or parent):

1. Read labels carefully before purchase to choose a product that has the least amount of pollutants in it.
2. Follow the manufacturer's directions
3. Make sure to wipe the container clean on the outside before sealing tight and putting away.

You can download an excellent Fact Sheet created by the Environmental Protection Agency on the reactions between different chemicals. The Fact Sheet also has a list of alternatives: <http://es.epa.gov/techinfo/facts/safe-fs.html>

Air Purification Systems:

There are different types of indoor air purifiers on the market. With our population spending more time inside these have become very popular. The Environmental Protection Agency has published a Web site that addresses this topic:

<http://www.epa.gov/iaq/pubs/ozonegen.html#what%20is%20ozone>

Most of the air “purifier” systems actually emit ozone into the room. According to the EPA Web site following the manufacturer directions does not guarantee indoor air quality safety. The ozone generated from these machines was actually 5-10 times higher than allowed by public health standards.

Air Fresheners that plug into the wall, sprayed into the air or are sprinkled on carpet, only mask the problem. They do not eliminate the problem. They do this by numbing nose sensors that would send messages to the brain that say the smell is gone, but in reality the problem is only temporarily removed.

For example: A child has a bowel accident in the classroom. After taking care of the child, the best thing to do for the room environment is to sanitize the area, as required by law, and open the doors and windows. Leave them open as long as it take to eliminate the odor in the classroom and if the odor returns then open the doors and windows again. It is not uncommon for smells to return so you may have to do this several times.

Most cleaning products include some oil based products and other chemicals. Some of these products are known to cause cancer in animals. By spraying these products into the air, we are exposing our children’s lungs to chemicals that are not healthy for animals to breathe. These products add to indoor pollution. The best thing to do is to avoid fragranced cleansers and use the least toxic product that can be found. Ventilate the room well when you are cleaning. Opening the door or window for a short period of time to air out the room will reduce the amount of chemicals floating around in the air. Do not store chemicals in the classroom.

The best way to purify indoor air is to figure out what is causing the smell and then eliminating the problem.

Secondhand Smoke

What is secondhand smoke?

Secondhand smoke is made of smoke from cigarettes (and cigars) and the air that the smoker exhales. Secondhand smoke is also called Environmental Tobacco Smoke (ETS) or “passive” or “involuntary” smoking. Children exposed to secondhand smoke are likely to have more problems breathing than those who are not exposed to secondhand smoke.



Exposure to secondhand smoke may harm a child’s immune system. Adults should never smoke in a building where children are present or around children anywhere. Adults who leave the building to smoke should wear something over their clothing while smoking and remove it before they return to the presence of children. A simple thing like the smoke lingering on clothing after smoking can cause breathing problems for some children.

Are there any health effects?

Second hand smoke irritates the lungs and can make existing breathing problems, such as asthma, worse and even cause permanent damage. It enters the lungs through the bronchi tubes and irritates the lining. The body creates mucous to try and fight the irritant and then has to cough it up. The smoke that enters through travels deep into the lung tissue where it can even cause cancer.

- ♥ Keep your building smoke free.
- ♥ If you must smoke please wear another garment over your clothes while smoking and remove it to reduce the smoke smell that settles on your clothes.
- ♥ Wash your hands after smoking to remove leftover smoke from your hands.

Chemicals

Why are chemicals an important concern? Gases are released by the chemicals in the products we use. These gases are in soaps and shampoos, perfumes and colognes, air fresheners, cleaning supplies, carpets, building materials, art and school supplies, toys, furniture and so many more items.

The chemicals in our environment are very small (2.5 microns) so they go deeply into our lungs as we breathe. Our body can’t get rid of them, and they build up in our lungs, where they can affect our breathing. For this reason, it is important to be aware of the chemicals that are present in the products we use. Even though we can’t get rid of all the gases and chemicals in our environment, there are lots of things that we can do to improve the air quality in our childcare centers and homes.

What are commonly used chemicals at your childcare center? You may not think of cleaning supplies, art supplies, and school supplies as dangerous, but they can cause problems.

Art Supplies

Examples of art supplies and activities that may contribute to air quality problems include: solvents, inks, adhesives, glues, wax varnishes and lacquers; powdered pigments, acids, clays, paints, and firing kilns.



The Art and Craft Materials Institute (ACMI) is a group that determines the toxicity of art supplies. They have created a very helpful tool online by which you can enter the name of your art supply and you will receive information about potentially harmful ingredients. The Web site is www.acminet.org

The Center for Safety in the Arts is another source to find information about art supplies. They are located at: 5 Beekman St, Suite 820, New York, NY 10038
Telephone: (212) 227-6220.

Cleaning Supplies

The Arizona Department of Health Services' (ADHS) childcare rules require that surfaces be sanitized but do not identify products to use.

The National Resource Center for Health and Safety in Child Care suggests that in a childcare environment a solution of $\frac{1}{4}$ cup of the commonly used liquid chlorine bleach be added to 1 gallon of tap water and prepared fresh daily. After normal cleaning of surfaces such as kitchen counters or bathroom surfaces or any surfaces that might have been soiled with food or body fluids or other contaminants, use the bleach solution on a cloth to *wipe* the surfaces. There should be a slight smell of bleach. The surfaces should be left moderately wet with the bleach solution and allowed to air dry. ***Do Not Spray.*** This sanitizes the surfaces and makes them safe to use again.



Child care centers need to be able to sanitize to avoid spreading diseases. Should your facility choose to go with Green Products they must meet the minimum standards mentioned above. As with all cleaning products care needs to be exercised not to expose children to these harmful fumes. For more details on this, see the special section in the back of this Guide.

School Supplies

Chalk dust can be a problem for some people. Try to clean erasers outside (and away from the door) to prevent floating indoor chalk dust. Sidewalk chalk can create enough dust to cause problems for some children. Be aware that dry erasers and the dry erase solution can also cause breathing problems. Use sparingly.



TIPS:

- ♥ Instead of chalk erasers use old mismatched socks as an eraser. These are plentiful in almost every home and once used up with chalk can either be laundered or thrown away. This reduces additional chalk dust floating in the air.
- ♥ Make a list of your art supplies and indicate in the file what chemicals are in them. Any of those that contain toxic chemicals should be stored outside the classroom and brought in only for the time they are in use.
- ♥ Wipe up spills right away and dispose of rags properly.

Moisture Control

What is mold?

Mold is a type of fungus that can lay dormant in dry conditions and reappear when the humidity and oxygen combinations are just right. There are somewhere between 50,000 and 250,000 species of fungi. About 200 of these have been found to be harmful to humans.

Where do I find mold?

Mold spreads by creating spores. Spores are small and lightweight “seeds” which travel freely through the air and land on a moist spot where the fungi then attaches itself to the surface. Mold can be found on wood, carpet, and food. Outdoor mold helps break down leaves and other debris. Indoor mold is not quite so welcome. Mold can be found anywhere where there is moisture. Frequently it can be found in restrooms and kitchens but can also be found on or near drinking fountains. Laundry baskets with dirty clothes in them can also create an ideal place for mold growth. Keeping your indoor or outdoor plants too wet could provide an ideal place for mold spores to plant themselves. The best line of defense is to monitor the dirt around your plant, or landscaping, whenever you water it.

What does it look or smell like?

Mold can look like white string growing on clothes or have black speckles on clothes. Usually mold is accompanied by a “musty” smell that doesn’t go away. However, mold can also grow behind wallboard, under vinyl (like in the bathroom), or in the crawl space. Your sense of smell may tell you there is a mold issue and it may take you some time to find it. Be diligent...don’t give up!

Are there any health effects?

Mold can produce an allergenic reaction in some people while not affecting others. The type and amount of mold involved, the age of the person exposed to the mold, and the sensitivity that person has to mold fungi are factors determining the effect on the individual. Health effects can show up as irritations of the eyes, skin, nose and throat, and lung.

How does this affect my children and what can I do?

You cannot totally control what is in the air. However, there are a lot of things you can do to help *REDUCE* additional exposure while children are in your environment. Below is a list of things that you can do and most of them should already be a part of your normal maintenance plan. Awareness of your childcare facility environment, what’s in it and how it can affect the children, is the best assistance you can give your childcare family.

Clean up Mold and Control Moisture

Report any foul moist odor to your director immediately because this could be a sign of a mold issue. Here are a few remedies that might help reduce or eliminate a build up of moisture:



Bathrooms:

- ♥ Install an exhaust vent that can de-humidify area. Indoor humidity should stay between 30-50 percent.
- ♥ Install a window in the bathroom to allow fresh air into the room.
- ♥ Eliminate carpeting near bathrooms and sinks where water could seep into the flooring and padding.
- ♥ Wipe up spills immediately.
- ♥ Check sheetrock behind toilets for mildew. When toilets overflow and water is allowed to stand, it is possible that the sheetrock could get damaged and harbor mold. A simple solution might be to put some sort of vinyl coated backsplash onto the wall and floor-board to increase distance between water and sheetrock.
- ♥ Check toilets to make sure they are working properly. Does your toilet run all the time? Does your bathroom smell moist?
- ♥ Check for any leaks around the sink.
- ♥ Does your bathroom have a drain trap? If so, there may be sewer gases coming up through the drain into the bathroom.

Cleaning Of Facility

- ♥ Try to reduce the amount of time you clean while children are present.
- ♥ Dusting and vacuuming create a lot of dust particles that can cause kids to inhale small particles. If you can, use a vacuum with a HEPA filter, which is normally on most of today's vacuum cleaners. This filter can trap the small particles (PM_{2.5}) in the air which we referred to earlier as a real threat to children's respiratory health. Another good idea is to use a vacuum cleaner that has a rotating brush. This will bring out the dust particles that could otherwise get trapped in the carpet. Dusting and vacuuming should be done when children are out of the room.
- ♥ Bleach smells and chemical reactions between different types of cleansers can release toxic fumes. Bleach has such a strong smell that many people's lungs find it difficult to breathe when bleach is being used.
- ♥ Stuffed toys need to be washed weekly and dried completely or eliminated all together. They store a lot of dirt (and dust mites) that is tossed back into the air when the children play with them.
- ♥ Cooking with gas can irritate eyes, nose and throat.
- ♥ Children with asthma and other respiratory problems should have limited exposure to dogs, cats and other fuzzy critters in the school environment. These pets can trigger respiratory symptoms in some people.
- ♥ Curtains need frequent washing since they trap particles (and dust mites) in the fabric.
- ♥ Covering mattresses with plastic and washing bedding frequently can reduce dust mites.
- ♥ In general, it is recommended that couches and other fabric-covered furniture not be used in the day care environment. If they are, they should be cleaned frequently or have slipcovers that can be washed on a regular schedule in hot water and sent through the dryer on high if possible. The couch will still need to be vacuumed but maybe not as frequently. Here again, state and local sanitation requirements need to be followed.



Integrated Pest Management (IPM)

This is a technical term for pest control without chemical spraying. Pests include mice, rats and cockroaches. Did you know that most homes have mice or rat droppings? These droppings place small particles into the air that can affect some people.

Since most schools do spray chemicals for pests it would be best to spray on Friday afternoon after children leave so that your building has time to air out over the weekend. Outside spray is broken down with sunlight but indoor spraying does not get exposure to Ultraviolet rays. Therefore, indoor spraying could cause more problems to your asthmatic/allergic child. It would be best to find other ways to get rid of problem pests without using chemicals. However, should you need to spray, please make sure the rooms being sprayed are well ventilated to reduce chemical concentrations.

Other TIPS:

- ♥ Use bait or traps instead of spraying chemicals.
- ♥ Keep food covered and put away.
- ♥ Keep countertops, sinks, tables and floors clean from clutter and debris.
- ♥ Store food in plastic airtight containers.
- ♥ Cover the trash can.
- ♥ Make sure you wash all produce thoroughly before preparing.
- ♥ Make sure you break down all corrugated cardboard as quick as possible.
- ♥ Locate school trash bin as far away from buildings as possible.

Additional IPM information can be found in the free EPA publication “Pest Control in the School Environment”. Publication Number EPA 735-F-93-012 and was published in August 1993. For your convenience this document is enclosed with this “Train the Trainer” Guide.

Heating and Cooling System

Swamp coolers will create more moisture and allow more particles inside the environment than a closed up system such as air conditioning.

- ♥ Check your filters for buildup regularly and replace the filter as necessary. The closer to traffic and open spaces you are the more likely the filter will a large amount of particles. It may be worth using a filter that can be washed, dried thoroughly and then reinstalled. These are available at most home improvement stores. A flat filter can’t trap as many small particles as a wavy one.
- ♥ Un-vented kerosene or gas space heaters can emit Nitrogen Dioxide. Symptoms could be shortness of breath and it can bother your eyes, nose and throat.
- ♥ If you are using a wood burning stove, make sure that you empty ashes when few people are around so that the dust can settle.
- ♥ Drain pans from the refrigerator, air conditioner and washing machine should be checked for water or dust accumulation.
- ♥ Make sure that vents are properly installed and are not bringing outside air in.
- ♥ Check dryer vent to make sure that dryer hose is not cracked and leaking moisture or lint back into the room.
- ♥ Have an annual vent cleaning performed to reduce the amount of dust, bacteria and other small objects from re-circulating through the system.
- ♥ Make sure that the fresh air intake is not by the parent drop off and pick up location or by the delivery door.

Asthma

What is Asthma?

Asthma is a chronic disease that affects our airways, which are the tubes that carry air in and out of our lungs. For those who have asthma, the inside walls of the airways are inflamed (swollen). The inflammation makes the airways very sensitive, and they tend to react strongly to things to which we are allergic or find irritating. When the airways react, they get narrower and less air flows through to our lung tissues. This causes symptoms like wheezing (a whistling sound when asthmatics breathe), coughing, chest tightness, and trouble breathing.

An allergy is a reaction to something the person comes in contact with. Most of us probably know someone with sensitivity to pollutants and we try to minimize the person's exposure to those irritants. Often children may not know what may be causing their allergies. They try to eliminate what might be the cause, but it can sometimes take a long time to figure out what someone is actually allergic to.

Asthma and allergies are closely linked because they most often affect the lungs and cause similar symptoms. Asthma and allergies are sometimes confused by people. Asthma is often a misunderstood condition because symptoms look so much like other respiratory illnesses. Until parents and teachers can figure out what may be triggering the child's symptoms they often resort to the process of elimination to determine the cause.

What are some signs of asthma?

Since asthma is an inflammation of the lung lining it is not visible to the naked eye. You may observe some of the following symptoms from time to time in some of the children in your care:

Feeling tired	Lethargic
Wants to be alone	Irritable
Headache	Coughing
Eyes look glassy	Wheezing
Dark circle under the eyes	Breathing changes
Pale stuffy nose	

Asthma can look a lot like flu or allergy symptoms. In small children less than 5 years old asthma symptoms look a lot like respiratory viruses such as Respiratory Syncytial Virus commonly known as RSV, pneumonia, or bronchitis. Scientists have found that children, who will develop allergies and most asthma symptoms, will do so before they turn 5.

How is Asthma diagnosed?

- ♥ A pattern of repeated wheezing/coughing or shortness of breath episodes
- ♥ A cough that just won't go away and stays longer than a normal cold
- ♥ Doctor prescribes trial asthma medication, and it seems to reduce symptoms
- ♥ Family background may establish a history of allergies/asthma

Since allergies and asthma are so closely related and often share the same symptoms it may be difficult for the doctor to diagnose. Some doctors may prescribe asthma medication to see if the symptoms get better.

What are simple things that a child care provider can do to help?

- ♥ Have children wash their hands often each day for 20 seconds each time.
- ♥ The best thing that a childcare provider can do is to record and communicate symptoms with the parents. Located in the Appendix is a sample chart that may communicate vital daily events to the parents and recommend they seek medical advice if symptoms persist.
- ♥ Get to know which children in your classroom have allergies and try to find out what they are allergic to and reduce their exposure to those triggers in your classroom.
- ♥ Find ways to reduce chemical use in your classroom and find alternatives that will work just as well and meet local/state codes. Try to switch to products with the "Green" label since they are more environmentally friendly and may have less harsh chemicals.
- ♥ Educate yourself on how to recognize asthma symptoms.
- ♥ Learn how and when to give the life saving medications.
- ♥ Make sure that all of your allergy/asthma students have *Asthma Action Cards* located with their medical records. In time of stress an Asthma Action Card can save a child's life because it tells the rescuer step by step directions of what needs to be done to help this child restore his or her ability to breathe. For your convenience a sample document has been included on page 33 .
- ♥ Create an Asthma Friendly School policy.

What do I do if the child is having an Asthma attack?

1. **STAY CALM** and have the child sit and relax as much as possible.
2. Contact your facility director immediately so that the asthma plan can be put into effect. Follow the prescribed plan.
3. Refer to the A.C.T. for Asthma poster (page 35) for step-by-step instructions.

Asthma Friendly Childcare Facilities



Why Become Asthma Friendly?

An Asthma friendly childcare facility will create awareness between parent, staff and child of things that could cause additional breathing problems for a child. The facility will actively work in reducing the triggers that could cause someone's asthma to flare up.

- ♥ Asthma affects 1 in 4 school children
- ♥ Asthma is increasing in prevalence especially in young children below the age of 5
- ♥ Asthma can kill if left unattended
- ♥ Asthma is a major cause of childhood admissions to hospital
- ♥ Recognize the signs of Asthma: lethargy, tiredness, decreased motivation and inability to concentrate, ear and stomach aches

How can we become an Asthma Friendly childcare facility?

We suggest the following should be required in order to establish an Asthma friendly childcare facility.

Required

- ♥ Asthma Action Plan included with state required health records and available to emergency (rescuing) personnel
- ♥ ACT for Asthma posters visible in a prominent location in each classroom.
- ♥ Asthma education provided for all facility staff
- ♥ Asthma medications are stored in safe facility location
- ♥ Asthma education program offered to families and asthma awareness is created in daycare curriculum
- ♥ Carry a child's Asthma Medication while you are on a field trip
- ♥ Incorporate vehicle idling procedures
- ♥ Incorporate environmental housekeeping techniques

Recommended

- ♥ Utilize the Tools for Schools checklists to improve air quality
- ♥ Potential asthma triggers identified in the school environment and reduced

School Bus Idling

Diesel fumes from idling school buses can be harmful when loading students on to buses, especially when several buses are lined up (queued) at once. Young lungs are particularly susceptible since they are not completely developed. The following health problems can occur when a school bus's engine is on and the bus is not moving;

- ♥ Soot from the exhaust increases the chance of heart and lung disease
- ♥ Asthma and respiratory problems are aggravated by prolonged exposure to diesel fumes
- ♥ Breathing diesel exhaust may increase the risk of getting cancer

Facts about Idling and Health

1. One hour of idling burns approximately $\frac{1}{2}$ gallon of fuel
2. Vehicle exhaust is the leading source of air pollution in Arizona
3. Diesel exhaust contains 40 Hazardous Air pollutants along with carbon particulates
4. Queued idling buses have the highest levels of particulates and black carbon retained during the ride, depending on bus ventilation rates
5. Diesel exhaust is classified as a probable human carcinogen by many government authorities, including the Internal Agency for Research on Cancer, the U.S. National Toxicology program and U.S. Environmental Protection Agency (EPA).

Recommended School Bus Idling Procedures:

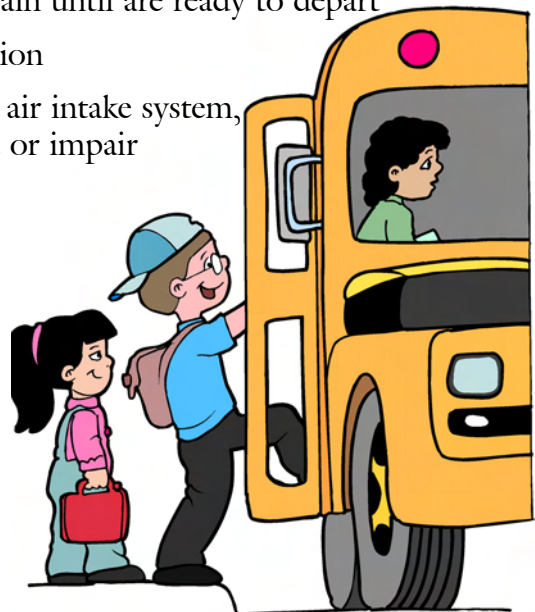
Arriving at school

1. Turn off the engine ASAP and do not turn it on again until are ready to depart
2. If available, roof vents can remain open for ventilation
3. Park the bus at least 100 feet from an active school air intake system, unless school had determined that will block traffic or impair student safety

Loading students

If lights are needed, activate them without running the engine.

Wait until all students are loaded and door securely shut prior to starting engine.



Queued Buses

When several buses are lined up waiting for students:

1. Lead bus should control movement of other buses at all times
2. All drivers should wait until word is received that every bus is loaded and ready to leave before starting their engines

Departing from school:

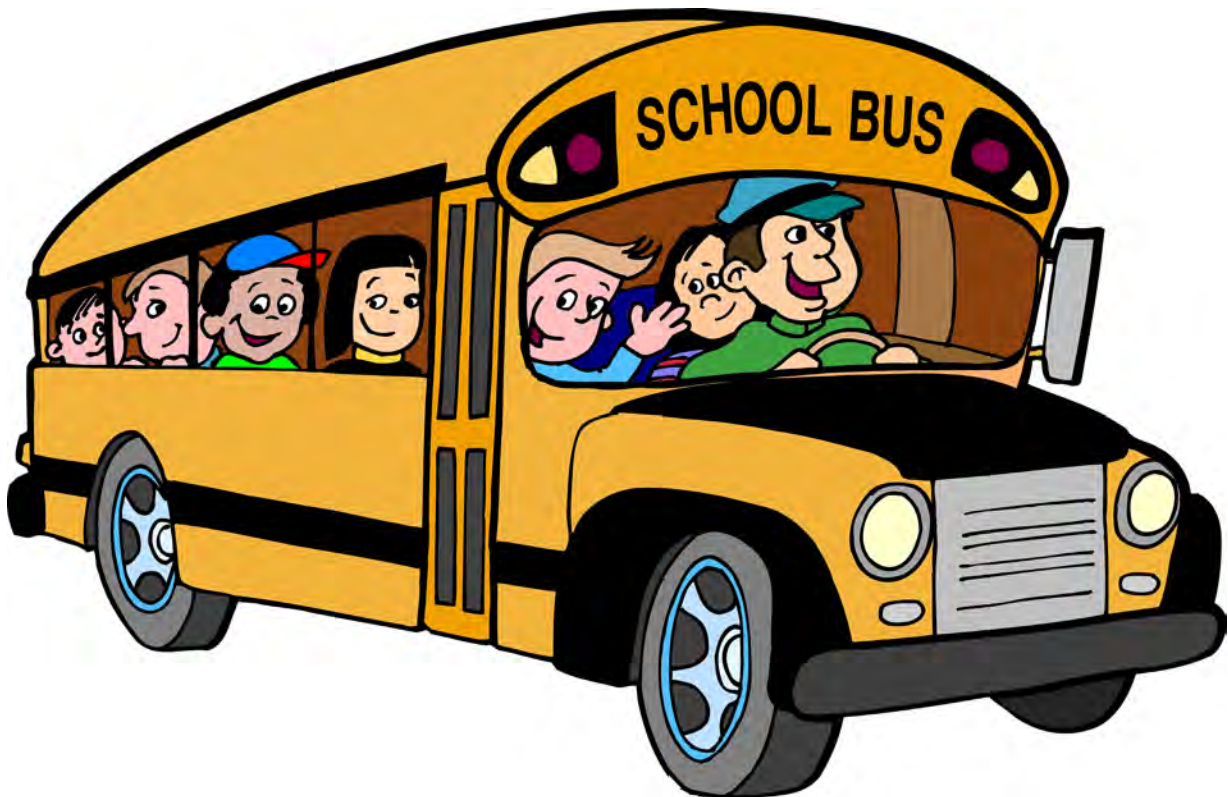
Drivers are discouraged from “caravanning” behind other buses to avoid fumes from the leading bus entering the passenger compartment.

Exceptions:

Smaller, special needs buses (could also be child care providers buses) that take less time to load are exempt from these recommendations and should be free to leave the bus is loaded.

If justified by cold or heat, buses may idle for a minimum time to heat or cool the bus prior to loading, or if an emergency situation dictates.

These recommendations are available on the Arizona Department of Environmental Quality website. School districts are being encouraged to voluntarily accept these practices because it makes environmental and economic sense. You can check to see if your local school district is participating in this program at www.azdeq.gov



Appendix

Cleaning Supplies (Sanitize and Disinfect)

The following text from the National Resource Center for Health and Safety in Child Care:

Disinfect - To eliminate virtually all germs from inanimate surfaces through the use of chemicals (e.g., products registered with the U.S. Environmental Protection Agency as "disinfectants") or physical agents (e.g., heat).

In the child care environment, a solution of 1/4 cup household liquid chlorine bleach added to 1 gallon of tap water and prepared fresh daily is an effective disinfectant for environmental surfaces and other inanimate objects that have been contaminated with body fluids (See Body Fluids), provided that the surfaces have first been cleaned (See Clean) of organic material before disinfecting.



To achieve maximum disinfection with bleach, the pre-cleaned surfaces should be left moderately or glistening wet with the bleach solution and allowed to air dry. A slight chlorine odor should emanate from this solution. If there is no chlorine smell, a new solution needs to be made, even if the solution was prepared fresh that day. The solution will contain 500-800 parts per million (ppm) chlorine.

Solutions much less concentrated than the recommended dilution have been shown in laboratory tests to kill high numbers of blood borne viruses, including HIV and hepatitis B virus. This solution is not toxic if accidentally ingested by a child.

However, since this solution is moderately corrosive, caution should be exercised in handling it and when wetting or using it on items containing metals, especially aluminum.

DO NOT MIX UNDILUTED BLEACH OR THE DILUTED BLEACH SOLUTION WITH OTHER FLUIDS, ESPECIALLY ACIDS (E.G., VINEGAR), AS THIS WILL RESULT IN THE RAPID EVOLUTION OF HIGHLY POISONOUS CHLORINE GAS.

A disinfecting agent that is at least as effective as the chlorine bleach solution and is approved by the state or local health department may be used as a disinfectant in place of the bleach solution.

Disinfection is commonly used for toys, children's table tops, diaper changing tables, food utensils, and any other object or surface that is significantly contaminated with body fluids. Disinfection of food utensils can be accomplished by using a dishwasher or equivalent process, as described in Maintenance."

Try to simplify your cleaning supplies to as few as allowable by local or state code. Your facility may want to consult with childcare licensure and the Department of Education about cleaning supplies/procedures. Green products do not cost much more and may be an option.

ENVIRO HUNT Game

The object of this game is to create awareness of how many things we have in our rooms that add to indoor air pollution - items that are so every day and so minor in our environment, and yet may cause "breathing problems. We may not know how much these things affect children's ability to breathe freely.

What is the value of this exercise? Staff will learn how to identify what environmental health risks are in their environment so that they can begin to protect the children, particularly those with asthma and other breathing problems.

Instructions:

Divide the group into 2 or more teams. Each team can have 2-5 people, and is assigned its own room to search for items which can cause indoor air pollution. Give each team plenty of time to complete the hunt, and return to the main classroom. Have each team explain their findings and why each item may cause indoor air pollution. Have the group discuss how different items could be used, or how children's exposure could be reduced.

Scavenger Hunt		Room Number/Name: _____
Find as many of these as you can:	For 1 extra point each:	
<input type="checkbox"/> Pesticide Spray	Do you dust with a dry or wet rag?	<input type="checkbox"/>
<input type="checkbox"/> Air Freshener/perfume	Is your room mopped regularly?	<input type="checkbox"/>
<input type="checkbox"/> Potpourri/Candle	Do you see any dead bugs?	<input type="checkbox"/>
<input type="checkbox"/> Throw Rug	Are there any insects?	<input type="checkbox"/>
<input type="checkbox"/> Paint	Does your ceiling have wet spot stains?	<input type="checkbox"/>
<input type="checkbox"/> Lotion	What's in the cabinet under the sink?	<input type="checkbox"/>
<input type="checkbox"/> Glue	Do you keep your window open?	<input type="checkbox"/>
<input type="checkbox"/> Plant	How do you clean glass/mirrors?	<input type="checkbox"/>
<input type="checkbox"/> Disinfectant or	Do you disinfect tables?	<input type="checkbox"/>
<input type="checkbox"/> Disinfectant Wipes		
<input type="checkbox"/> Open Food	Does your vacuum have a filter on it?	<input type="checkbox"/>
<input type="checkbox"/> Trash Can	Are you close to a street?	<input type="checkbox"/>
<input type="checkbox"/> Knick Knacks		
<input type="checkbox"/> Curtains		
<input type="checkbox"/> Chalk/Eraser/Spray		
<input type="checkbox"/> Points	Total Points	<input type="checkbox"/>

Asthma Awareness Exercise

Activity #1

Materials needed: Straws and balloons

Instructions:

1. Hand out a straw to each student.
Have each student put the balloon at the end of their straw. Take the other end of the straw and put it up to their lips. Pinch their nose shut and ask them to suck air through the straw (with the balloon on there) One breath.



Ask: How hard is it to get air into your lungs? Why?

2. Now ask each student to blow air through the straw into the balloon.

Ask: How did you feel when you were exhaling?

(Follow students lead on this by answering questions that may arise)

Such questions as: Did you blow so hard you experienced dizziness?

(insert child's name here)

ASTHMA WARNING SIGNS CHECKLIST

Warnings Signs I have noticed

- ☐ Coughed/whistles when coughing
- ☐ Cold or flu
- ☐ Fever
- ☐ stuffy or runny nose
- ☐ Has a persistent tickle in the throat
- ☐ Sneezes and has watery eyes

How child looked or seemed to feel

- ☐ Has a stomach ache
- ☐ Face is pale
- ☐ Had dark circles under the eyes
- ☐ Tightness in the chest / hard time breathing
- ☐ Feels weak or tired
- ☐ Complains that head is hurting

Some other things I have noticed:

(Maybe add circles for these symptoms also)

Date: _____

Symptoms: _____

Date: _____

Symptoms: _____

Date: _____

Symptoms: _____

Date: _____

Symptoms: _____

Date: _____

Symptoms: _____

Date: _____

Symptoms: _____

Date: _____

Symptoms: _____

Classroom Checklist

Is your classroom:

- ☐ Dusted, vacuumed and mopped regularly
- ☐ Free of clutter
- ☐ Organized with plastic bins and not cardboard.
- ☐ Trash taken out daily?
- ☐ Food stored in kitchen or in airtight containers
- ☐ Pet food stored in airtight containers
- ☐ Using unscented school-approved cleaners
- ☐ Making sure soiled clothes are removed regularly
- ☐ Assuring wet towels are removed.
- ☐ Only eating in one place?



Animals in Classroom

- ☐ Animals kept in cages (as much as possible)
- ☐ Cages are cleaned regularly
- ☐ Animals removed from proximity to supply and return air vents
- ☐ Consulted director about student sensitivities.
- ☐ Remove sensitive students from animals and habitats

Excess Moisture in Classroom

- ☐ Report classroom sink leaks
- ☐ Report classroom toilets that have leaks
- ☐ Report any ceiling tiles and walls that looked water stained.
- ☐ Makes sure spills are cleaned up promptly.
- ☐ Are outside doors sealed tight?
(No sunlight coming under or around the door.)

Educational Supplies

- ☐ Inventory paints and other supplies
- ☐ Makes sure that Material Safety Data Sheets (MSDS) and
- ☐ Create a spill clean-up procedure
- ☐ Assure supplies are stored according to manufacturer recommendation.

Report any problems to your school administrator

School Checklist

- ☐ Is Facility Smoke Free?
- ☐ Is the return or air intake near parking or delivery areas?
- ☐ Does school have a removable or washable doormat to collect dust and other irritants?
- ☐ Does your school replace the air filter weekly or monthly? Is it always dirty?
- ☐ Do doors and windows seal correctly?
- ☐ Is there a strong odor? If yes, identify it and reduce or eliminate it

Kitchen:

- ☐ Break down cardboard boxes from deliveries as soon as possible
- ☐ Take trash to dumpster as soon as possible
- ☐ Locate dumpster as far from school building as possible
- ☐ Keep kitchen free of small crumbs
- ☐ Cover and store leftovers properly
- ☐ Spills are quickly treated

Office:

- ☐ Office Equipment needs room to breathe. Ventilate area well
- ☐ Dust area well
- ☐ Organize office to reduce clutter
- ☐ Close lids tightly on chemicals
- ☐ Medical Records are properly updated
(Include an Asthma Action Plan in required medical records)
- ☐ Staff Asthma awareness and response training

Janitorial Closet:

- ☐ Does closet smell moist?
- ☐ Chemical bottles are tightly closed and stored properly
- ☐ Vacuum cleaner bags emptied timely
- ☐ Vacuum cleaner kept in good working order
- ☐ Mop kept in good working condition
- ☐ Does mop ever dry?
- ☐ Rags are properly disposed of
- ☐ Clothes dryer vented to the outside? Checked hose to make sure it is not cracked?

Classroom:

- ☐ Rooms are vacuumed thoroughly
- ☐ Vacuum slowly so to pick up the most amount of allergens
- ☐ Spills on carpet cleaned up right away

Do not vacuum, dust, use spray or wipe chemicals while children are in the room

- ☐ Are there any water spots on ceiling tiles?
- ☐ Does your school wet rags before dusting?
- ☐ Are paints and glues stored properly?
- ☐ Free of clutter?
- ☐ Teacher closet organized?
- ☐ Tile flooring mopped daily?
- ☐ Sleeping cots wiped down regularly?

Bathrooms:

- ☐ Flooded? Dried out thoroughly? Floors mopped daily
- ☐ Well ventilated to control moisture?
- ☐ Cleaned while children are not present?
- ☐ Wet spots on wallboard or floor?

Environmental Pledge **for** **Arizona Child Care Facilities**

Pledges to improve indoor air quality.

We will strive to educate all who utilize our facility on environmental threats. This way we can help create a healthier learning environment for our children. Through our staff and parents we can help our children reach their full potential.



Arizona Children's
Environmental Health Project

ASTHMA PATIENT ACTION PLAN

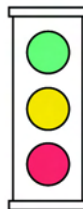
Name: _____

Doctor: _____ Date: _____

Phone # for doctor or clinic: _____

Phone # for taxi or friend: _____

You can use the colors of a traffic light to help learn about your asthma medicines.



1. Green means Go.
Use controller medicine.
2. Yellow means Caution.
Use reliever medicine.
3. Red means Stop.
Get help from a doctor.



1. Green – Go

Use controller medicine.

- Breathing is good
- No coughing or wheezing
- Can work and play

Medicine

How much to take

When to take it

Peak Flow Number
_____ to _____



20 minutes before sports, use this medicine:

2. Yellow – Caution

Take reliever medicine to keep an asthma attack from getting bad.



Coughing



Wheezing



Tight Chest

Medicine

How much to take

When to take it



Waking up
at night

Peak Flow Number
_____ to _____

3. Red – Stop – Danger

Get help from a doctor now!

Take these medicines until you talk with the doctor.

- Medicine is not helping
- Breathing is hard and fast
- Nostrils open wide
- Can't walk
- Ribs show
- Can't talk well

Medicine

How much to take

When to take it

Peak Flow Number
_____ to _____



This information is not intended as a substitute for professional medical care. Always follow your health care provider's instructions.

FR0122 10/05

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Helpful References

University of Arizona Agriculture Outreach creates useful pest management tidbits in a newsletter named “Pest Press”.

www.ag.arizona.edu/urbanipm

Arizona Department of Environmental Quality establishes guidelines for air and water quality.

www.adeq.gov

Arizona Department of Health Services provides guidelines and services that protect the children’s health and welfare.

www.adhs.gov

Pima County’s Air Info Now provides an interactive way of seeing how lungs are affected by the various pollutants that we breathe in our air.

www.airinfnow.org

Healthy Indoor Air provides you information about different types of air quality issues.

www.healthyindoorair.org

Environmental Protection Agency. These are the people who create helpful information on our indoor and outdoor environment.

www.epa.gov

American Academy of Allergy Asthma and Immunology provides very interesting articles and tidbits on how to alleviate triggers and control symptoms.

www.aaaai.org

National Safety Council has created a wonderful teachers curriculum that can be utilized in the classroom to educate children on environmental issues.

www.nsc.org/ehc/indoor/teachers.htm

National Emphysema Foundation.

www.emphysemafoundation.org/pulmonaryhealth.jsp

Community Resources

This list of resources might provide you with additional resources on Asthma, environment and may also be a place to send families that are in need of assistance. This is not a complete list of community resources available in Arizona. However, this could help a family get started in their search for information or seeking medical assistance.

AHCCCS Offers several low or no cost medical coverage programs to Arizona families and children.

www.ahcccs.state.az.us/Services/Overview/ForAZFamChildren.asp

Allergy & Asthma Network Mothers of Asthmatics (AANMA) Online resource for families whose desire is to overcome, not cope with, allergies and asthma.

www.aanma.org/headquarters/

American Academy of Allergy Asthma and Immunology Agency focuses on advancement of the knowledge and practice of allergy, asthma and immunology for optimal patient care.

www.aaaai.org/media/resources/media_kit/

Arizona Association of Community Health Centers Primary goal of the Association is to help Arizona Community Health Centers expand and grow. To bring primary care health services to all medically underserved people in our state.

www.aachc.org/

Arizona Asthma Advocates for better services and improved quality of life for persons with asthma in Arizona through partnership development and coalition building.

www.azasthma.org/

Arizona Commission of Indian Affairs Works for a greater understanding and improved relationships between Indians and non-Indians in the State of Arizona.

www.indianaffairs.state.az.us/agreements/ades.html

Arizona Department of Economic Security The Arizona Department of Economic Security promotes the safety, well-being, and self sufficiency of children, adults, and families.

www.de.state.az.us/ASP/default.asp

Arizona Department of Health Services Promotes healthy environment through public education on issues that affect our physical health.

www.azdhs.gov/

Arizona Department of Environmental Quality Creates and enforces state environmental laws and creates public information about environmental issues that could affect our health.

www.azdeq.gov/

American Lung Association Their goals are to educate the public on respiratory diseases.
www.lungusa2.org/arizonanewmexico/

A to Z Child Health Links An online resources guide for Arizona families.
www.azchl.org/ - brought to you by the Arizona Center for Community Pediatrics (ACCP)

Catholic Services Provides social services to Arizona families
www.catholicsocialserviceaz.org/services/families.asp

Center for Disease Control
www.cdc.gov/ or www.cdc.gov/asthma/interventions/act.htm

Child and Family Resources An online resources guide for Arizona families.
www.childfamilyresources.org/ or www.arizonachildcare.org/

Child Welfare League
www.cwla.org/

Community Information and Referral An online resources guide for Arizona families.
www.cir.org/

County Health Departments
www.healthguideusa.org/arizona_county_health_department.htm

Covering Kids and Families An online resource calendar of events servicing Arizona families.
www.coveringkidsandfamilies.org/communications/bts/events/index.php?StateID=AZ

Goodnight Pediatrics After hour pediatric care.
http://www.goodnightpeds.com/index.php?option=com_contact&catid=4&Itemid

Kids Care Reduced rate insurance for those that do not qualify for AHCCCS.
www.kidscare.state.az.us/

U.S. Department of Housing and Urban Services (HUD) HUD's mission is to increase homeownership, support community development and increase access to affordable housing free from discrimination.

Shelters in Arizona

www.hud.gov/local/az/homeless/sheltersinfo.cfm
www.espanol.hud.gov/local/az/homeless/sheltersinfo.cfm?&lang=es in Spanish

National Alliance for Hispanic Health Organization created to improve health and well-being of the Hispanic population.
www.hispanichealth.org/

National Safety Council Asthma information.
www.nsc.org/ehc/asthma.htm

Phoenix Area Indian Health Service Services for the Native American population
www.ihs.gov/FacilitiesServices/AreaOffices/Phoenix/phx_services.cfm
www.ahcccs.state.az.us/Services/Overview/ForAZFamChildren.asp

Poison Control Center

www.npic.orst.edu/poisondata.htm

Raising Special Kids Serves families and children with disabilities in central and northern Arizona.

www.raisingpecialkids.org/

Support Groups in Arizona An online resource for support groups in Arizona.

www.findingstone.com/services/azsupportgroups.htm

A.C.T. For Asthma

A

ASSESS THE CHILD'S CONDITION

1. SPEAKING

What you might see:

Short, choppy sentences
Difficulty speaking and walking

* Unable to speak

What the child might say:

"I'm having trouble talking"

"My throat is scratchy"

"My mouth is dry"

2. BREATHING

What you might hear:

Squeaky sounds
Rapid breathing
Mouth breathing
Coughing or sneezing

* No sounds

What the child might say:

"I'm having trouble breathing"

"My chest feels tight"

"My chest hurts"

"I can't catch my breath"

3. LOOKING

What you might see:

Restlessness
Hunching over
Pale or flushed
Gray/blue lips or fingernails

* Unresponsive or unconscious

What the child might say:

"My chest is itchy/scratchy"

"I feel hot all over"

"I feel tired"

"My neck feels funny"

C

CALL FOR HELP

STAY CALM AND REASSURE THE CHILD

1. If the child can speak without difficulty, and you do not hear squeaky breathing, call a colleague for help, and then call the parents.

* 2. If the child has difficulty speaking, gray or blue lips, with or without any squeaky breathing, or no sounds that you can hear, call for Emergency help NOW.

3. Your emergency number is _____

T

TREAT THE CHILD'S SYMPTOMS

1. Reassure the child, and help the child to sit in a comfortable position with shoulders relaxed, leaning forward with elbows on the knees, and try to coach the child to breath out through puckered lips.

2. If the child has an ACTION plan and medications from the doctor, follow that plan, and help the child use the medications.

3. STAY WITH THE CHILD UNTIL THE PARENTS OR EMERGENCY HELP ARRIVES.

* AVOID DELAYS - TAKE IMMEDIATE ACTION AND CALL FOR HELP!

Sponsored by:



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