Air Pollutant: Pet Dander
Proteins in your pet's skin flakes, urine, feces, saliva and hair settles on surfaces and floors and clings to fabric, upholstery, and carpeting inside your home. When disturbed, the dander becomes airborne and becomes a biological air pollutant.

Health Risk: Pet Dander
Asthma Triggers: Dogs, cats, rodents (including hamsters and guinea pigs) and other warm-blooded mammals can trigger asthma in individuals with an allergy to animal dander.

Action Steps to Reduce: Pet Dander
- If you have to have a pet inside, keep it out of the bedroom of the person with asthma.
- Keep pets off of your furniture.
- Vacuum carpets and furniture when the person with asthma is not around.
Air Pollutant: Secondhand Smoke

Secondhand smoke is the smoke from a cigarette, cigar or pipe, and the smoke exhaled by a smoker. Secondhand smoke contains more than 4,000 substances, including several compounds that cause cancer.

Health Risk: Secondhand Smoke

Secondhand smoke can trigger asthma episodes and increase the severity of attacks. Secondhand smoke is also a risk factor for new cases of asthma in preschool-aged children. Children's developing bodies make them more susceptible to the effects of secondhand smoke and, due to their small size, they breathe more rapidly than adults, thereby taking in more secondhand smoke. Children receiving high doses of secondhand smoke, such as those with smoking parents, run the greatest relative risk of experiencing damaging health effects.

Action Steps to Reduce: Secondhand Smoke

• Don't let anyone smoke near children.
• If you smoke — until you can quit, don't smoke in your home or car.
Air Pollutant: Carbon Monoxide (CO)

Carbon monoxide (CO) is an odorless, colorless and toxic gas. Sources of CO include unvented kerosene and gas space heaters; leaking chimneys and furnaces; back-drafting from furnaces, gas water heaters, wood stoves, and fireplaces; gas stoves; generators and other gasoline powered equipment; automobile exhaust from attached garages; and tobacco smoke. Incomplete oxidation during combustion in gas ranges and unvented gas or kerosene heaters may cause high concentrations of CO in indoor air. Worn or poorly adjusted and maintained combustion devices (e.g., boilers, furnaces) can be significant sources, or if the flue is improperly sized, blocked, disconnected, or is leaking. Auto, truck, or bus exhaust from attached garages, nearby roads, or parking areas can also be a source.

Health Risk: CO

Because it is impossible to see, taste or smell the toxic fumes, CO can kill you before you are aware it is in your home. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure.

Action Steps to Reduce: Carbon Monoxide

- Keep gas appliances properly adjusted.
- Consider purchasing a vented space heater when replacing an unvented one.
- Use proper fuel in kerosene space heaters.
- Install and use an exhaust fan vented to outdoors over gas stoves.
- Open flues when fireplaces are in use.
- Choose properly sized wood stoves that are certified to meet EPA emission standards. Make certain that doors on all wood stoves fit tightly.
- Have a trained professional inspect, clean, and tune-up central heating system (furnaces, flues, and chimneys) annually. Repair any leaks promptly.
- Do not idle the car inside garage.
**Air Pollutant: Mold**

Molds can be found almost anywhere; they can grow on virtually any organic substance, as long as moisture and oxygen are present. There are molds that can grow on wood, paper, carpet, foods, and insulation. When excessive moisture accumulates in buildings or on building materials, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed, like in areas under a sink or where the toilet connects to the wall in a bathroom.

Molds are part of the natural environment. Outdoors, molds play a part in nature by breaking down dead organic matter such as fallen leaves and dead trees, but indoors, mold growth should be avoided. Molds reproduce by means of tiny spores; the spores are invisible to the naked eye and float through outdoor and indoor air. Mold may begin growing indoors when mold spores land on surfaces that are wet. There are many types of mold, and none of them will grow without water or moisture.

**Health Risk: Mold**

Molds are usually not a problem indoors, unless mold spores land on a wet or damp spot and begin growing. Molds produce allergens (substances that can cause allergic reactions), irritants, and in some cases, potentially toxic substances (mycotoxins). Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals.

Allergic responses include hay fever-type symptoms, such as sneezing, runny nose, red eyes, and skin rash (dermatitis). Allergic reactions to mold are common. They can be immediate or delayed. Molds can also cause asthma attacks in people with asthma who are allergic to mold.

In addition, mold exposure can irritate the eyes, skin, nose, throat, and lungs of both mold-allergic and non-allergic people. Symptoms other than the allergic and irritant types are not commonly reported as a result of inhaling mold.

**Action Steps to Reduce: Mold**

It is impossible to get rid of all mold and mold spores indoors; some mold spores will be found floating through the air and in house dust. The mold spores will not grow if moisture is not present. Indoor mold growth can and should be prevented or controlled by controlling moisture indoors. If there is mold growth in your home, you must clean up the mold and fix the water problem. If you clean up the mold, but don't fix the water problem, then, most likely, the mold problem will come back.

The Key to Mold Control is Moisture Control

http://www.epa.gov/mold/moldguide.html
Air Pollutant: Dust Mites

Dust mites are tiny bugs that are too small to see. Every home has dust mites. They feed on human skin flakes and are found in mattresses, pillows, carpets, upholstered furniture, bedcovers, clothes, stuffed toys and fabric and fabric-covered items.

Health Risk: Dust Mites

Body parts and droppings from dust mites can trigger asthma in individuals with allergies to dust mites. Exposure to dust mites can cause asthma in children who have not previously exhibited asthma symptoms.

Action Steps to Reduce: Dust Mites

- Wash bedding in hot water once a week. Dry completely.
- Use dust proof covers on pillows and mattresses.
- Vacuum carpets and furniture every week.
- Choose stuffed toys that you can wash. Wash stuffed toys in hot water. Dry completely before your child plays with the toy.
- Common house dust may also contain asthma triggers. These simple steps can help:
  - Dust often with a damp cloth.
  - Vacuum carpet and fabric-covered furniture to reduce dust build-up using a high efficiency (HEPA) filter. People with asthma or allergies should leave the area being vacuumed. Read more about Air Filters - Available Guide for Their Comparison.
Air Pollutant: Pesticides

Pesticides are classed as semi-volatile organic compounds and include a variety of chemicals in various forms. Pesticides are chemical products that are used to kill or control pests which include bacteria, fungi, and other organisms, in addition to insects and rodents. Pesticides are inherently toxic. A kitchen often stores chemical products such as these as well as cleaning products like disinfectants with similar chemical components.

Other possible sources of pesticides include contaminated soil or dust that floats or is tracked in from outside, stored pesticide containers, and household surfaces that collect and then release the pesticides. Pesticides used in and around the home include products to control insects (insecticides), termites (termiteicides), rodents (rodenticides), fungi (fungicides), and microbes (disinfectants). They are sold as sprays, liquids, sticks, powders, crystals, balls, and foggers.

Health Risk: Pesticides

Irritation to eye, nose, and throat; damage to central nervous system and kidney; increased risk of cancer. Symptoms may include headache, dizziness, muscular weakness, and nausea. Chronic exposure to some pesticides can result in damage to the liver, kidneys, endocrine and nervous systems.

Exposure to high levels of cyclodiene pesticides, often associated with misapplication, has produced various symptoms, including headaches, dizziness, muscle twitching, weakness, tingling sensations, and nausea. The EPA is also concerned that cyclodienes might cause damage to the liver and the central nervous system, and an increased risk of cancer.

In the U.S., the sale or commercial use is no longer permitted for cyclodiene, chlordane, aldrin, dieldrin, & heptachlor. The exception is the use of heptachlor by utility companies to control fire ants in underground cable boxes.

Action Steps to Reduce: Pesticides

- Use non-chemical methods of pest control when possible.
- Use strictly according to manufacturer's directions.
- Mix or dilute outdoors.
- Apply only in recommended quantities.
- Increase ventilation when using indoors.
- Take plants or pets outdoors when applying pesticides/flea and tick treatments.
- Use non-chemical methods of pest control where possible.
- If you use a pest control company, select it carefully.
- Do not store unneeded pesticides inside home; dispose of unwanted containers safely.
- Store clothes with moth repellents in separately ventilated areas, if possible.
- Keep indoor spaces clean, dry, and well ventilated to avoid pest and odor problems.
Air Pollutant: Volatile Organic Compounds (VOCs)

Common household cleaners, often placed under the kitchen sink, release Volatile Organic Compounds (VOCs), when used and stored.

Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands. Examples include: paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions. Organic chemicals are also widely used as ingredients in household products such as wax, and disinfecting, cosmetic, degreasing, and hobby products.

Health Risk: Volatile Organic Compounds (VOCs)

Eye, nose, and throat irritation; headaches, loss of coordination, allergic skin reaction, dyspnea (shortness of breath), emesis, epistaxis (acute nose bleed), fatigue, dizziness nausea; damage to liver, kidney, and central nervous system are all symptoms. Some organics can cause cancer in animals; some are suspected or known to cause cancer in humans.

The ability of organic chemicals to cause health effects varies greatly from those that are highly toxic, to those with no known health effect. As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Eye and respiratory tract irritation, headaches, dizziness, visual disorders, and memory impairment are among the immediate symptoms that some people have experienced soon after exposure to some organics.

Action Steps to Reduce: Volatile Organic Compounds (VOCs)

- Increase ventilation when using products that emit VOCs.
- Meet or exceed any label precautions.
- Use integrated pest management techniques to reduce the need for pesticides.
- Throw away unused or little-used containers safely; buy in quantities that you will use soon.
- Keep out of reach of children and pets.
- Never mix household care products unless directed on the label.

NOTE: Formaldehyde, one of the best known VOCs, is one of the few indoor air pollutants that can be readily measured. Identify, and if possible, remove the source. If not possible, reduce exposure by using a sealant on exposed surfaces of paneling and furnishings. Use products according to manufacturer’s directions.
Air Pollutant: Carbon Monoxide

A basement is a source of air leaks and moisture, and often contains various chemicals. It is important to ventilate, seal cracks, and properly store all chemicals.

Sources of Carbon Monoxide include in a kitchen could be unvented kerosene and gas space heaters; leaking chimneys and furnaces; back-drafting from furnaces, gas water heaters, wood stoves, and fireplaces; gas stoves; generators and other gasoline powered equipment; automobile exhaust from attached garages; and tobacco smoke. Incomplete oxidation during combustion in gas ranges and unvented gas or kerosene heaters may cause high concentrations of CO in indoor air. Auto, truck, or bus exhaust from attached garages, nearby roads, or parking areas can also be a source.

Health Risk: Carbon Monoxide

At low concentrations, symptoms include fatigue in healthy people and chest pain in people with heart disease. At higher concentrations, impaired vision and coordination; headaches; dizziness; confusion; nausea can occur. CO can cause flu-like symptoms that clear up after leaving home. Fatal at very high concentrations. Acute effects are due to the formation of carboxyhemoglobin in the blood, which inhibits oxygen intake. At moderate concentrations, angina, impaired vision, and reduced brain function may result. At higher concentrations, CO exposure can be fatal.

Action Steps to Reduce: Carbon Monoxide

• Keep gas appliances properly adjusted.
• Install and use an exhaust fan vented to outdoors over gas stoves.
• Open flues when fireplaces are in use.
• Choose properly sized wood stoves that are certified to meet EPA emission standards. Make certain that doors on all wood stoves fit tightly.
• Do not idle the car inside garage.
Air Pollutant: Carbon Monoxide

Sources of CO in a basement could be combustion heating and cooling appliances such as heating, ventilation, and air conditioning units, gasoline-powered heaters, and other appliances.

Health Risk: Carbon Monoxide

At low concentrations, symptoms include fatigue in healthy people and chest pain in people with heart disease. At higher concentrations, impaired vision and coordination; headaches; dizziness; confusion; nausea can result. CO can cause flu-like symptoms that clear up after leaving home. It is fatal at very high concentrations. Acute effects are due to the formation of carboxyhemoglobin in the blood, which inhibits oxygen intake. At moderate concentrations, angina, impaired vision, and reduced brain function may result. At higher concentrations, CO exposure can be fatal.

Action Steps to Reduce: Carbon Monoxide

- Consider purchasing a vented space heater when replacing an unvented one.
- Use proper fuel in kerosene space heaters.
- Have a trained professional inspect, clean, and tune-up central heating system (furnaces, flues, and chimneys) annually. Repair any leaks promptly.
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Air Pollutant: Mold

Molds can be found almost anywhere; they can grow on virtually any organic substance, as long as moisture and oxygen are present. There are molds that can grow on wood, paper, carpet, foods, and insulation. When excessive moisture accumulates in buildings or on building materials, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed like in a basement that has flooded.

Molds are part of the natural environment. Outdoors, molds play a part in nature by breaking down dead organic matter such as fallen leaves and dead trees, but indoors, mold growth should be avoided. Molds reproduce by means of tiny spores; the spores are invisible to the naked eye and float through outdoor and indoor air. Mold may begin growing indoors when mold spores land on surfaces that are wet. There are many types of mold, and none of them will grow without water or moisture.

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Action Steps to Reduce: Mold

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Basements can be damp. Install a properly sized dehumidifier to help keep your basement at an appropriate humidity level and reduce the potential for mold. It is important to dry water-damaged areas and items within 24-48 hours to prevent mold growth.
Air Pollutant: Radon

Radon is a naturally occurring radioactive gas that can enter a home through cracks and openings in floors and walls that are in contact with the ground.

Radon-222 is the decay product of radium-226. Radon-222 and its parent, radium-226, are part of the long decay chain for uranium-238. Since uranium is essentially ubiquitous (being or seeming to be everywhere at the same time) in the earth's crust, radium-226 and radon-222 are present in almost all rock and all soil and water.

The amount of radon in the soil depends on soil chemistry, which varies from one house to the next. Radon levels in the soil range from a few hundred to several thousands of pCi/L (picocuries per liter) in air.

The amount of radon that escapes from the soil to enter the house depends on the weather, soil porosity, soil moisture, and the suction within the house.

Health Risk: Radon

Smoking, radon, and secondhand smoke are the leading causes of lung cancer.

**Smoking** is the leading cause of lung cancer and lung cancer is the number one cause of death among women. A smoker who is also exposed to radon has a much higher risk of lung cancer.

**Radon** is the number one cause of lung cancer among non-smokers. Overall, radon is the second leading cause of lung cancer. Radon is responsible for about 21,000 lung cancer deaths every year. About 2,900 of these deaths occur among people who have never smoked.

**Secondhand smoke** is the third leading cause of lung cancer. Smoking affects non-smokers by exposing them to secondhand smoke. Exposure to secondhand smoke can have serious health costs for children, including asthma attacks, affecting the respiratory tract, & may cause ear infections.

Action Steps to Reduce: Radon

- **For Existing Homes:** Test for radon — testing is the only way to know if radon is in your home. Do-it-yourself test kits are convenient and accessible, or you may choose to have a professional test your home.

- **For New Construction:** Radon-resistant new construction (RRNC) draws radon from the soil and vents it through a pipe to the roof, preventing its entry into the house. New home buyers should ask their builder to include RRNC features. All new homes, even new RRNC ones, should be tested for radon.

- **If the test result indicates your radon level is too high** a qualified radon service professional can install a radon mitigation system. There are several methods this contractor can use to lower radon levels. Some techniques prevent radon from entering your home while others reduce radon levels in the home.