

Healthy Indoor Air for New Mexico Homes

Cooperative Extension Service
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Home Economics



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Reviewed by David O'Brien, Extension Specialist

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INDOOR AIR QUALITY IS OF INTEREST FOR MANY REASONS

If you are like most Americans, you spend much of your time indoors. Most of us are indoors-at home or at work-about 90 percent of our time. Have you ever stopped to think about the quality of the air you breathe in your home?



When you are at home, do you have frequent headaches or feel tired or nauseous? Do you feel better when you are away from home? If so, your home's air may not be as healthy as it should be.

Air pollution is a national health concern. Congress passed the Clean Air Act to help improve the air we breath-outdoors. EPA recently released new standards for outdoor air quality that will benefit approximately 125 million Americans, including 35 million children. The new standards are expected to help prevent approximately 15,000 premature deaths, 350,000 cases of aggravated asthma, and a million cases of significantly decreased lung function in children.

Researchers have found that air quality inside American homes can be worse than the air outside. What could be causing this problem? For one thing, we are using more and more products and furnishings in our homes that cause a variety of allergic reactions. In addition, new homes are being built and remodeled tighter to prevent the loss of heating and cooling, so air flow into and out of new homes is very limited.

Because our homes are tighter, there is a greater chance for the air inside to become polluted. Pollutants will vary from home to home, but they may include one or more of the following:

- molds, mildew, fungi, and bacteria,
- dust mites and animal dander
- combustion products, including carbon monoxide

- tobacco smoke
- formaldehyde
- radon
- volatile organic compounds from household products and home furnishings
- asbestos
- lead
- particulate matter such as dust, smoke, and pollen

When indoor air is polluted, respiratory illness and other health-related problems can affect families. To protect yourself and your family from air pollution inside your home, you need to know what the risks are and if they are present in your home. You need to be able to:

1. identify the pollutant(s),
2. control the source of the pollutant(s), and
3. take action to manage or remove the problem.

HAZARDS YOU SHOULD KNOW ABOUT

The following categories describe a variety of pollution sources that affect indoor air quality. As you read over them, think about your home. Do you recognize any of the situations? Are any of these factors influencing air quality inside your home?

Biological Pollutants (*Bioaerosols*)

Molds, mildew, fungi, bacteria, dust mites, and animal dander are



some of the biological pollutants inside a home. Some, such as pollen, are generated outside and come inside with natural air flow and when doors and windows are opened.

Molds, mildew, fungi, and bacteria are often found where there is high humidity, such as the bathroom, kitchen, and laundry room. Molds grow on organic materials such as paper, textiles, grease, dirt, and soap scum. Spores float throughout the house, forming new colonies where they land. To prevent mold, mildew, and similar pollutants, keep your home clean and dry. Use a disinfectant to clean surfaces where there is evidence of pollutants.

Dust mites thrive on dead human skin cells and in textiles such as bedding, carpeting, and upholstery. They have been identified as the single most important trigger for asthma attacks.

Dust mites and animal dander are best removed by vacuuming thoroughly and changing bed linens regularly. People who are sensitive to dust mites and animal dander may need to replace carpeting in the home with hard surfaced flooring and use area rugs that can be removed and cleaned frequently.

Allergic reactions are the most common health problems associated with biological pollutants. Runny nose, watery eyes, sneezing, congestion, itching, coughing, wheezing, and difficulty breathing are a few symptoms. Headache, dizziness, and fatigue also can occur.

Carbon Monoxide

Carbon monoxide is known as a silent killer. This colorless, odorless gas is fatal when breathed in sufficient quantities. There are many cases each year of individuals and families being overcome by carbon monoxide—especially in the winter when a house is closed up tightly and a furnace, fireplace, or improperly vented heater may be in use.



Sources of carbon monoxide include poorly vented heaters and furnaces; blocked fireplace flues; and inadequate ventilation around operating ovens, ranges, grills, and fuel-burning space heaters. Even a poorly vented gas water heater can produce enough carbon monoxide to injure or kill.

If the air pressure is not evenly balanced inside to outside, car exhaust containing carbon monoxide from an attached garage can enter a home, harming its inhabitants.

Experts recommend having combustion heating systems inspected by a trained professional every year—usually when it is turned on for the winter. In-

spectors should look for blocked openings in flues and chimneys, cracked or disconnected flue pipes, signs of soot around openings in the furnace, rust or cracks in the heat exchanger, soot or creosote build-up, and exhaust or gas odors.

Carbon monoxide displaces oxygen in the blood. Survivors of carbon monoxide poisoning often have continuing physical and mental problems after exposure. Symptoms of carbon monoxide poisoning are similar to the flu: nausea, headache, etc.

Consider installing a carbon monoxide detector in your home. They are inexpensive and fairly efficient. Check for detectors at your local hardware or department store. They plug in to a wall outlet and sound an alarm if the level of carbon monoxide in the home reaches dangerous levels.

Combustion Pollutants

Combustion pollutants are the result of burning fuels—natural gas, propane, wood, oil, kerosene, or coal. Other items burned in the home also can cause pollution. Harmful gases include carbon monoxide, nitrogen dioxide, and sulfur dioxide. Particulate matter such as ashes and excess moisture in the air also can result from combustion.



Combustion gases can kill. They also irritate the eyes, nose, and throat and can cause lung cancer. Excess moisture can contribute to the growth of molds and mildew. Particulates can irritate eyes and lungs as well as become a nuisance—more dust to clean.

Cigarette smoke is a major pollutant in many homes. More and more homeowners are asking people not to smoke in their home. Some communities have passed regulations that limit where cigarettes can be smoked—some restaurants no longer have a smoking section. There are federal regulations about smoking in the work place, elevators, and public buildings.

Yearly inspections of combustion equipment are recommended. Always operate combustion equipment only for its intended purpose, and be sure it is installed correctly.

Formaldehyde

Formaldehyde is a chemical released into the air as a pungent gas. Remember how your eyes used to burn when you went into a fabric store? Formaldehyde was the culprit. It does have some good properties and is an excellent adhesive. Formaldehyde is used in many



building materials and home furnishings. It is still used in some textiles and is an important ingredient in fabric finishes that prevent wrinkling.

Evidence of formaldehyde irritation include watery eyes and a burning sensation in the eyes, nose, and throat. Some people may experience wheezing and coughing. Skin rashes, headaches, loss of coordination, and nausea also can occur.

To reduce formaldehyde in the home, consumers can use special sealants or varnishes to coat any exposed surfaces or edges such as the undersides of countertops, cabinet interiors, and drawers.

Lead

Lead is a metallic element widely dispersed in the environment. It has been an important ingredient in paint, gasoline, solder, and fixtures and pipes. In the early 1950s, paint was as much as 50 percent lead. Lead-based paint was banned after 1978, but it still can be found in older residences and buildings. As long as it is not disturbed and is in good condition, lead paint is not a problem. It becomes a problem when paint chips or paint dust occur—such as when windows are raised up and down frequently or when a home is remodeled your home.



Water is also a potential source of lead. This occurs when there is lead in solder, fixtures, and pipes in your home. If lead is found in your water, it may be necessary to change fixtures and replace pipe where possible.

Although lead is no longer used in gasoline, the effects of leaded gas are still being felt in some areas. Children who play in the dirt near busy streets or highways, or who live near highly industrial areas may be exposed to lead that has accumulated over time.

Lead accumulates in the body, and its effects are irreversible. Exposure to lead is especially risky for young children. It can cause delayed development, reading and learning problems, lower IQ, hyperactivity, and discipline problems. Large doses can cause high blood pressure, anemia, and kidney and reproductive disorders in children and adults.

The simplest way to avoid lead exposure is to keep the area clean. Frequent damp mopping or wiping surfaces down with a wet cloth will remove loose dust. Avoid vacuuming—it can disperse lead dust back into the air. Wash your child's hands and toys frequently to reduce exposure from dirt in the playground or yard.

Do-it-yourself lead detection kits are available—but their sensitivity is limited. If you believe there may be a problem with lead in your home, contact a professional who has been trained in removing lead.

Radon

Radon is a naturally occurring gas that results from the breakdown of uranium. It is typically concentrated in areas with lots of granite, shale, phosphate, and pitchblende. It can be found in building material made from concrete or stone. Because it is a gas, radon can leak into the home through the basement, crawl space, or foundation from exposed soil and rock. It can be found in well water in some areas. It can even be carried into your home through natural gas.



Exposure to radon can increase your chances of getting lung cancer. If they are present in the air, radon particles get into your lungs when you breathe. These particles accumulate in the lungs and release bursts of energy that can damage lung tissue and lead to lung cancer. Smoking combined with radon exposure is an especially dangerous health risk.

Radon detectors are available to test your home. There are two types—a long test of at least a month, or a test that requires about seven days. Longer tests are considered more reliable. If radon is detected in your home, contact your local health department or a professional for assistance in dealing with the problem. It is possible to vent the gas out of an existing home, and there are simple techniques to protect against radon when building a new home.

Household Products

Household products also impact air quality inside your home. They contain volatile organic compounds, or VOCs, which evaporate into the air. Some are flammable. These products include such things as solvents, paints, paint stripper, wood preservatives, aerosol sprays, moth repellents, air fresheners, stored fuel, automotive products, hobby supplies, pesticides, and some cleaners and disinfectants.



Short-term effects of exposure to VOCs in household products may include eye, nose, and throat irritation; and headaches. Long-term exposure can cause loss of coordination; nausea; and damage to liver, kidneys, and the central nervous system.

Always use care when working with household products. Read labels and be aware of any warnings.

Use products as intended and follow instructions carefully. Most should be used in a well-ventilated area. When considering the purchase of a household product, ask yourself the following questions:

Is there something you can use in its place?

How much do you really need?

How is it to be used?

How is it stored?

How is it disposed of?

Home Remodeling

Preserving the quality of indoor air can become a problem when a home is being remodeled. Asbestos, formaldehyde, lead paint dust, and other organic and biological pollutants can be released into the air when you begin removing walls, windows, and carpeting and disturbing existing structures.



Asbestos was once used in some building products. It is often found in older homes in the floor tile, roofing, siding, textured paints, millboard, and artificial ashes used in decorator fireplaces. Asbestos was often used as an insulation for pipes and around water heaters and boilers. It is not a problem if it is in good condition. Covering the material is recommended over it. If it is disturbed, particles of asbestos can be inhaled. These particles lodge in the lungs, irritate them, and can increase the risk of cancer. If you find asbestos in your home, contact the health department or local building codes office for information about removing it.

Some of the materials used to remodel are also pollutants—paints, wood strippers, finishes, adhesives, waxes, and cleaners. They contain such chemicals as petroleum distillates, mineral spirits, chlorinated solvents, carbon tetrachloride, methylene chloride, trichloroethane, toluene, and formaldehyde. All of these should be very used carefully to avoid problems. Read the label to learn about clean-up and disposal.

Thorough clean-up is important when remodeling. Dust and fibers, mold and mildew spores, and other

pollutants need to be carefully and completely removed to prevent future contamination.

WHAT CONSUMERS CAN DO

Indoor air quality is an important consideration in today's world, which is full of products that are intended to make our lives better. Many of those products can cause problems if they are not managed correctly. A major hazard when considering problems related to indoor air quality is misinformation.

Consumers need to know what causes indoor air quality problems and how to recognize them. More detailed information is available from the Healthy Indoor Air for America's Homes website at <http://www.montana.edu/wwwcxair/>. Take time to become informed about indoor quality and how you as a consumer can make sure the air in your home is as healthy as possible.

SIGNS OF POSSIBLE HOME INDOOR AIR QUALITY PROBLEMS

- Unusual and noticeable odors, stale or stuffy air
- Noticeable lack of air movement
- Dirty or faulty central heating or air conditioning equipment
- Damaged flue pipes or chimneys
- Unvented combustion air sources for fossil fuel appliances
- Excessive humidity
- Tightly constructed or remodeled home
- Molds and mildew
- Health reaction after remodeling, weatherizing, using new furniture or carpeting, using household or hobby products, or moving into a new house
- Feeling noticeably healthier outside the home



Originally written by Susan Wright, Extension Consumer Education Specialist.

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