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**Green Home Websites**

US Green Building Council  
[www.usgbc.org](http://www.usgbc.org)

American Lung Association  
[www.healthhouse.org](http://www.healthhouse.org)

EPA Energy Smart  
[www.energystar.gov](http://www.energystar.gov)

NC Green Building Council  
[www.ncgreenbuilding.org](http://www.ncgreenbuilding.org)

NC HealthyBuilt Homes Program  
[www.healthybulthomes.org](http://www.healthybulthomes.org)



# Indoor Air Quality News

## Green Building Techniques Can Improve Indoor Air Quality

With the realization that our traditional fossil-fuel based sources of energy are finite and becoming more and more expensive as well as contributing to global pollution, the construction of homes, businesses and schools using “green” or sustainable building principles is becoming increasingly popular and perhaps a necessity. Green building techniques can help create a healthy living environment by using less toxic materials, controlling moisture and providing fresh air ventilation. According to the EPA, many Americans spend 60% of their day in their homes and up to 90% in their total time indoors. The American Lung Association estimates that there are over 42 million Americans with allergies and asthma and that indoor pollutants in the home can compromise respiratory health. Indoor pollutants include biological mate-

rials (animal dander, mold, dust mite and cockroach allergens) combustion products, volatile organic compounds (VOCs), lead dust, asbestos and radon. Activities in the home such as cooking, heating and cooling, cleaning and renovation can release indoor pollutants. Green building is resource efficient, environmentally friendly and provides a healthy space for occupants. Green building techniques include environmentally sound site selection and development, energy and water efficiency, and material selection. Indoor air quality (IAQ) design features ensure that sources of indoor air pollutants are limited and those that are present will be diluted and removed from the indoor space by adequate fresh air ventilation. Using green building principles, home owners and builders

can employ a variety of construction practices and technologies to decrease the risk of poor IAQ, including careful selection of moisture control and combustion venting systems, heating, cooling and ventilation systems and building materials.

Advantages to building “green” include:

- Improved air quality, providing a more comfortable and healthier living environment.
- A home that is less toxic, and environmentally “green”.
- Greater durability, energy and resource efficiency.
- A better performing home needing less maintenance.
- A home that will increase in value over time.

## Green Home Design and Construction Resources

Building green is resource efficient, environmentally sound and provides a healthy home for occupants. Design and construction of a green home requires a team that is knowledgeable of green building requirements and includes the

home owner, architects, builders and inspectors. Several governmental and private foundations and organizations offer green building programs that include certification. EPA Energy Star Program, the US Green Building Council’s Leader-

ship in Energy and Environmental Design (LEED) program and the American Lung Association’s Health House program are excellent resources for information regarding building or remodeling your home using green building techniques.

## Are You Concerned About Mold In Your Home?

- Mold grows quickly; fix moisture problems in your home promptly.
- Dry or dispose of porous materials (carpet, etc) that have been wet within 24 hours.
- Repair leaking roofs.
- Vent clothes dryer to the outside.
- Install a vent in your bathroom.



For more information regarding mold and mold remediation visit the EPA website:

[www.epa.gov/mold/](http://www.epa.gov/mold/)



Proper maintenance and cleaning of your home will create a healthy environment for your children.

*"The connection between health and dwelling is one of the most important that exists"*

Florence Nightingale

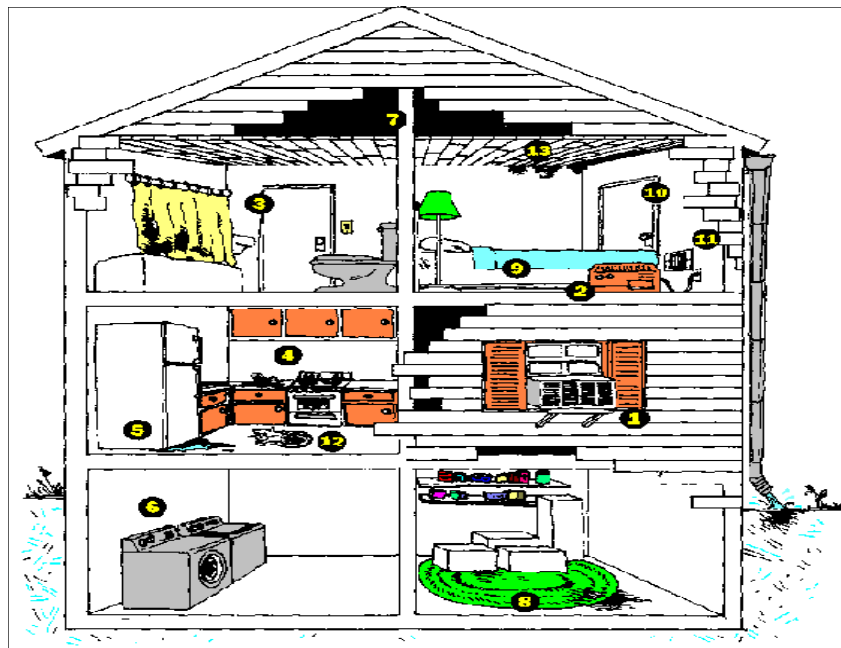
## Are Biological Pollutants Making Your Family Sick?

Biological pollutants are, or are produced by, living things. They include molds, bacteria, viruses, animal dander and saliva, dust mites, cockroach allergens and pollen. Biological pollutants can be found in areas where nutrients, and moisture are present. For example, damp and wet areas such as cooling coils, humidifiers, refrigerator condensate pans or unvented

bathrooms may become moldy. Draperies, bedding, carpet, and other areas where dust collects may accumulate biological pollutants. Biological pollutants can trigger allergic reactions, including hypersensitivity pneumonitis, allergic rhinitis and asthma. Generally good housekeeping and maintenance of heating and air conditioning equipment are very important.

Adequate ventilation and good air distribution can also help. The key factor in control of biological pollutants is moisture control. Maintaining relative humidity in the home between 30% - 60% will help control mold, dust mites, and cockroaches.

## Sources of Biological Pollutants in the Home



1. Dirty air conditioners
2. Dirty humidifiers and/or dehumidifiers
3. Bathroom without vents or windows
4. Kitchen without vents or windows
5. Dirty refrigerator drip pans
6. Laundry room with unvented dryer
7. Unventilated attic
8. Carpet on damp basement floor
9. Bedding
10. Closet on outside wall
11. Dirty heating/air conditioning system
12. Dogs or cats
13. Water damage (around windows, the roof or the basement)

Source: Consumer Product Safety Commission Document #425 For more information regarding indoor air quality visit the CPSC website: [www.cpsc.gov](http://www.cpsc.gov)

**“Come On In, The Water’s ????” - Indoor Pool Air Quality**

There is nothing more refreshing on a sultry July day than a dip in the pool and swimming is one of the best forms of exercise for people of all ages. While many of us may not have access to a back yard pool, we do enjoy using the local recreation center pool or the motel pool while on vacation. One minute we may be weaving through the water like a dolphin or at least like a turtle and the next minute we are gasping for air. Anyone who has swum in a chlorinated pool knows the harsh effects that chlorine can have on the eyes, skin, and respiratory tract. These symptoms are likely caused by a combination of poor water and indoor air quality in the pool caused by an accumulation of irritants, known as chloramines, in the pool and water. Chlorine is used to kill waterborne bacteria in the pool but it can react with organic matter in the water including dirt, sweat, body oils and urine intro-

duced by humans. Proper maintenance of the pool and attention to water chemistry and ventilation can control these disinfection by-products. The Centers for Disease Control and Prevention (CDC) indicates that this is an emerging health concern for recreational and professional swimmers. In an investigation conducted involving a motel pool in Nebraska, the CDC found that 24 individuals were affected by disinfection by-products in the poorly maintained pool and that one child was hospitalized with severe bronchitis. During the 2007 US National Swimming Championship, some swimmers walked out of warm-ups because of poor air quality caused by a ventilation problem in the pool area. Indoor public pools are required to have a mechanical ventilation system which removes stale air and introduces fresh air into the area. If the system is not working properly, these irritants can build-up in the pool enclosure. Chloramines

are not considered health hazards in outdoor swimming pools. However, in the enclosed space around indoor pools, they can reach dangerous concentrations and pose a substantial health risk. High concentrations can cause acute eye and respiratory tract irritation in swimmers and other persons in the indoor pool environment and might also contribute to asthma and respiratory disease. Serious conditions such as “lifeguard lung” and “swimmers’ asthma” are a concern for public health agencies. The Environmental Health Section of the Alamance County Health Department inspects public pools and enforces state regulations regarding the operation of pools. Swimmers and other patrons of indoor public pools that experience symptoms that may be related to water or air quality should contact Environmental Health at 570-6367.

**Area Employees Trained in Asthma and IAQ Awareness**

During the past ten months, over 100 area employees from a variety of occupations and agencies have been trained in asthma and indoor air quality awareness by the Environmental Health Educator working under an EPA grant. Those trained include Environmental Health Specialists, Health Care Consultants and nurses with the

Health Department, school system maintenance mechanics, and child care facility staff members. Recently a training session was held with regional case managers with Community Care of Central Carolina. As part of the organization’s asthma management program for NC Medicaid enrollees, case managers received informa-

tion regarding home environmental assessments for smoking, allergenic materials and other asthma triggers. Environmental Health can also perform an assessment for you, or you can perform one yourself using a check list available from the EPA website.

[www.epa.gov/asthma/pdfs/home\\_environment\\_checklist.pdf](http://www.epa.gov/asthma/pdfs/home_environment_checklist.pdf)

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**Does Your Home Contain Lead Based Paint?**

In 2007, there were 6 cases investigated in Alamance County involving lead exposure; 3 with elevated lead levels and 3 with lead poisoning. Lead is a toxic metal used in a variety of products and materials. When lead is absorbed into the body, it can cause damage to the brain and other vital organs, like the kidneys, nerves, and blood. Some symptoms of lead poisoning may include headaches, stomachaches, nausea, tiredness, and irritability. Lead can also harm children without causing any obvious symptoms. Many homes built before 1978 have lead based paint. For more information:

[www.cdc.gov/lead/](http://www.cdc.gov/lead/)



Lead dust created by the friction of opening and closing windows that have lead paint on them, is a common lead hazard.



Home environmental assessments can be an important component of an asthma management program.

ALAMANCE COUNTY HEALTH  
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ENVIRONMENTAL HEALTH SECTION

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Burlington, NC 27212

Phone: 336-570-6367



Alamance  
County  
Health  
Department

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## Seven Tips for Keeping a Healthy Home

### 1. Keep it Dry

Prevent water from entering your home through leaks in roofing systems, rain water from entering the home due to poor drainage, and check your interior plumbing for any leaking.

### 2. Keep it Clean

Control the source of dust and contaminants, creating smooth and cleanable surfaces, reducing clutter, and using effective wet cleaning methods.

### 3. Keep it Safe

Store poisons out of the reach of children and properly label. Secure loose rugs and keep children's play areas free from hard or sharp surfaces. Install smoke and carbon monoxide detectors and keep fire extinguishers on hand.

### 4. Keep it Well-Ventilated

Ventilate bathrooms and kitchens and use whole house ventilation for supplying fresh air to reduce the concentration of contaminants in the home.

### 5. Keep it Pest-free

All pests look for food, water and shelter. Seal cracks and openings throughout the home; store food in pest-resistant containers. If needed, use sticky-traps and baits in closed containers, along with least toxic pesticides such as boric acid powder.

### 6. Keep it Contaminant-free

Reduce lead-related hazards in pre-1978 homes by fixing deteriorated paint, and keeping floors and window areas clean using a wet-cleaning approach. Test your home for radon, a naturally occurring dangerous gas that enters homes through soil, crawl-spaces, and foundation cracks.

### 7. Keep it Well-Maintained

Inspect, clean and repair your home routinely. Take care of minor repairs and problems before they become large repairs and problems.

## Carbon Monoxide (CO) Alarm Legislation Passes in NC

The April issue of **Indoor Air Quality News** contained information regarding the hazards related to carbon monoxide (CO) exposure. On July 10, the NC Senate passed legislation that will require CO alarms to be installed in single and multifamily rental dwellings beginning January 1, 2010.

## HUD Healthy Homes Initiative

Millions of children are harmed each year by environmental hazards in the home. There are more than 6 million substandard housing units nationwide. Scientific evidence suggests that health problems such as asthma, lead poisoning, and unintentional injuries are linked to preventable housing deficiencies. Creating healthier, safer and more efficient housing has the potential to save billions in health care costs and prevent the public health problems that arise from substandard housing. In 1999, the US Department of Housing and Urban Development (HUD) responded to a Congressional Directive over concerns regarding child environmental health by launching its Healthy Homes Initiative (HHI) to protect families from health and safety hazards related to housing. In addition

to general home safety, the HHI addresses multiple childhood diseases and injuries and home environmental hazards including: lead, carbon monoxide, pesticides, radon, mold, allergens and asthma. The Healthy Homes Initiatives focuses on research and demonstration of low-cost, effective assessment and intervention of home health hazards. HHI provides grants to non and for-profit firms, state and local governments in order to develop low-cost methods for hazard assessment and interventions, evaluating the effectiveness of interventions, and enabling local entities to educate residents and mitigate hazards and to develop and provide educational programs for the public. For more information: [www.hud.gov.healthyhomes](http://www.hud.gov.healthyhomes)

## Next Newsletter To Focus on Back to School IAQ and Asthma Issues

Creating a safe and healthy school is a vital aspect of providing a learning environment in which students and teachers can reach their goals. The September **Back To School** issue of **Indoor Air Quality News** will feature articles related to asthma management at school and maintenance of good indoor air quality in school facilities.