Is Your Home Making You or Your Family Sick?
An Introduction to Indoor Air Quality

General Indoor Air Quality Mini-Lesson Leader’s Guide

Objectives:
As a result of this program, participants will:

• Develop a greater awareness of issues related to indoor air quality.
• Identify problems in the home that can trigger asthma, allergic reactions, and other health problems.
• Evaluate and make changes in their home to improve indoor air quality.

Additional Information for Presenter:
This leader’s guide focuses on general indoor air quality issues. The overall indoor air quality program includes three mini-lessons. These lessons can be taught in succession or individually, and include information on general indoor air quality issues, mold, and radon. Each mini-lesson can be taught in 15-20 minutes. Activities times vary (see activities for more information). For the leader’s guide on mold or radon contact your local county Extension agent or Ashley Osborne, Extension Associate, at 859-257-2505 or ashley.osborne@uky.edu.

Teaching Points:
Which is dirtier: outdoor or indoor air? If you answered indoor air, you are correct. In the U.S., more than 90 percent of Americans’ time is now spent indoors. Yet the air inside homes and other buildings can be many times more polluted than outdoor or ambient air. As a result, some Americans may be exposed to significant levels of indoor air pollutants on a daily basis. But it doesn’t have to be that way.

This lesson is intended to help participants make informed choices that can reduce their exposure to indoor air pollution. Additional information is available in the Extension Bulletin titled “Is Your Home Making You and Your Family Sick? An Introduction to Indoor Air Quality” and is available online or at your county Extension office. This bulletin also includes a room-by-room check list that will help you identify which indoor air pollutants may be present in your home.

Ten Tips to Help Reduce Indoor Air Pollutants
1. Keep your home and car smoke-free.
   • Secondhand smoke can cause cancer and other illnesses. Children are especially at risk. Asthma, Sudden Infant Death Syndrome (SIDS), bronchitis, pneumonia, and ear infections may result when children are exposed to secondhand smoke.
   • Need help quitting? Call Kentucky’s Tobacco Hotline at 1-800-QUIT-NOW for free counseling.

2. Test your home for radon.
   Notes for Presenter:
   • Before the lesson contact your county health department and ask if they provide free radon test kits for county residents. If they do not provide free test kits, the Kentucky Radon Program (phone: 502-564-4856)
Teaching points:
• Radon is a naturally occurring gas that is common across much of Kentucky.
• Radon is produced from the gradual breakdown of uranium in soil, rock, and water.
• Radon gas can enter homes and buildings through cracks, gaps, and crevices in floors, walls, and a building or home’s foundation. Once inside your home, the level of radon gas can build up.
• Radon claims the lives of over 20,000 Americans each year as the number one cause of lung cancer deaths among nonsmokers.
• Take action by testing your home for radon. If your home has high radon levels, consult a radon removal contractor. Radon contractors will install a ground-level ventilation system that will prevent radon from building up inside your home. To get a listing of contractors visit the National Radon Safety Board at www.nrsb.org (Find a Professional) or the National Radon Proficiency Program at www.nrpp.info (Find a Professional).

3. Install a carbon monoxide detector.
• Carbon monoxide is a poisonous gas that cannot be seen, tasted, or smelled.
• Symptoms of carbon monoxide exposure include headaches, dizziness, disorientation, nausea, and fatigue. Carbon monoxide exposure can cause death.
• Carbon monoxide can result from unvented kerosene and gas space heaters, leaking chimneys and furnaces, back-drafting from furnaces, gas water heaters, wood stoves, fireplaces, gas stoves, generators and other gasoline powered equipment, automobile exhaust from attached garages, and tobacco smoke.
• Install a carbon monoxide detector near each sleeping room and on each floor of your home. The detector should be battery-operated or have a battery-backup.

4. Have a qualified professional inspect and service your heating system (furnaces, flues, and chimneys), water heater, and other gas, oil, or coal burning appliances annually. These systems and appliances can be of source of carbon monoxide if not working properly.

5. Keep pets out of the bedroom and off all furniture. Vacuum carpets and furniture regularly.
• Pet dander (dried skin flakes), urine, and dried salvia can trigger allergic reactions and asthma. Remember that dogs and cats are not the only pets that can trigger allergies and asthma. Hamsters, guinea-pigs, and other warm-blooded mammals also create pet dander.

6. Increase ventilation when using products that may emit organic gases.
• Organic gases are emitted by a wide range of products. Examples include aerosols such as hair spray and cooking spray, air fresheners, cleaning products, disinfectants, paint, and other solvents.
• Organic gases can cause eye, nose, and throat irritation, headaches, loss of coordination, nausea, and some may be associated with damage to the kidneys, liver, and central nervous system and certain cancers. Keep in mind that many factors, including the level of exposure and the length of time exposed to the pollutant, play a part in the extent of the health effect.
7. Reduce allergens and asthma triggers.
   • Dust mites are tiny bugs that feed on human and pet dander (dried skin flakes).
   • Dust mites are found in every home in mattresses, pillows, carpets, upholstered furniture, bedcovers, clothes, stuffed toys, and fabric-covered items.
   • Dust mites and their droppings can trigger symptoms such as a runny or stuffy nose, coughing, sneezing, and watery eyes, and can even result in asthma in individuals that are allergic to them.
   • The following steps can help control dust mites:
     o Bedding should be washed in hot water and dry completely each week.
     o Dust-proof protectors should be used on pillows and mattresses.
     o Carpets and furniture should be vacuumed frequently. A vacuum cleaner equipped with a HEPA (High Efficiency Particulate Air) filter is recommended.
     o Replace stuffed toys with toys that can be easily cleaned or choose stuffed toys that can be washed and dried completely.
   • Molds produce tiny spores that travel through the air and either settle on surfaces to create new mold colonies or are inhaled creating allergic reactions or asthma in certain people.
   • Molds can grow on most surfaces as long as moisture is present (including wood, paper, carpet, drywall, clothing, foods, and even damp soil in potted houseplants).
   • In your home, the key to controlling mold growth is controlling moisture.
   • Additional information about preventing mold and safely cleaning up mold is available online at http://www.epa.gov/mold/.

8. Control pests by removing spilled food and garbage quickly, sealing cracks and crevices around your home, keeping doors and windows closed, and fixing any leaks.
   • Some pests, such as cockroaches, can cause allergic reactions and asthma for some individuals.
   • Many pests can be prevented or reduced by following the steps noted (such as removing spilled food, etc.). This can decrease or eliminate the need for pesticides.

9. If your home was built prior to 1978, it may have lead-based paint.
   • Prior to 1978, many homes used lead-based paint. Since that time lead-based paint has been banned but in some homes the old paint still remains.
   • Lead-based paint that is chipping or peeling can create lead dust that can be inhaled or swallowed.
   • Exposure to lead can cause serious health problems especially for children. Lead poisoning in children can lead to learning and behavioral problems and brain, hearing, and nervous system damage.
   • In adults, lead poisoning can affect the nervous system, increase blood pressure, impair kidney function, and lead to reproductive problems.
   • If you think your home may have lead-based paint, have your home tested. For a list of certified companies that do lead inspections and abatement, contact the Kentucky Environmental Lead Program at (502) 564-4537.
   • If you have children in your home contact your health care provider to have your children tested for lead poisoning.

10. Vacuum carpets with a HEPA filter regularly.
   • Carpets can collect and harbor pollutants such as dust mites, pet dander, cockroach allergens, and mold spores.
   • The American Lung Association recommends hard-surfaced flooring and rugs that can be removed and cleaned in place of carpets. However, if removing all carpeting is not feasible, vacuuming with a HEPA filter at least three times a week, preferably when the person experiencing allergic reactions or asthma is not home, is advised.
A vacuum cleaner with a HEPA filter is recommended because this type of vacuum cleaner keeps allergens in the vacuum bag. Vacuums that are not equipped with a HEPA system re-circulate the particles back into the air.

If participants want additional information about indoor air quality or have more questions tell them to visit the US Environmental Protection Agency’s Indoor Air Quality website at [http://www.epa.gov/iaq/](http://www.epa.gov/iaq/), or contact their county Extension agent or Ashley Osborne, Extension Associate for Environmental and Natural Resource Issues at (859)-257-2505 or ashley.osborne@uky.edu.

**Handouts for Participants:**
Below are education materials available for the lesson. Two factsheets have been provided for the topic. Depending on your audience and your printing capabilities you may only want to print out and provide the shorter factsheet to participants, then provide the longer factsheet/booklet for those that request more information.

- **Is Your Home Making You or Your Family Sick? An Introduction to Indoor Air Quality** Extension Bulletin and Home Checklist – X pages
- **Common Indoor Air Pollutants: Sources and Health Impacts** (HF-LRA-161) Factsheet – 4 pages

**Activity Ideas:**
For information about the activities listed below contact your county Extension agent.

- **Particulate Pollution Activity**
  - In this activity, participants pretend to be cilia, tiny hairs that protect and filter out particles in the lungs. As cilia, participants wave their arms and smack away particulate matter in the form of paper wads.

- **Indoor Air Quality Toolkit**
  - In this activity, participants are given various items that may cause indoor air quality problems or can be used to detect or prevent indoor air quality problems. Participants discuss each item and its connection to indoor air quality.

**Evaluation:**
1. Give each participant an evaluation form to complete and turn in.
2. Give each participant an envelope. Have participants write their name and mailing address on the envelope. In 6 months, send a follow-up evaluation (and self-addressed envelope) to participants using the addressed envelope. Ask participants to complete the follow-up evaluation and mail back to you.

**References:**

This leader’s guide was prepared by Ashley Osborne, Environmental and Natural Resource Issues. January 2014.

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