Indoor Air Hazards

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Leader's Guide

Introduction

This lesson is designed to make homeowners aware of indoor air hazards and identify ways they can reduce the risks associated with air pollutants. Many homes today have furnishings, combustion appliances, and household products that can compromise the quality of the air we breathe.

People spend most of their time indoors. There are some, such as the elderly, infirm, and children who spend nearly 100 percent of their time indoors. A growing body of scientific evidence suggests that the air inside of homes may be more seriously polluted with toxins than outdoor air in some of our largest and most industrialized cities.

Objectives

By the end of this program, participants should be able to:

1. Identify sources, symptoms, and health effects of common indoor air pollutants
2. Recognize the appropriate roles of pollutant testing for indoor air contaminants
3. Implement procedures to reduce exposure to indoor air hazards

Program Preparation

Before the program, review the fact sheet and other resource material. Become familiar with the Web sites that list solutions to indoor air hazards. Review the Indoor Air Hazards checklist (page 3) to determine the feasibility of using it for a take home assignment. Look at the lesson options suggested for teaching the lesson in the Program Presentation Guide and select an option that fits your teaching style.

Make copies of "Indoor Air Hazards," page 3, and "Things You Should Know About Mold," page 4, for each participant.

Program Presentation Guide

1. A lecture/discussion format may be one of the easiest ways to cover the material in the fact sheet. Pose questions about each of the six indoor hazards, and then answer the questions for the participants. For example the questions for biological pollutants could be: Why are mold and dust mites of concern? What are the health concerns? How can a person reduce health risks associated with mold and dust mites? Ask a question or two about biological pollutants to see if participants are understanding the lesson concepts being taught.

2. A second option is to center the lesson on ways to detect indoor air hazards.

Use the Household Hazard Identification ideas listed in this leader's guide as a way to describe how to identify indoor air hazards. A radon testing kit can be used to talk about the harmful effects of radon and how to use the kit to check for high levels in the home. See the testing section for different type of testing devices.

3. A third option is to use a PowerPoint presentation as a tool to teach people about indoor air hazards. The PowerPoint presentation will show pictures of some hazards that can't be brought into a classroom.

Mold and dust mites and some chemicals are best demonstrated through pictures. (Toxic household chemicals should not be brought into a classroom or meeting room.)

4. A fourth option for a small group is to walk participants visually through the Healthy Home Tabletop Display. Talk about hazards that could be found in each room of the house. The Indoor Air Hazard survey can be used to talk about hazards that can be found in different rooms of the home.

Homework Assignment

Encourage everyone to take a copy of the Indoor Air Hazards survey (page 3) and walk room-by-room through their homes while checking those items that may be hazardous. Encourage participants to do something about any moisture, dust, chemicals or other hazards that are found.

Household Hazard Identification

Show some of the items listed below:

Relative humidity (hygrometer – found in most hardware stores)

Radon test kits (Found in many extension offices)

CO detectors (Found in hardware and discount stores)

Empty toxic chemicals containers (under kitchen sink or garage)

Other resources

Healthy Home Tabletop Display – Can be checked out of the area K-State Research and Extension office

Resources

Healthy Indoor Air – *http://www.montana.edu/wwwcxair/train.htm*

Indoor Air Hazards – *http://www.montana.edu/wwwcxair/hazards.htm*

EPA Hotline resources – *http://www.epa.gov/iaq/iaqxline.html*

The Inside Story: A Guide to Indoor Air Quality – *http://www.epa.gov/iaq/pubs/insidest.html*

American Lung Association – *http://www.healthhouse.org/consumer/Tipsheets.asp*

Mold EPA – *http://www.epa.gov/iaq/molds/moldresources.html*

Mold clean up EPA – *http://www.epa.gov/iaq/molds/*

Lead Resources – *http://www.epa.gov/lead/*

Sick Building Syndrome – *http://www.epa.gov/iaq/pubs/sbs.html#Air%20cleaning*

Indoor Air Hazards

Do a room-by-room survey to see if you have indoor air hazards.

Place a check in the box next to those items that may need to be changed or modified to bring your home to a standard that is free of potential indoor air hazards.

Kitchen

- ❑ Excess moisture from cooking and dishwasher that may encourage the growth of mold, and mildew, as well as cockroaches and dust mites.
- ❑ Use of unnecessary household cleaners that give off harmful vapors.
- ❑ Unvented gas stove and range that can be a source of carbon monoxide and gas by products.

Bathroom and Laundry

- ❑ Excess moisture from bathing, clothes washing that may encourage growth of mold, and mildew, as well as cockroaches and dust mites.
- ❑ Use of personal care products that can release organic gases from product chemicals.
- ❑ Unvented clothes dryer that produces excessive moisture and dust.
- ❑ Use of a gas-fired dryer that is not properly vented.

Living Areas

- ❑ Water-damaged carpet that biological pollutants can grow on or new carpet exuding organic gases.
- ❑ Fireplaces that leak carbon monoxide and combustion pollutants into the home.
- ❑ Moisture encourages the growth of mold, and mildew, as well as cockroaches and dust mites.
- ❑ Gas or kerosene space heaters that are located in living quarters and may produce carbon monoxide and combustion pollutants.
- ❑ Family member or guests that smoke inside of the home.
- ❑ Lead-based paint in home built in 1978, or earlier, that is peeling, chipping or chalking.
- ❑ Animals that leave allergens such as dander, hair, feathers and skin in the air.

Bedroom

- ❑ Humidifier/vaporizer (cold mist type) that can encourage the growth of mold and mildew.
- ❑ Use of moth repellents that contain paradichlorobenzene, a pesticide.

Utility, Basement and Hobby Areas

- ❑ Ground moisture in basement or other places in the home that encourages the growth of mold, and mildew, as well as cockroaches and dust mites.
- ❑ Home has never been tested for radon.
- ❑ Home has hobby products such as solvents, paint, glue, and epoxy that can emit organic gases.
- ❑ Gas or fossil-fuel furnace/boiler and gas water heaters that are not properly vented or that may produce backdrafting of carbon monoxide (CO) and combustion pollutants.

Garage

- ❑ Car or small engine exhaust that can produce sources of carbon monoxide and combustion by-products.
- ❑ Paint, solvents and cleaning supplies that may release harmful vapors.
- ❑ Pesticides, fertilizers and other toxic yard and garden chemicals.
- ❑ Stored fuels such as gasoline and kerosene that may release harmful vapors.

* Adapted from Healthy Indoor Air for America's Homes.

Things You Should Know About Mold

1. There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.
2. If mold is a problem in your home or school, you must clean up the mold and eliminate the sources of moisture.
4. Reduce indoor humidity (to 30-60%) to decrease mold growth by: venting bathrooms, dryers, and other moisture-generating sources to the outside; using air conditioners and de-humidifiers; increasing ventilation; and using exhaust fans whenever cooking, dishwashing, and cleaning.
5. Clean and dry any damp or wet building materials and furnishings within 24 to 48 hours to prevent mold growth.
6. Prevent condensation: Reduce the potential for condensation on cold surfaces (i.e., windows, piping, exterior walls, roof, or floors) by adding insulation.
7. If the moldy area is less than about 10 square feet (less than roughly a 3 ft. by 3 ft. patch), in most cases, you can handle the job yourself.
8. Clean mold off hard surfaces with water and detergent, and dry completely. Absorbent materials such as ceiling tiles, that are moldy, may need to be replaced.
9. Avoid breathing in mold or mold spores when cleaning. In order to limit your exposure to airborne mold, you may want to wear an N-95 respirator, available at many hardware stores and from companies that advertise on the Internet. (They cost about $12 to $25.)
10. In areas where there is a perpetual moisture problem, do not install carpeting (i.e. bathroom sinks, or on concrete floors with leaks or frequent condensation).
11. Molds can be found almost anywhere; they can grow on virtually any substance, providing moisture is present. There are molds that can grow on wood, paper, carpet, and foods.
12. Wear gloves. Long gloves that extend to the middle of the forearm are recommended. When working with water and a mild detergent, ordinary household rubber gloves may be used. If you are using a disinfectant, 'such as chlorine bleach, or a strong cleaning solution, you should select gloves made from natural rubber, neoprene, nitrile, polyurethane, or PVC. Avoid touching mold or moldy items with your bare hands.
13. Wear goggles. Goggles that do not have ventilation holes are recommended. Avoid getting mold or mold spores in your eyes.

Adapted from EPA

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