Improving Indoor Air Quality in the Home
Overview

- Indoor Air Quality (IAQ) is Important
- Health is influenced by IAQ
- Sources of indoor air pollution
- Things you can do
IAQ is Important

• People spend up to 90% of their time indoors

• Indoor air pollutants can cause and trigger asthma and allergies, among other health concerns

• Small changes in the home have big health payoffs
Health is Influenced by IAQ

- Asthma
- Allergies
- Other health concerns
Asthma

- Almost 10% of Oregonians have asthma
- Oregon’s asthma rate is higher than the national average
- Asthma
  - lifelong disease
  - disabling
  - hospitalization
  - expensive to manage
ASTHMATIC

• Muscles tighten
• Airways become inflamed
• Mucous produced

NON-ASTHMATIC

• Muscles relaxed
• Airways open
• No mucous produced

Source: American Academy of Allergy, Asthma and Immunology
Are Asthma and Allergies Related?
Allergies

1. Exposure to allergen

2. Immune system response: allergen antibodies produced

3. Antibodies attach to mast cells in tissues

4. Second allergen exposure: Histamine and other chemicals released

5. Allergic reaction: Itchy eyes, sneezing, runny nose, asthma

Source: www.epa.gov/asthma/
Sources of Indoor Air Pollution

- Allergens
- Asbestos
- Carbon Monoxide (CO)
- Environmental Tobaccos Smoke (ETS)
- Lead
- Mold
- Outdoor Air
- Radon
- Volatile Organic Compounds (VOCs)
Allergens
Pollen Count Resource

National Allergy Bureau
www.aaaai.org/nab

- **Station:** Eugene, OR
- **Allergy & Asthma Research Group**
- **Station Head(s):** Kraig W. Jacobson, M.D.
- **Date of Pollen and Mold Count:** 04/22/2011

- Pollen & Mold Summary
  - **Trees:** Moderate Concentration
  - **Weeds:** Absent
  - **Grass:** Low Concentration
  - **Mold:** Not Counted
Asbestos

- **Health concerns**
  - Fibers can remain in the body for long period of time
  - Cancer and lung disease

- **Risk factors**
  - Damaged or disturbed materials in older homes
    - pipe and furnace insulation
    - siding
    - shingles
    - millboard
    - textured paints and other coating materials
    - floor tiles
Asbestos

• Things you can do
  – If the material is in good condition → LEAVE IT ALONE
  – Seal or enclose sources of asbestos that are damaged
  – Don’t cut, rip or sand asbestos material
  – Consider repair or removal of damaged material by a professional
  – Use personal protective equipment
Carbon Monoxide

- **Health concerns**
  - Higher risk for those with CVD, respiratory diseases
  - CNS problems >> death

- **Risk factors**
  - Burning indoors, emergency situations
  - Poorly maintained heating devices
  - Improper ventilation

- **Things you can do**
  - Install a certified carbon monoxide detector
  - Adjust sources to decrease emissions
  - Maintain heating devices
  - Use adequate ventilation
Environmental Tobacco Smoke (ETS)

• **Health concerns**
  – Cancer
  – Asthma
  – Other respiratory problems

• **Risk factors**
  – Smoking or living with a smoker
  – Infants and young children are especially vulnerable

• **Things you can do**
  – Don’t smoke in the home/car or allow others to do so
Mold

- **Health concerns**
  - watery eyes, runny nose, sneezing, nasal congestion, itching, skin irritation, coughing, wheezing, difficulty breathing, headache and fatigue

- **Risk factors**
  - Moisture control!

- **Things you can do**
  - Remove moisture source
  - Increase ventilation
  - Dehumidifier
  - If mold is present: Wash hard surfaces with soap and water and keep them dry. May have to discard soft surfaces (carpet, couches, etc.)
Lead

• **Health concerns**
  - a lot over a short period of time
  - a little over a long period of time

• **Risk factors**
  - Homes older than 1950 (banned in 1978)
  - Lead-based paint that is not in good condition, friction, heavy traffic areas
  - Tracking in from outside, pets too

• **What can you do?**
  – Proper maintenance of paint in older homes
  – Contact lead poisoning prevention program for remodel or abatement advice
  – Get children tested if you suspect exposure
Radon

• **Health concerns**
  - No immediate symptoms
  - Lung cancer

• **Risk factors**
  - Geological
  - Cracks and crevices

• **What can you do?**
  - Test for radon
  - Sealing cracks and other openings in foundation
  - Install ventilation system
Yellow: low potential
Orange: moderate potential
Volatile Organic Compounds (VOCs)
Volatile Organic Compounds (VOCs)

• Health concerns
  – headaches, eye, nose and throat irritation, nausea, difficulty breathing, liver, kidney, central nervous system, cancer

• Risk factors
  – Poor ventilation
  – Indoor sources
  – Geographical

• What can you do?
  – Read and follow label instructions
  – Allow products to dry or off-gas thoroughly outside
  – Open doors or windows if products must be used indoors
  – Purchase low VOC products
What To Do

- Cleaning / Housekeeping
- Home Maintenance
- Personal Behaviors
- Pest Management
- Pet Care
Air Cleaners

Particle removers
- Mechanical – filters: room and house scale
- Electronic – electrostatic collection or ionizers
- MERV vs HEPA

Gas-vapor air filters
- Sorbent
- Pollutant specific

Pollutant destroyers
- UVGI – ultraviolet germicidal irradiation
- PCO – photocatalytic oxidation
- Ozone generators – NOT RECOMMENDED

Plants
- Not proven
- Moisture sources
  - Source: http://www.epa.gov/iaq/pubs/airclean.html
Resources

Cleaning alternatives:  http://www.oregonmetro.gov/index.cfm/go/by.web/id=1400

Lead:  http://public.health.oregon.gov/HealthyEnvironments/Healthy Neighborhoods/HealthyHomes/LeadPoisoning/Pages/leadsafefam.aspx

National Allergy Bureau:  http://www.aaaai.org/nab

NW Clean Air Agency:  http://nwcleanair.org

Oregon Asthma Program:  Factsheets, 4 languages


Oregon Environmental Council:  Eco-healthy Homes Checkup Kit


Radon:  http://www.epa.gov/radon/states/oregon.html
