Improving Indoor Air Quality in the Home

Overview

• Indoor Air Quality (IAQ) is important
• IAQ and Health
• Types 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.
• Residential IAQ is not regulated and is the responsibility of the occupants.
IAQ and Health

- 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

Why asthma makes it hard to breathe

ASTHMATIC
- Muscles tighten
- Airways become inflamed
- Mucous produced

NON-ASTHMATIC
- Muscles relaxed
- Airways open
- No mucous produced
Are Asthma and Allergies Related?

Allergies

Asthma

Allergic reaction: itchy eyes, sneezing, runny nose, asthma

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

Source: www.epa.gov/asthma/

Types of Indoor Air Pollution

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

Things you can do:
- Get tested for allergies - identify the culprit
- Prioritize the bedroom:
  - Wash bedding weekly
  - Shower at night
  - Keep pets out
  - Use dust mite covers if applicable
  - Remove clutter to facilitate cleaning
- Remove shoes indoors
- Minimize rugs and carpeting
- Clean with damp rag or mop.
- Keep windows and doors closed during high pollen periods
- Clean or change air filters frequently

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 remain in the body for a long period of time
  – Cancer and lung disease; Smokers are at high risk.

• 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.
  – Use personal protective equipment.
  – Consider repair or removal of damaged material by a professional.

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 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 in susceptible individuals

- **Risk factors**
  - Moisture: water leaks, relative humidity >50%, poor ventilation

- **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, mattresses, 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

- Things you can do
  - Test for radon
  - Sealing cracks and other openings in foundation
  - Install ventilation system

Volatile Organic Compounds (VOCs)

Yellow: low potential
Orange: moderate potential
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

- **Things you can 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
- POO – photocatalytic oxidation
- Ozone generators – NOT RECOMMENDED

**Plants**
- Not proven
- Moisture sources

Source: [https://www.epa.gov/iaq/pubs/airclean.html](https://www.epa.gov/iaq/pubs/airclean.html)
<table>
<thead>
<tr>
<th>Resources</th>
<th>Link</th>
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<tr>
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</tr>
<tr>
<td>Oregon Asthma Program: Factsheets, 4 languages</td>
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</tr>
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