Basics of a Healthy Home
Indoor Air Quality in Tribal Communities

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Presentation

- How Lungs Work
- Basic Strategies – Healthy Home
  - Source Reduction
  - Ventilation
  - Air Cleaning
How Lungs Work
Lungs
Activity

Lung Function Model
Cardiovascular Connection

- Gases and small particles distributed widely after entering bloodstream
- If lungs are not functioning properly, heart must work harder
Protect the Lungs of Young Children

- Lungs of young children are very sensitive
- Air pollution can damage lungs for a lifetime
- Exposure to air pollutants can cause asthma, which can last a lifetime
- Lung infections can damage lungs for a lifetime
Indoors: Why be concerned?

- We spend most of our time indoors.
- Vulnerable populations spend even more time indoors.
- Air pollutants are often more concentrated indoors than outdoors.
- Many “New” pollutants are associated with modern living.
Pollutants And Health

What determines the health impacts of exposure?

- Toxicity of the pollutant
- Dosage (exposure)
- Individual sensitivity (Genetics; Life cycle; Specific conditions)
Basics

Healthy Home
Basic Principles

1. Source Control
2. Ventilation
3. Air Cleaning
Source Control

- Improving quality of indoor air is vital for human health
- Preferred strategy
- Increasing ventilation – higher energy costs
Environmental Tobacco Smoke (ETS)

No risk-free level of exposure to secondhand smoke.

Eliminate from indoor environment

Following actions DO NOT protect nonsmokers

- Separating smokers from nonsmokers
- Cleaning the air
- Ventilating buildings
Wood / Coal Burning Stoves

Consider alternative heating sources
Best practices
Household Hazardous Chemicals

- Average US household uses 40 lbs of chemicals each year
- Average household stores more than 60 hazardous products
- Many of the products are loaded with fragrances and petroleum-distilled chemicals (Volatile Organic Compounds / VOCs)

Consider “Green Cleaning”
Activity
Green Cleaning
Microfiber
Consumer Products (Buyer Beware)

- BPA in cans and plastic containers
- Phthalates used in many plastics, children’s toys, building materials, shower curtains, glues, floor coverings
- Perfluorinated compounds are used to make materials resistant to stain, oil, and water
- Flame retardants are found in electronics, furniture, and other foam containing products
- Mercury is found in fluorescent light bulbs, switches, thermostats, old paint (pre-1991), and batteries (pre-1995)
Air Fresheners

DO NOT “clean” the air
They add more air pollutants
Activity

Reading Labels
Personal Care Products

- Many soaps, fragrances, shampoos, lotions, and cosmetics contain toxic chemicals like parabens, phthalates, and triclosan – chemicals linked to endocrine disruptors
- Many products are loaded with fragrances and petroleum-distilled chemicals (Volatile Organic Compounds / VOCs)
- Phthalates are found in makeup and beauty supplies
Pesticides

Read and follow label instructions
Consider Integrated Pest Management
Carbon Monoxide (CO)

- All burning emits CO
- Alarms are backup

Appliance maintenance also important
Radon

- Radioactive gas
- Lung Cancer
Outside Sources

Reduce idling of buses

Location of dumpsters
Watch for fresh air intakes
Walk-Off Mats

Keep the dirt out!
Carpets trap and release pollutants
Mold

Moisture Control!
Floor Drains

- No sewer gases coming in to plumbing fixture
- Water sitting in the trap prevents sewer gases from coming in to the home
- This side of the trap goes to the sewer, and sewer gases are found here
Occupant Sources

- Physiological “equilibrium”
- Sweat/Perspiration
- Perfume, cologne
Basic Principles

1. Source Control
2. Ventilation
3. Air Cleaning
Ventilation

- Higher energy costs
- Tension between weatherization and indoor air quality
- For tight homes consider
  - Energy Recovery Ventilators (ERV)
  - Heat Recovery Ventilators (HRV)
Source Ventilation

50 CFM
Source Ventilation

Cooking releases moisture

100 CFM

Make sure range hood vents to outside
Ventilation – Outside Air

ASHRAE provides guidelines

Ventilation recommendations depend on

- activities
- number residents
- size of home

See ITEP Dropbox for more information on ventilation
Ventilation

Natural leakage
(Measured with Blower Door)

Mechanical
• Exhaust fans
• Supply (HRV / ERV)
Basic Principles

1. Source Control
2. Ventilation
3. Air Cleaning

Air cleaning is only recommended after proper source control and ventilation steps are taken.
Air Cleaners

- Generally not effective for gaseous pollutants
- Efficiency for collecting pollutants (HEPA = 99.97% of 0.3 micron particles)
- Moving air through cleaning element
- On going maintenance
- Combine with source removal and ventilation
Air Cleaners

- Buyer beware!
- No Ozone Air Cleaners
- True HEPA Filter
- Activated Charcoal
- Size for the space and air flows
Air Cleaning – Don’ts

These methods may make air quality WORSE

- **DO NOT USE Ozone** (sold under many different guises)
  - Ozone is an air pollutant
  - Chemical reactions may lead to even more dangerous air pollutants
- Air fresheners typically attempt to cover up odors and add more air pollutants
- Electronic or electrostatic cleaners that may add ozone
Summary – Maintaining Healthy IAQ

- Health of building occupants
- No silver bullets – If it is too good to be true…
- Source Control is preferred strategy
Healthy Homes APP

- Healthy Homes – Youth app from the iTunes
  

- Healthy homes – Basics
  

- After using the app(s), please proceed to the online survey
  
  https://www.surveymonkey.com/r/XYT9SPQ
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