

Building Healthy Housing

Presented to
Boston Department of Neighborhood Development
August 2007

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National Center for Healthy Housing
Healthy Homes Training Center

Green is Good

■ Green Gives Us

- Energy Efficiency
 - Envelope - key
- Water Conservation

- And we get health benefits
 - Pest control
 - Moisture control
 - Comfort
 - Reduced operating costs
- Choices matter
 - Air sealing/foundation for pests
 - Water – effective toilets



Key Principles

- Make the house:
 - Dry
 - Clean
 - Pest free
 - Well Ventilated
 - Contaminant Free
 - Safe
- Maintain the house



National Green/Health Standards

- Green Communities – Enterprise Community Partners
- LEED H – US Green Building Council
- NAHB Green Home Building Guidelines
- Energy Star Indoor Air Package – US EPA
- Health House – American Lung Association





Summary Analysis

| Healthy and Affordable Building Principles | LEED-H Points | NAHB Green Home Building Guidelines | Green Communities | ALA Health House | EPA Air Plus |
|--|---------------|-------------------------------------|-------------------|------------------|--------------|
|--|---------------|-------------------------------------|-------------------|------------------|--------------|

| | | | | | |
|------------------------------|----------------------------------|-----------------------|----------------------------------|----------------------------------|----------------------------------|
| KEEP IT DRY | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| KEEP IT CLEAN | <input checked="" type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| KEEP IT WELL VENTILATED | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| KEEP IT SAFE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| KEEP IT FREE OF CONTAMINANTS | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| KEEP IT PEST FREE | <input checked="" type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| KEEP IT WELL MAINTAINED | <input checked="" type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |



all criteria included



75% of criteria included

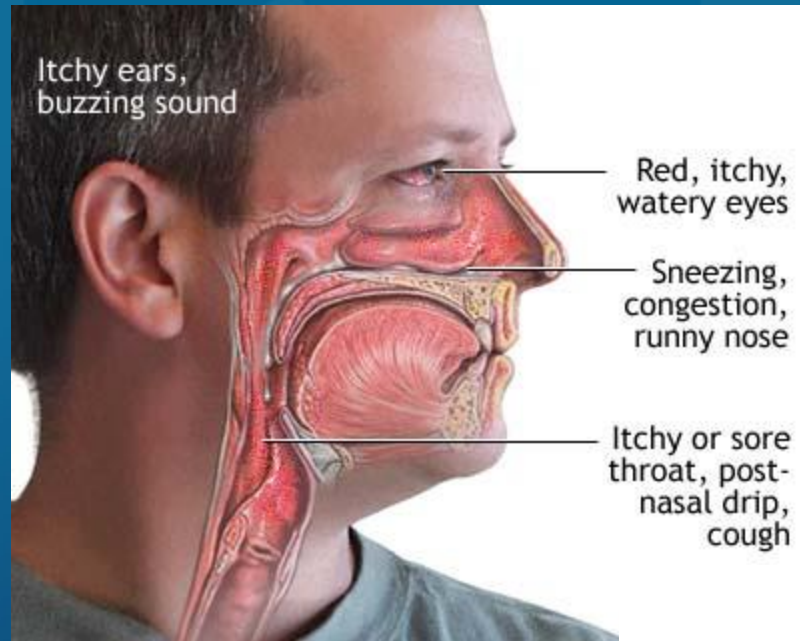


less than 75% of criteria included

Why Keep it Dry



- Moisture/mold increase risk of wheezing, asthma attacks, allergic reactions
- 20% asthma cases linked to moisture or mold
- Attracts pests & structural damage
- Moisture repairs expensive



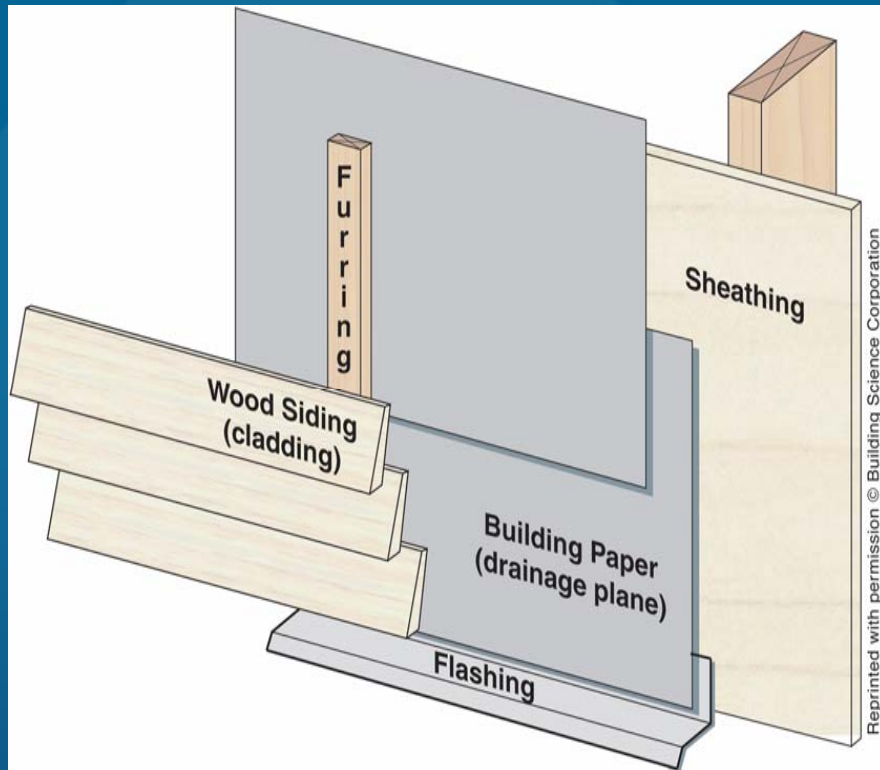
Keep it Dry



- For example...
 - Avoid plumbing exterior walls
 - Drain pan water heater
 - Extend eaves 18"
 - Slope ground away
 - Gypsum 1/2 " off slab
 - Sub slab prep
 - No paper gypsum board behind shower/tub



Keep it Dry



- Drainage plane
- Window and door sill flashing



Dry - Better Toilets

- Large utility cost
- # work order at BHA/CDCs
- Pick reliable, low flow toilets (1.3 gpf)
 - DND 1.4 gpf
- EPA Water Sense
- Toilet study





Costs when things go wrong?

- The Boston Housing Authority and 6 CDCs cite plumbing repairs and leaks as their most frequent tenant complaint and work order request.
- New York City* - 150 families file suit against housing complex owner claiming failure to eliminate mold. 5 are wrongful death suits.
- California* - \$33,000 settlement regarding roof leaks.

*Examples taken from “Mold in Construction” presentation by Don Garvey, CIH, CSP of St. Paul Fire & Marine Insurance Co.



Clean

- 2/3 dust tracked in
- Walk off mats at entry
- Smooth and resilient flooring
- Shoe storage



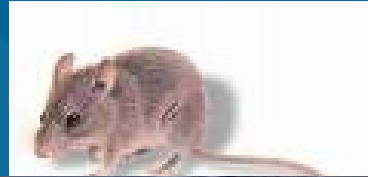
Units: Commercial grade vinyl, sealed with welded seams, in kitchen, laundry, bath, entry, dining

Community center: ceramic tile



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Why Pest Free



- Mice and cockroach droppings trigger asthma
- Pests result in pesticide use
- Extermination expensive



Pest Free



- Seal holes and cracks
- Apply boric acid
- No spraying or fogging
- Require monitoring

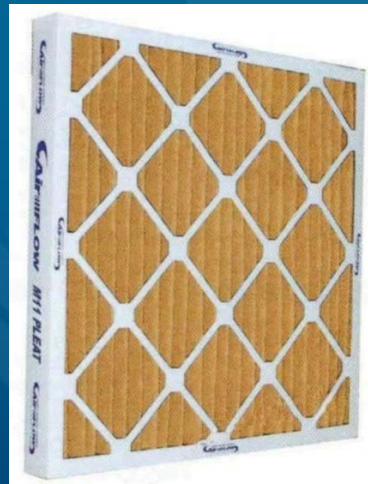


Costs when things go wrong?

- The Boston Housing Authority (BHA) and 6 CDCs cite pest control as the second most frequent tenant complaint and work order.
- At the BHA, pest management is the third highest property maintenance expense.



Why Well Ventilated



- Exhaust moisture & contaminants
- Increased respiratory irritation and illness with poor ventilation
 - Missed school & work



Ventilate Sources

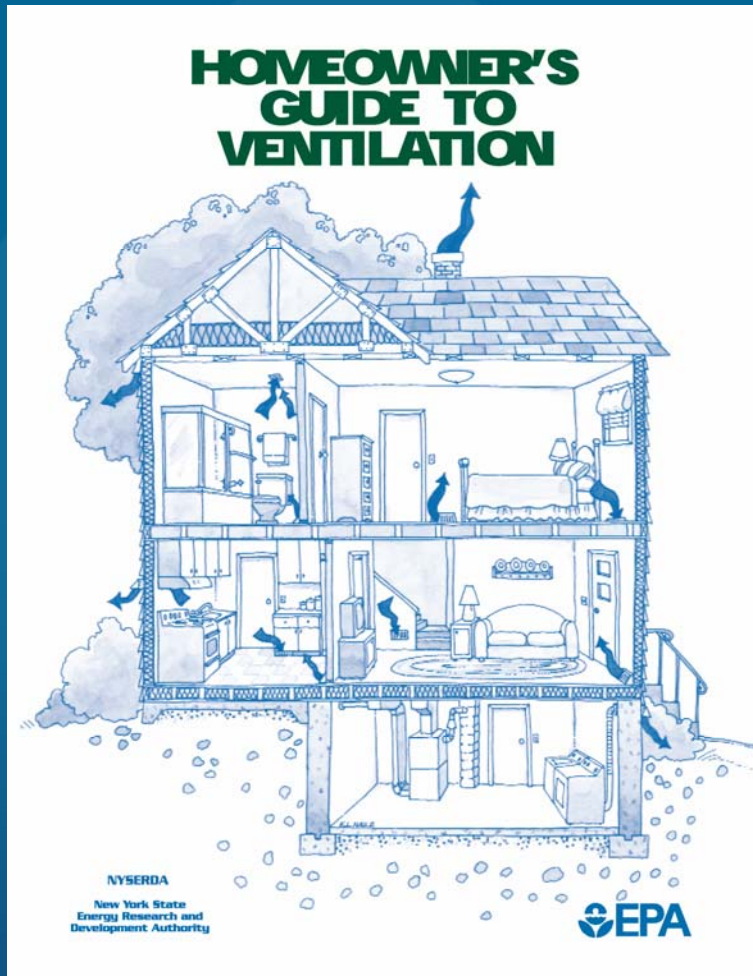


- Exhaust moisture & contaminants outside
- ASHRAE 62.2
- Bath: 50 cfm /20 cfm
- Kitchen: 50 cfm/5 ach (intermittent/continuous)
- Dryers exhaust outside





Ventilate House – Clean Fresh Air



- ASHRAE 62.2 sets cfm & filtration
- Require mechanical contractor to document compliance



ASHRAE 62.2

Exhibit IEQ 4-A Minimum Required Ventilation Air Flow (CFM) Requirements

| Conditioned Floor Area (ft ²) | Number of Bedrooms | | | | |
|---|--------------------|-------|-------|-------|-----|
| | 0 – 1 | 2 – 3 | 4 - 5 | 6 - 7 | > 7 |
| < 1,500 | 30 | 45 | 60 | 75 | 90 |
| 1,501 – 3,000 | 45 | 60 | 75 | 90 | 105 |
| 3,001 – 4,500 | 60 | 75 | 90 | 105 | 120 |
| 4,501 – 6,000 | 75 | 90 | 105 | 120 | 135 |
| 6,001 – 7,500 | 90 | 105 | 120 | 135 | 150 |
| > 7,500 | 105 | 120 | 135 | 150 | 165 |



MERV 8 v. 10

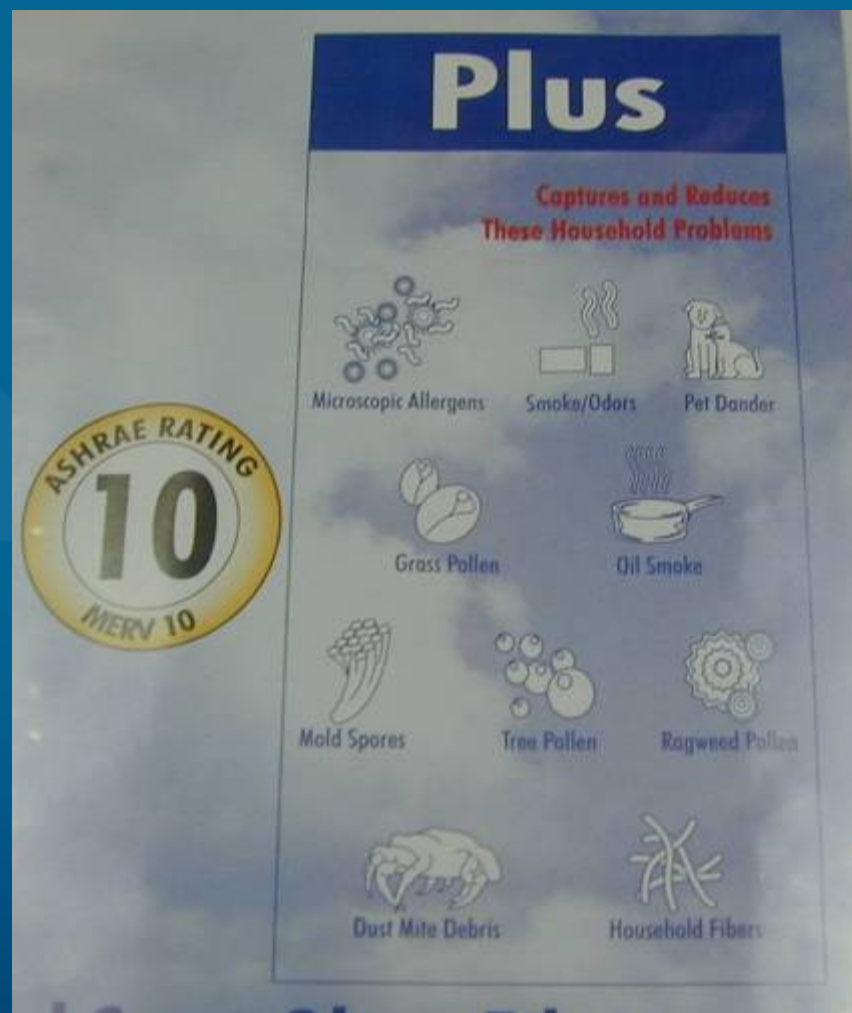


Standard

Captures and Reduces These Household Problems

ASHRAE RATING 8 MERV 8

- Ragweed Pollen
- Mold Spores
- Dust Mite Debris
- Pet Dander



Plus

Captures and Reduces These Household Problems

ASHRAE RATING 10 MERV 10

- Microscopic Allergens
- Smoke/Odors
- Pet Dander
- Grass Pollen
- Oil Smoke
- Mold Spores
- Tree Pollen
- Ragweed Pollen
- Dust Mite Debris
- Household Fibers



MERV Ratings

| MERV | PARTICLE SIZE (μm) | TYPICAL CONTROLLED CONTAMINANT |
|---------|---------------------------------|--|
| 1 – 4 | >10.0 | Pollen, sanding dust, textile and carpet fibers |
| 5 – 8 | 3.0 – 10.0 | Mold, spores, hair spray, cement dust |
| 9 – 12 | 1.0 – 3.0 | Legionella, lead dust, welding fumes |
| 13 – 16 | 0.3 – 1.0 | Bacteria, most tobacco smoke, insecticide dust, copier toner |
| 17 - 20 | ≤ 0.3 | Virus, combustion particles, radon progeny |



Why Contaminant Free



- Tobacco smoke #1 health concern: cancer, 2nd handsmoke -- SIDs, respiratory infection, cardio vascular & fire...
- VOCs cause eye, nose, throat irritation
- Low VOC paint, flooring available
- Can't ventilate smoke



Contaminant Free



- Low VOC paints
- Smooth cleanable flooring
- Green Label carpet



Contaminant Free



- Sealed combustion forced hot air and water heater
- Limits potential carbon monoxide problems





The Financial Burden

NON Smoking Room

| | |
|---------------------|---------|
| Labor ~ 12hrs*35/hr | = \$420 |
| Paint ~ 3 Gallons | =\$60 |
| Ceiling Paint~2 Gln | =\$40 |
| Carpet Shampoo | =\$50 |

Smoking Room

| | |
|----------------------|---------|
| Labor ~ 24hrs*35/hr | = \$840 |
| Paint ~ 3 Gallons | =\$60 |
| Ceiling Paint ~2 Gln | =\$40 |
| Carpet Shampoo | =\$50 |
| Primer | =\$100 |
| Replace Rug Burns | =\$600 |

Total = \$570 VS. = *\$1,070 – **\$1,690

*Depending on Carpet Condition.

**Additional costs could be added for cabinets/countertops.

Smoke Free: Myths & Reality

1. I will lose money
 - No, you will save money (reduced cleaning, unit turnover, fire damage).
2. I will alienate tenants
 - Ask tenants. Surveys show 45%-75% want smoke free.
3. It is not legal
 - HUD has no policy that prohibits public housing authorities or section 8 landlords from banning smoking in individual residential units.



Outline

- Key health issues
 - Cancer & 2ND hand smoking
 - Asthma/breathing issues
 - Allergic reactions/irritations etc
- Green is good.....BUT doesn't always = same health outcomes
- Key construction practices matter, make good choices
- It Pays to be Healthy





Unhealthy Housing is NOT Affordable

