Green Buildings: Without Ventilation, They’re Just Moldy!

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RenewAire’s “Green” Factory

Douglas Steege
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Window

“Eye-to-the-wind” Norse
Window – Then and Now

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House in plastic bag – House accumulates pollutants including water vapor
The Moisture Balance in Homes Has Changed
# Typical 1970 Home

<table>
<thead>
<tr>
<th>Water In</th>
<th>Gallons/Day</th>
<th>Water Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Respiration</td>
<td>1 to 1.5</td>
<td>– Winter situation</td>
</tr>
<tr>
<td>– Cooking</td>
<td>0.5</td>
<td>– Average one air change per hour</td>
</tr>
<tr>
<td>– Shower/bathing</td>
<td>0.5</td>
<td>– 30% indoor RH</td>
</tr>
<tr>
<td>– Basement or crawlspace</td>
<td>1 to 2</td>
<td>Infiltration/Exfiltration will carry away approx.</td>
</tr>
<tr>
<td>– Stored moisture</td>
<td>-1 to 1</td>
<td>10 gallons/day</td>
</tr>
<tr>
<td>– Other (pets, plants cloths drying)</td>
<td>0 to ?</td>
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</tr>
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Total = 3 - 4.5 gallons or more
## Typical Home Today

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**Water Out**

- Winter situation
- Average 1/4 air change per hour
- 30% indoor RH

Infiltration/Exfiltration will carry away approx. 2 gallons/day.
Typical Home Today

Like throwing 2-3 milk bottles of water on your walls – every day
Mold is a Green Disaster
Mold is a Health Risk
No Question
Mold is Also a Property Risk
Mold is a Property Risk

- Clean up
- Repair - replacement – disposal
- Lost property value
- Lost sale
- In extreme cases tear-down
100 CFM will remove 3 to 5 gallons/day
What is Ventilation?

“Providing for acceptable indoor air quality (IAQ) through the simultaneous exhaust of stale air and supply of fresh outdoor air.”

In with the good!
Out with the bad!
Why Ventilate?

- Athletic equipment
- Cleaning supplies
- Mold
- Bathroom exhaust
- Smoke
- Pet odors
- Diapers
- Window condensation
- Radon
- Dust Mites
Attributes of Good Ventilation

- Ample air flow
- Automatic control
- Quiet operation
- Pressure balanced
- Energy efficient
Appropriate Ventilation

- Intermittent source control
  - Bathroom
  - Kitchen
  - Exercise room
  - Hobby room

- Continuous source control
  - Building materials
  - Cleaning and laundry chemicals
  - General humidity control
  - People activities
  - Radon
What About **Natural** Ventilation?

- Operable windows
- Passive vents
- “Designed leakiness”
- Fresh Air Intakes
- Automated Vents
Why “Natural” Ventilation Cannot Be Counted On
Natural Ventilation Can’t Be Counted On

- Variable air flow rate
- You don’t know where the air is distributed
- The air may be carrying pollutants with it
- This can be a path for noise
- Home security may be compromised
Keep Your Eye on Ventilation

Without it you may have a green liability. With it you have a green opportunity!

Thank you!

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