

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

Douglas Steege
RenewAire Energy Recovery Ventilation
www.renewaire.com

RenewAire's "Green" Factory



Silver



Douglas Steege
RenewAire LLC



Window

“Eye-to-the-wind” Norse

Window – Then and Now



Douglas Steege
RenewAire LLC



Home Construction Today



Douglas Steege
RenewAire LLC



The Moisture Balance in Homes Has Changed

Douglas Steege
RenewAire LLC



Typical 1970 Home

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

Typical Home Today

<u>Water In</u>	<u>Gallons/Day</u>
– Respiration	1 to 1.5
– Cooking	0.5
– Shower/bathing	0.5
– Basement or crawlspace	1 to 2
– Stored moisture	-1 to 1
– Other (pets, plants cloths drying)	0 to ?

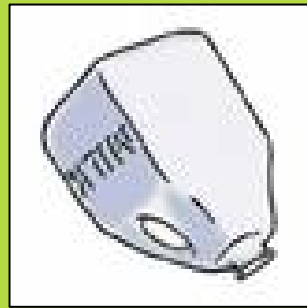
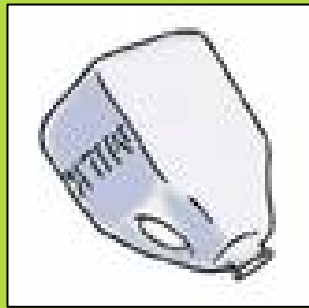
Total = 3 - 4.5 gallons or more

<u>Water Out</u>
– Winter situation
– Average 1/4 air change per hour
– 30% indoor RH
Infiltration/Exfiltration will carry away approx.

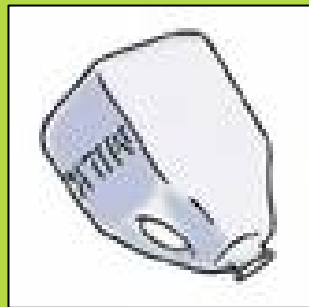
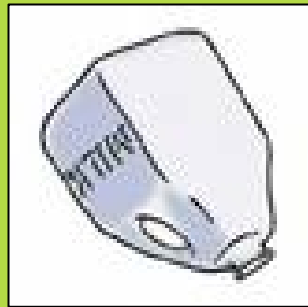
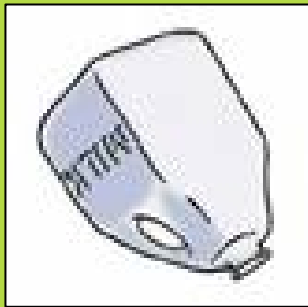
2 gallons/day

Typical Home Today

Like throwing 2-3 milk bottles of water on your walls – every day



Mold is a Green Disaster



Douglas Steege
RenewAire LLC



Mold is a Health Risk

No Question

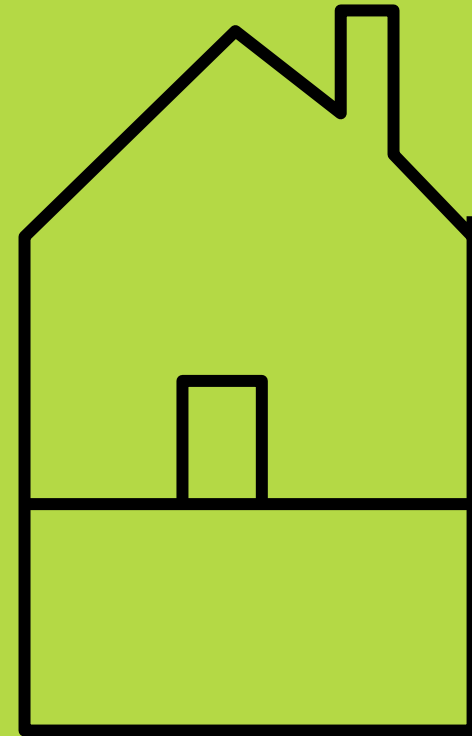
Mold is Also a Property Risk

Mold is a Property Risk

- Clean up
- Repair - replacement – disposal
- Lost property value
- Lost sale
- In extreme cases tear-down

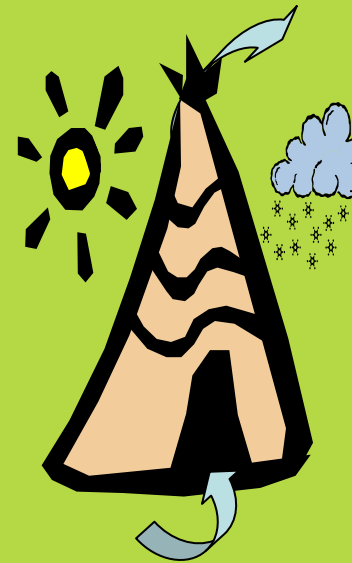
Ventilation Removes Water

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.”



Out with
the bad!

In with
the good!

Why Ventilate?



Athletic equipment



Bathroom exhaust

Cleaning supplies

Mold

Diapers



Pet odors



Window condensation

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!