BUILDING A FRAMEWORK FOR HEALTHY HOUSING

Sorting Out the Indoor Air Quality (IAQ) Standards

Agenda

- Overview of IAQ Standards
- Highlights of ASHRAE Standard 62.2
- Questions for Panelists:
  - Paul Francisco, U.I. Urbana Champaign
  - Joseph Lstiburek, PhD, Building Science Corp.
  - Max Sherman, PhD, Lawrence Berkeley Lab.
- Your Questions

Overview of IAQ Standards

- Laws & Building Codes:
  - Material & equipment regulation
  - Building codes
- The only professional IAQ standard is ASHRAE Standard 62.2
- Voluntary Program Standards:
  - Dedicated IAQ programs
  - Green Building programs

Least flexible
Fewest issues

Most flexible
Most issues

Laws & Building Codes

- Force of law – but only as good as enFORCEment
- Lags science – spawned by Litigation & Legislation
- IAQ issues covered by regulation?
  - Headline issues (“killers” like lead, asbestos, CO - to a limited extent)
- IAQ issues not covered by regulation?
  - Almost everything else
  - Especially complex issues

Voluntary Program Standards

- Voluntary – depend on sales & education
- Often ahead of science, but sometimes wrong
- IAQ issues covered by voluntary programs?
  - Anything that appears to impact IAQ
- IAQ issues not addressed well:
  - Anything that doesn't sell (i.e., hard stuff)

Voluntary Program Standards

- Dedicated IAQ programs:
  - ALA Health House (Consumer Education)
  - EPA Indoor Air Plus (Home label)
- Green Building programs:
  - LEED Homes
  - NAHB National Green Building Standard
  - Local programs

ASHRAE Standard 62.2 Highlights

"Ventilation and Acceptable Indoor Air Quality"

ASHRAE Standard 62.2 – Is This It?

TABLE 4.1a (I-P)

Ventilation Air Requirements, cfm

Floor Area (ft2)	Bedrooms 0-1	2-3	4-5	6-7	>7
<1500	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6001-7500	90	105	120	135	150
>7500	105	120	135	150	165

ASHRAE Standard 62.2 Highlights

Table 4.1a =

4. Whole-Building Ventilation

4.1 Qfan = 0.01 cfm/sf + 7.5 cfm (Nbr+1)

Exceptions: a) zones 3B/C, b) no A/C in 1/2, or c) conditioned <876 hrs/yr. & *if window operation is permissible*

4.1.1 +7.5 cfm/person in higher occupancy

4.1.2 Licensed Design Professional

4.1.3 Infiltration Credit (existing bldgs)

4.2 No real restrictions on system type

4.3 Override control required (On/Off)

4.4 Itermittent operations (increase rates req'd)

4.5 System limits in severe climates (7.5 cfm/sq)

ASHRAE Standard 62.2 (cont'd)

5. Local Exhaust

5.2 Rates required for Intermittent ops:

- Kitchens: 100 cfm
- Bathrooms: 50 cfm

5.3 Rates required for Continuous ops:

- Kitchens: 5 ach (of kitchen volume)
- Bathrooms: 20 cfm

ASHRAE Standard 62.2 (cont'd)

6. Other Requirements

6.1	No Transfer Air (only OA counts)
6.2	Labeling & operating instructions
6.3	Dryers vented outside
6.4	Adequate Combustion & Ventilation air, AND 2 largest exhaust fans ≤ 15cfm/100sf total
6.5	Garages sealed and ducts tight (≤ 6% fan)
6.6	Ventilation openings ≥ 4% floor area
6.7	Filters ≥ MERV 6 (systems w/ ≥ 10ft ducting)
6.8	Air Inlets ≥ 10 ft contaminant sources

ASHRAE Standard 62.2 (cont'd)

7. Air-Moving Equipment

7.1 HVI Standards & Manuf. requirements

7.2 Sound Ratings:

- Continuous: 1 Sone max
- Intermittent: 3 Sone max (except >400 cfm fans)

7.3 Airflow Tested OR Ducting Sized per Table 7.1 @ 0.25"

7.4 Multi-Branch Exhaust Ducting:

Back-draft dampers or continuous fan

Let the Debate Begin …

Questions for Panelists

1. **How well do laws & building codes address IAQ?**

What's missing?

Questions for Panelists

2. How well does ASHRAE Standard 62.2 address IAQ?

What's missing?

Questions for Panelists

3. How well do voluntary programs address IAQ?

What's missing?

Questions for Panelists

4. “Regulate, Litigate, or Participate?”

What aspects of IAQ should be controlled by code enforcement, the courts, or the markets?

Questions for Panelists

5. “Too much”, “Just right”, or “Not enough”?

What is the right ventilation rate for IAQ?

Questions for Panelists

6. What changes do you expect for ASHRAE Standard 62.2?

Questions for Panelists

7. How should ventilation be addressed for existing homes?

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Your Questions