

# Controlling Sources of Indoor Air Pollutants

The People in the Building: Health, Well-Being, and  
Indoor Environmental Quality.  
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# Outline

- IAQ
- Energy Conservation and Indoor Air Quality
- Source Control
- Green Guides by FTC

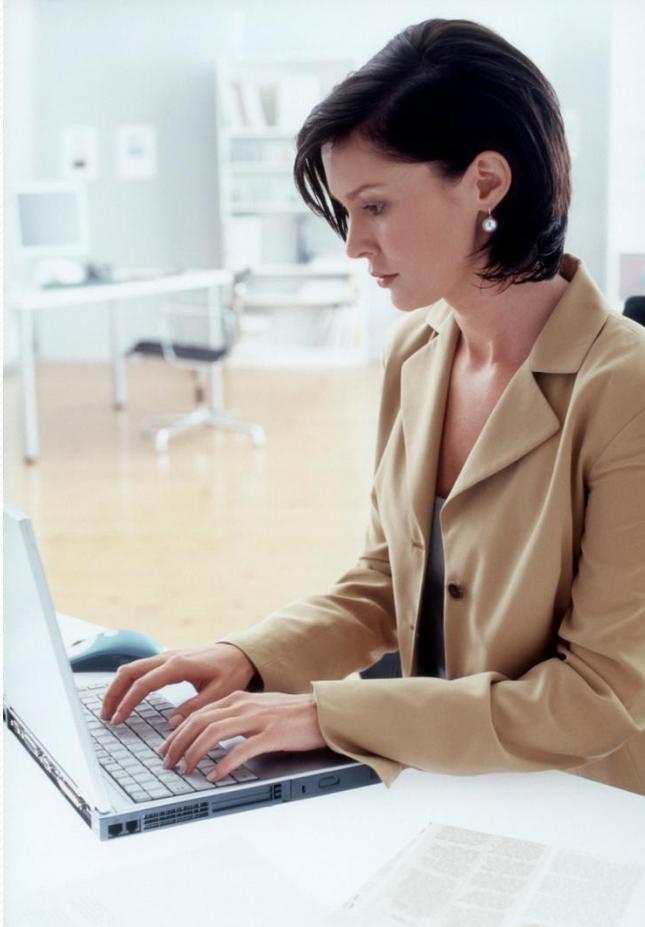


# Why is Indoor Air Quality Important?

- We spend about 90% of our time indoors
- Air Pollutants 2-5x higher inside than out
- There are thousands of chemical and biological pollutants in air
- More are discovered as building materials evolve



# What can we find in the air we breathe?



- Volatile Organic Compounds (VOCs)
- Inorganic and organic particulates, allergens
- Formaldehydes/Aldehydes
- Carcinogens & Reproductive toxins
- Inorganic & combustion gases
- Mold & mildew

# VOCs Sources Are Numerous...



- Wallcovering, floor covering
- Paints, adhesives, sealants, cleaners
- Cabinetry, furniture
- Computers, printers
- Hobby/repair supplies
- Bedding

# Building Evolution & the Impact on Indoor Air Quality



- Shift from natural to mostly synthetic materials
- Compacted work spaces
- Decreased ventilation
- Buildings don't breathe
- Designs can lack necessary contextual response

# Energy Conservation and Indoor Air Quality

- Two objectives of sustainable design are to optimize energy use and enhance indoor air quality, however.....
- IAQ and Energy Conservation can be a trade off:
  - Energy savings means a tighter building envelop
  - Lower Air Exchange Rate between indoor and cleaner outdoor air
- This can concentrate particles, gases and other chemicals and increase exposure
- Bottom line - What ends up in the space..... Stays in the space!!!
- Selection furnishings/finishes/materials becomes important in minimizing pollution sources



# Know Sources of Indoor Air Pollutants



Toluene



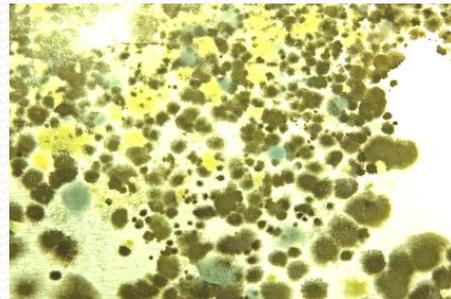
Formaldehyde



Acetone



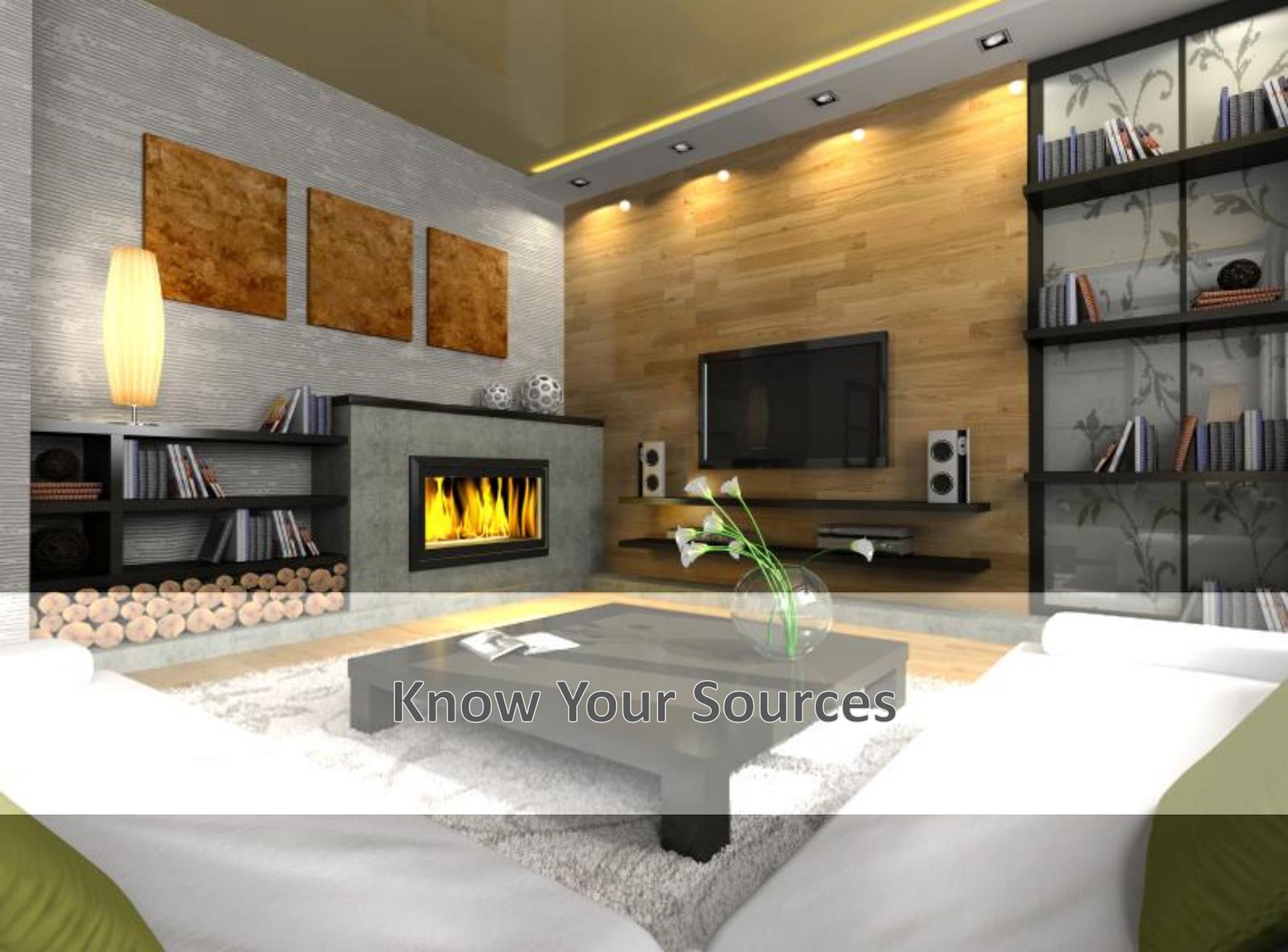
Acetaldehyde



Mold & Mold  
spores



Allergens &  
Pollen



Know Your Sources

Paint

Wall Construction

Casework

Equipment

Furniture

Textiles

Flooring



A young woman with her hair pulled back is shown from the chest up, meditating in a yoga pose. Her eyes are closed, and her hands are pressed together in a prayer position (Anjali Mudra) at her chest level. She is wearing a light-colored, possibly white or light grey, tank top. The background is a bright, out-of-focus indoor space, likely a yoga studio or a room with large windows. The overall tone is calm and serene.

**How Can We Enhance the Quality of  
Air We Breathe?**

# The IAQ Management Plan

- Design
- Construction
- Operations & Maintenance



# Design



- Respond to site context – climate, temp, wind & weather
- Effective programmatic layout – who and how is the space used
- Proper ventilation design and zoning
- Know the function and capacity of each space
- Specify Low emitting materials and products

# Guidelines For Construction/Renovation



- **Select low emitting products / materials**
- **Temporary ventilation, good house keeping**
- **Select mold resistant products**
- **Scheduling: allow wet materials to dry / cure before installing porous materials and before re-occupancy**
- **Pre-occupancy Clearance Testing**
- **Flush out if necessary**

# Operations & Maintenance



- Green procurement guidelines
- Establish a high performance cleaning program – use low-emitting chemicals and cleaners
- Educate staff on green housekeeping procedures
- Establish regular HVAC and moisture management plans
- Perform regular IAQ testing

# When should these techniques be employed?



Yesterday, Today, and Tomorrow.

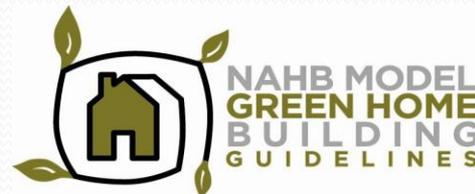
- Schematic Design and Design Development
- Construction/Renovation
- Operations and Maintenance

The U.S. Environmental Protection Agency and the American Lung Association agree that *source control is the most effective way to control indoor air pollutants.*



# Green Building Certification

- An important step in achieving a high performance sustainable Building
- But it should provide a healthy environment instilling a sense of well being
- Concern about IAQ + fact that products are the primary source = Demand for low emitting products & mitigative design/ construction practices



# Some Green Building Rating Systems and Green Codes Provide Credits for Low-Emitting Products

- Flooring
- Adhesives/ Sealants
- Paints/ Coatings
- Composite Wood
- Furniture
- Ceiling/ Wall Systems

# Overview – Programs, Labels and Certifications

- GREENGUARD, International
- AgBB – Germany
- Nature Plus - Germany
- GuT, Europe
- CertiPUR, Europe
- CertiPUR, US
- Indoor Advantage, USA
- CRI, USA
- Green Label, Hong Kong
- Californian Section 01350/LEED
- FloorScore, USA
- BIFMA, USA
- EMICODE, Europe
- DIBt, Germany
- Eco LOGO, Canada
- Ecomark, Japan
- EU Flower, EU
- Environmental Choice, Australia & New Zealand
- Breeam, UK
- Eurofins
- M1, Finland
- Blue Angel, Germany
- Umweltzeichen, Austria
- Indoor Air Comfort, Europe
- Danish Indoor Climate Label
- Nordic Ecolabel (“Swan”)
- VOC regulations and AFSSET, France

\*Not Exhaustive





# Green Guides – What are they?

- Green Guides are administrative interpretations of the laws administered by the Federal Trade Commission as they relate to environmental advertising and marketing practices.
- FTC laws in conjunction with the Green Guides protect consumers from unfair or deceptive environmental advertising and marketing claims practices.
- You can find current green guides at 16 cfr, part 260.



# Green Guides – Information and General Principles

- Guides were issued in 1992, updated in 1996 and 1998 with another updated scheduled in 2010.
- Green Guide can be found at <http://www.ftc.gov/>
- Any party making a claim must have reasonable basis for that claim, “competent and reliable scientific evidence, defined as tests, analyses, research, studies or other evidence based on the expertise of professionals in the relevant area, conducted and evaluated in an objective manner by persons qualified to do so, using procedures generally accepted in the profession to yield accurate and reliable results.”

# Green Guides – General Principles

- Disclosures should be sufficiently clear, prominent and understandable.
- It must be clear whether the claim refers to the product, the products packaging, a service or portion of the product.
- Claims must not overstate environmental attributes.
- Comparative statements should be clear and able to be substantiated.
- Must qualify claims related to general environmental benefits; biodegradable, photodegradable, compostable, recyclable products; recycled content; source reduction; refillable containers; and ozone safe products as appropriate.



# Green Guide Examples.

## 16 CFR, Part 260.



# Overstatement of environmental attribute:

- Example 1: A package is labeled, "**50% more recycled content than before.**" The manufacturer increased the recycled content of its package from **2 percent** recycled material to **3 percent** recycled material.
- **Deceptive** as it is likely to convey the false impression that the advertiser has increased significantly the use of recycled material.
- Example 2: A package of paper coffee filters is labeled "**These filters were made with a chlorine-free bleaching process.**" The filters are bleached with a process that releases into the environment a reduced, but still significant, amount of the same harmful byproducts associated with chlorine bleaching.
- **Deceptive** because the claim overstates the product's benefit & can be interpreted to mean that the product's manufacture does not cause any of the environmental risks posed by chlorine bleaching. A claim, however, that the filters were "bleached with a process that substantially reduces, but does not eliminate, harmful substances associated with chlorine bleaching" would not, if substantiated, overstate the product's benefits and is unlikely to be deceptive.

# Comparative claims:

- Example 1: An advertiser notes that its shampoo bottle contains "**20% more recycled content.**"
- **Deceptive:** The claim in its context is **ambiguous**. Depending on contextual factors, it could be a comparison either to the advertiser's immediately **preceding** product or to a **competitor's** product. The advertiser should clarify the claim to make the basis for comparison clear, for example, by saying "20% more recycled content than our previous package." Otherwise, the advertiser should be prepared to substantiate whatever comparison is conveyed to reasonable consumers.
- Example 2: An advertiser claims that "**our plastic diaper liner has the most recycled content.**" The advertised diaper does have more recycled content, calculated as a percentage of weight, than any other on the market, although it is still well under 100% recycled.
- **Not Deceptive:** Provided the recycled content and the comparative difference between the product and those of competitors are **significant** and provided the specific comparison can be **substantiated**, the claim is not deceptive.

# Key Principles!!

- There must be **substantiation** for claims, that is a reasonable basis. This requires competent and reliable scientific evidence defined as tests, analyses, research, studies conducted by qualified professionals.
- **Specificity**..... Claims should specify whether they refer to the product, packaging and must be clear, prominent and understandable.
- **General claims should be avoided**. Specific claims are much less likely to be deceptive because they are easier to substantiate.



# Multiple Green Labels, which ones have meaning?



# Beware of Greenwashing

## Empty Phrases:

- “VOC Free,”
- Natural, Alternative, Organic
- Blanket claims like “Eco-Friendly” or “Earth Friendly”
- No CFC’s, when other ozone depleting substances are present

## Emissions vs Content

- It’s not how much a product has but how it emits



# So What are the Impacts of Greenwashing?

Misleading Claims

Low Performing Products

IAQ Issues –Occupant Health & Well-being

Avoidance of sustainable products and processes

# FTC Environmental Marketing Guides

## **FTC Announces Actions Against Kmart, Tender and Dyna-E Alleging Deceptive 'Biodegradable' Claims**

The FTC has charged Kmart Corp., Tender Corp., and Dyna-E International with making false and unsubstantiated claims that their paper products were “biodegradable.”

## **Bamboo-based Textiles, Actually Made of Rayon, Are Not Antimicrobial, Made in an Environmentally Friendly Manner, or Biodegradable**

The Federal Trade Commission has charged four sellers of clothing and other textile products with deceptively labeling and advertising these items as made of bamboo fiber, when they are made of rayon. The complaints also charge the companies with making false and unsubstantiated “green” claims that their clothing and textile products are manufactured using an environmentally friendly process, that they retain the natural antimicrobial properties of the bamboo plant, and that they are biodegradable.

Source: [www.ftc.gov](http://www.ftc.gov)



# What to Look For in Certified Products

- Are claims specific?
- Look for VOC emissions vs. VOC content
- Has product been tested using reproducible, scientific methods within the past 12 months?
- Has the product received independent, third-party certification?



# Understanding the three types of Certifications:

First  
Party



Example: Generally claims made by the manufacturer

Second  
Party



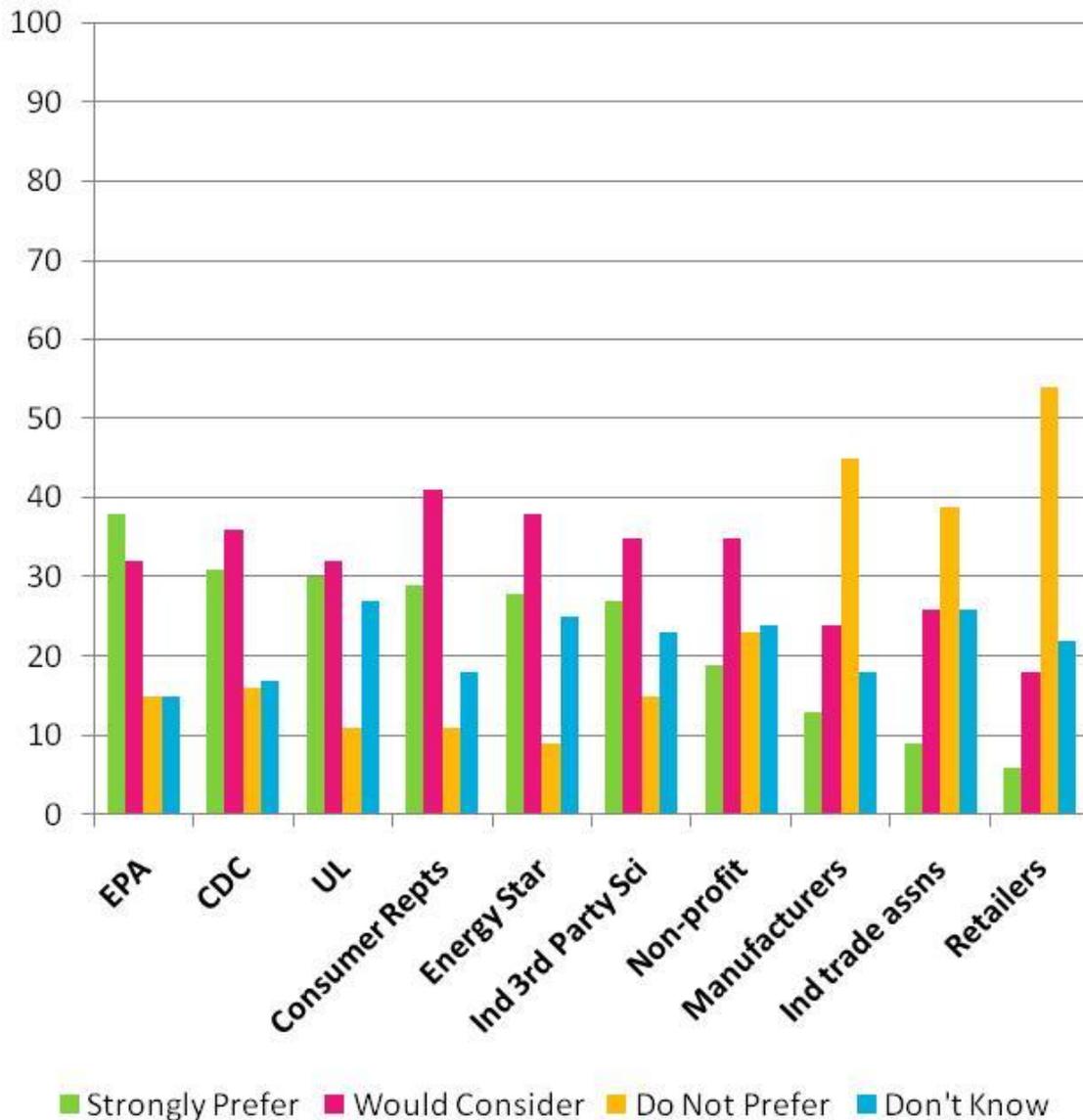
Example: Generally an industry based certification and criteria

Third  
Party



Example: Most reliable, backed by consensus based standards, independent certifying body, and transparent process open to review

# Preference for 3<sup>rd</sup> Party Certification



Consumers do not prefer manufacturers, industry trade associations and retailers handling IAQ certification

A woman with short brown hair, wearing a light green sleeveless top and blue jeans, is sitting on a light-colored wooden floor. She is smiling and looking at a baby she is holding in her arms. The baby is wearing a white long-sleeved shirt with a blue and yellow pattern. In the background, there is a white crib with a white sheet and a teddy bear. The scene is brightly lit, suggesting a sunny day.

**Healthy Indoor Air  
by Design**

A woman with short brown hair, wearing a light green sleeveless top and blue jeans, is sitting on a light-colored wooden floor. She is smiling and looking at a baby she is holding in her arms. The baby is wearing a white long-sleeved shirt with a blue and yellow pattern. In the background, there is a white crib with a white sheet and a teddy bear on a shelf. The scene is brightly lit, suggesting a sunny day.

**Design should include low emitting products.**

## Look for:

- Low Emitting Products
- Content vs. Emissions
- Specific Phrases & Claims
- Details Backing Up Those Claims
- Recognizable marks
- Third Party Certification
- Use of Established Test Methods and Standards



# Thank You!

