

Twenty Questions About Mold

**Connecticut Association
of Housing Code
Enforcement Officials**

December 14, 2018



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Introduction to Speaker

Bob Brown

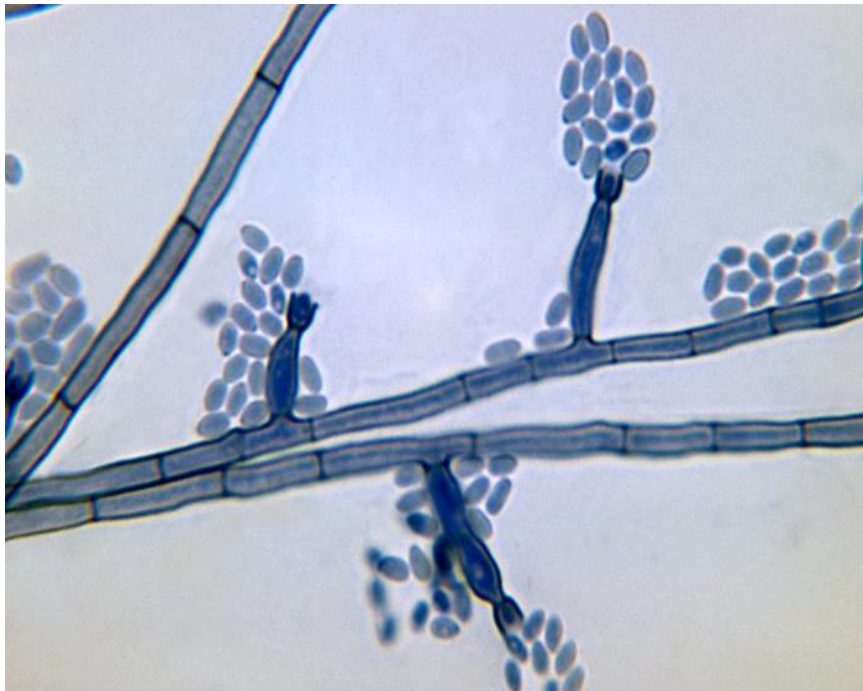
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What is Mold?

- Kingdom Fungi
- Single / Multi Cell
- No Chlorophyll
- Saprophytic
- Spore Producing
- Rapid Growing



Why is Mold a Concern in Buildings?



- **Health**

- Allergenic agent
- Other health effects

- **Cost**

- Tenant complaints
- Lawsuits
- Reduced property value
- High remediation costs



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Is Mold in Buildings a New Problem?

Leviticus, Chapter 14: 39–47

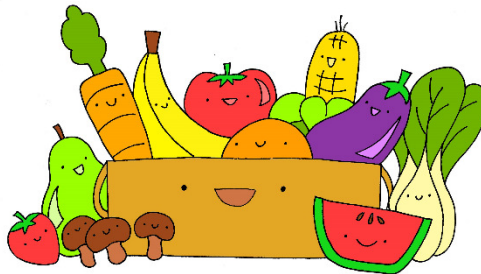
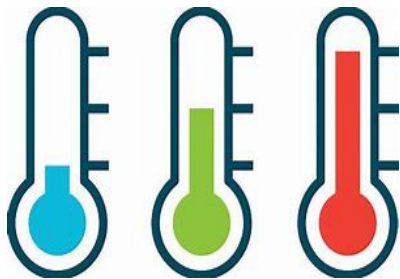
On the seventh day the priest shall return to inspect the house. If the mildew has spread on the walls, he is to order that the contaminated stones be torn out and thrown into an unclean place outside the town. If the mildew reappears in the house after the stones have been torn out and the house is scraped and plastered, it is a destructive mildew and the house is unclean. It must be torn down – its stones, timbers and all the plaster – and taken out of town.



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What Does Mold Need to Grow?

- **Nutrient Source** (Any porous organic material)
- **Suitable Temperature** (Optimum range 40-100°F)
- **Water/Moisture** (Relative humidity > 50%)



How Quickly Can Mold Grow?

- **FAST!**
 - Exponential growth
 - More moisture = faster growth
 - Some species grow faster
 - Under ideal conditions, visible growth in a few days to a week



How Does Mold Proliferate?

- **SPORE PRODUCTION**

- Produced in huge numbers
- Travels on air currents
- Cold/heat resistant
- Environmentally durable
- Long term viability (*Aspergillus* half life = 90 days)
- Typical size 2-20 microns



Most Common Health Issues from Mold?

ALLERGIES

- One in five people
- Mild to debilitating
- More likely to develop after past exposure
- Can be affected by living or non-viable mold
- Can exacerbate (not cause) asthma



Source: Bart



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Other Serious Health Effects from Mold?

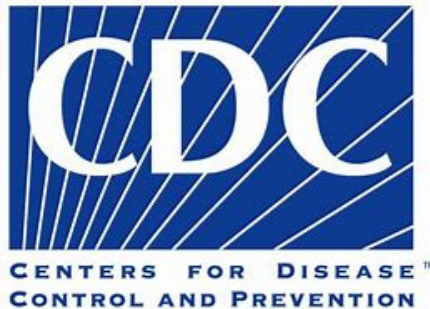
- **PNEUMONITIS**
 - Usually caused by massive long term occupational exposure - Farmer's Lung, etc.
- **FUNGAL INFECTIONS**
 - Usually affects susceptible and immune compromised individuals - Pulmonary Aspergillosis, etc.



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What about “Toxic” Mold?

The term “toxic mold” is not accurate. While certain molds are toxigenic, meaning they can produce toxins, the molds themselves are not toxic, or poisonous. Hazards presented by molds that may product mycotoxins should be considered the same as other common molds that grow in your hours.



Citation from CDC bulletin,
Facts about *Stachybotrys*
chartarum and Other Molds



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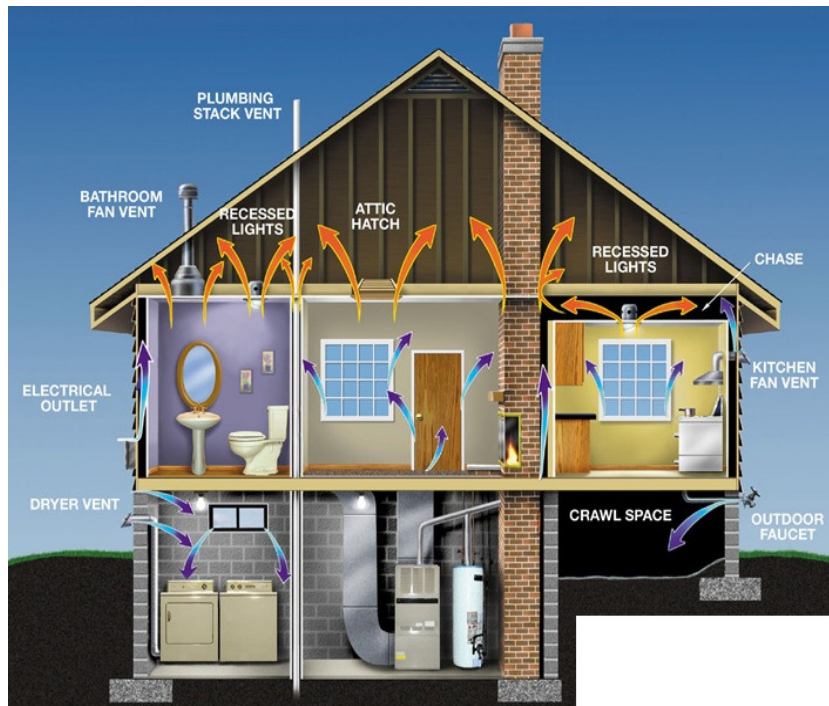
Where are Mold Problems Most Common?

- **BASEMENTS**

- Site Drainage
- Moisture Intrusion
- High Humidity
- Poor Ventilation
- Condensation
- Long Term Storage
- Carpeting / Sheet Rock



Other Rooms with Mold Problems?



1. Bath Rooms

- Plumbing, caulk/grout, ventilation

2. Kitchens

- Plumbing, dishwashers, refrigerators

3. Laundries

- Plumbing, ventilation

4. Attics

- Ventilation, A/C condensate, roof leaks

5. Mechanical Rooms

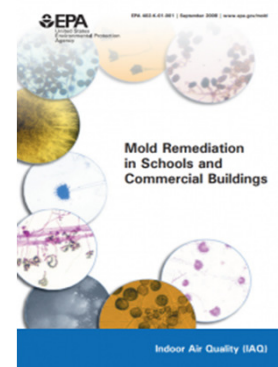
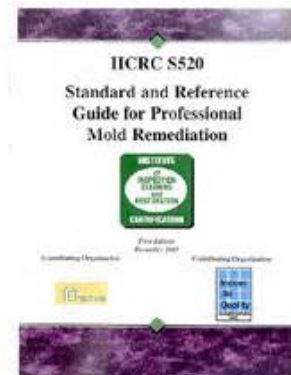
- Plumbing, leaks, condensate



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Mold Standards and Regulations?

- **No Federal Regulations (except OSHA)**
- **No Connecticut Regulations or Licensing**
- **Professional/Voluntary Standards**
 - IICRC S520 Standard and Reference Guide for Professional Mold Remediation
 - EPA Mold Remediation in Schools and Commercial Buildings



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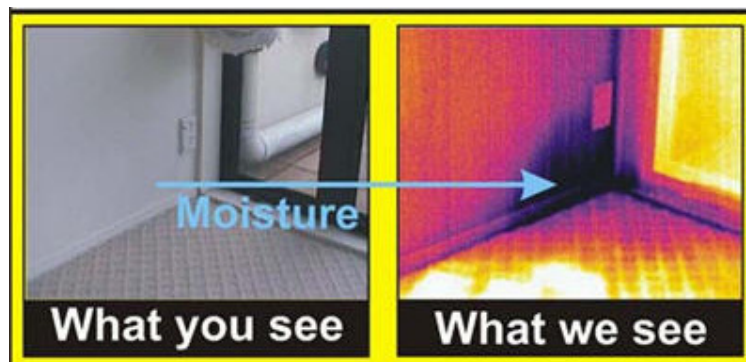
Mold Investigation Procedures?



- **Background Conditions**
- **Visual Inspection**
- **Moisture Testing**
- **Test Procedures**
 - Surface Sampling
 - Air Sampling

Moisture Measurement Tools?

- **Moisture Meters**
 - Pinless Moisture Meter
 - Pin-Type Moisture Meter
 - Calibrate to Material Tested
- **Infrared (FLIR) Photography**
 - Requires trained operator
 - Temperature sensitive



Viability vs Non-Viability Sampling?

- **Viability Sampling (Cultures)**

- Measures only living mold that grows on media
- Describes genus and species of mold

- **Non-Viability Sampling**

- Spore Counts, spore traps and tape lifts
 - Counts based on morphology
 - Fast and inexpensive
 - Widely used
- PCR Analysis
 - DNA-based identification
 - Expensive, less widely used

Significance of Outdoor Mold Counts?

- **Total spore counts, outdoor air**
 - 2,000 – 20,000 Cts/m³ (summer)
 - 0 - 2,000 Cts/m³ (winter)
- **Total spore counts, indoor air**
 - Total count and individual species counts are ordinarily lower indoors than outdoors
 - Consider other factors when interpreting spore counts (visual inspection, moisture survey, outdoor air intrusion, etc.)

How Are Mold Spore Counts Interpreted?

- No uniformly accepted method
- Method employed by Hygenix:
 - Indoor count > outdoor count
 - Aspergillus/Penicillium > 700 Spr/m³
 - “Normal Fungal Ecology”



Before Performing Mold Remediation?



- **Identify and Eliminate Moisture Sources**
 - Groundwater intrusion
 - Condensation
 - Building envelope leak
 - Roof leaks
 - Plumbing leaks

Mold Remediation Procedures?

- **Protect Non-Work Areas**
 - Dust control
 - Containment
 - HEPA ventilation
- **Remove and discard wet or moldy porous items**
 - Carpet
 - Drywall
 - Insulation
 - Ceiling tiles
- **Perform detail cleaning**
 - Mildewcides optional



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Are Mildewcides Effective?

- **Temporary relief**
 - Only helpful when used with effective long term moisture control



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Any Questions?



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