Indoor Environmental Quality and Mold

Carolinas Air Pollution Control Association

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Presentation Outline

- IEQ Parameters
- Occupant Complaints
- Basic IEQ Assessment
- Specific Assessments
- Mold
- Testing and results
- Recommendations
- Conclusions

Indoor Environmental Quality

Chemicals

Comfort Parameters

IEQ

Particulates

Microbials including Mold

Initiation

- Complaint
- Get specifics (symptoms, odors, confined to one area, every day, etc.)
- Do symptoms get better when away from the site?
- What has changed in the building (leaks, construction, HVAC, etc.)?

Initial investigation

- Building history
- Visual assessment
  - Building and envelope
  - Air handlers
- Temperature
- Relative humidity
- Carbon dioxide
- Carbon monoxide
- Moisture measurements

Concern?

Concern?

Concern?

Secondary investigation scope based upon preliminary findings

- VOCs/Chemicals
- Particulates
- Mold
  - Air
    - Compare results to outdoors
      - Total counts
      - Genera prevalence
  - Surface

Mold questions we will discuss

- What is mold?
- Why does mold grow indoors?
- Is indoor mold growth dangerous?
- How does mold affect my health?
- How do I clean up mold safely?

What is Mold?

- Type of microscopic fungi
- Hundreds of thousands of species
- Essential in the environment to decompose organic materials
- Reproduce using spores

What is Mold?

- Mold is ever present in our environment!
  - May be in the form of spores or mold growth
  - Outside "clean air"
  - Dirt and soil
  - Spores are a normal part of indoor dust, and can be found in carpet, fabrics, and any dusty surface
  - You are breathing spores RIGHT NOW!

What is Mold?

- Common types of mold include:
  - *Cladosporium*
  - *Basidiospores*
  - *Penicillium*
  - *Alternaria*
  - *Aspergillus*

What is Mold?

Mold can grow on many types of materials such as:

- Untreated wood products (plywood, dimensional lumber, OSB, etc.)
- Paper products – GWB and wall paper
- Materials made with organic fiber such as cotton fabrics and silk
- Organic materials found in dust – skin cells, animal dander, fibers, etc.

Why does mold grow indoors?

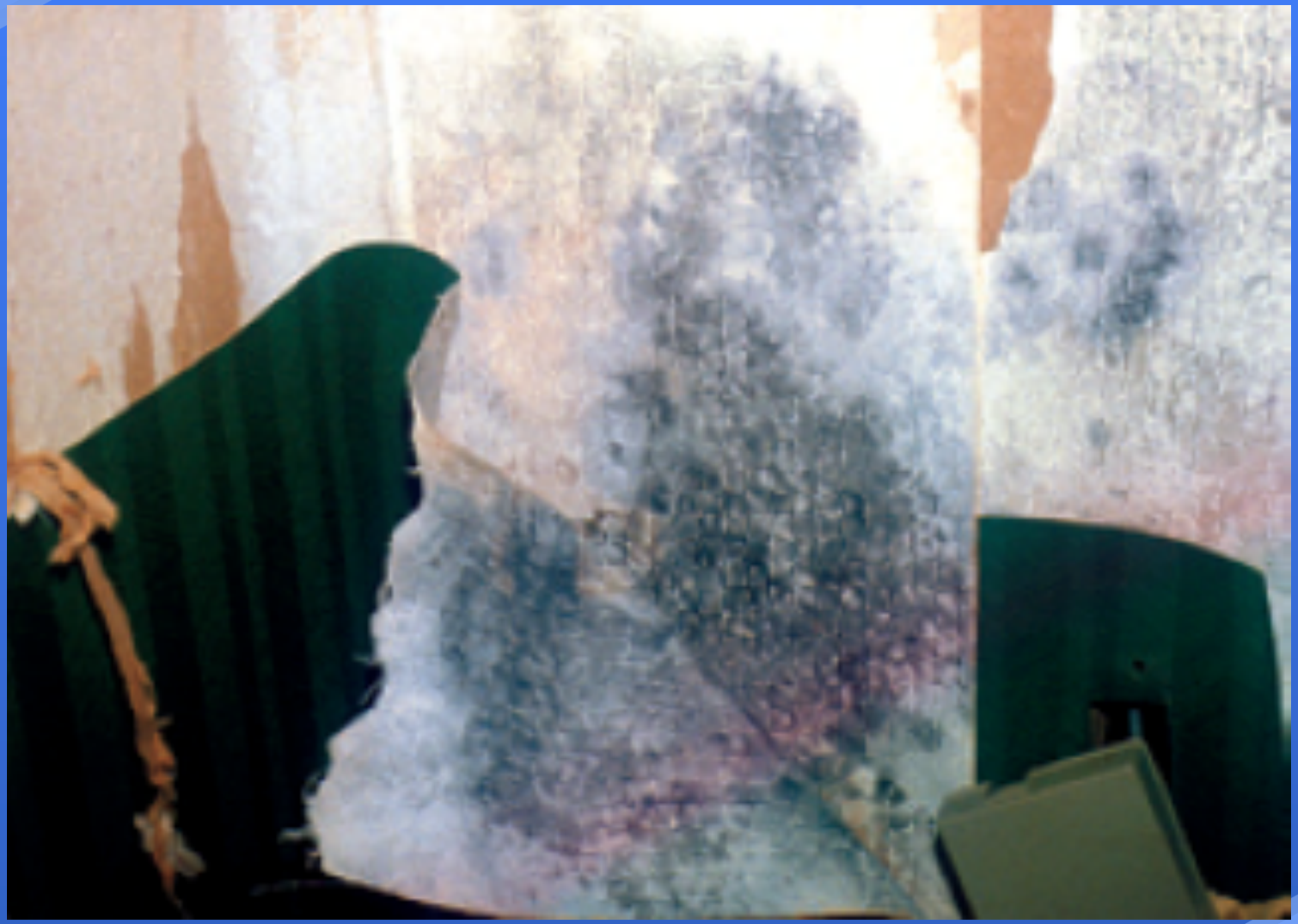
- Mold spores are everywhere, so why does mold only grow occasionally?

Mold requires:

- MOISTURE
- Nutrient source
- Appropriate temperature – typically the temperatures that we find comfortable

Why Does Mold grow Indoors?

- Mold growth will occur with enough moisture and a nutrient source
  - Plumbing leaks
  - Storm water incursions
  - Infiltration through sub-grade walls
  - Condensation
    - High humidity and cool surface temperatures = condensation
    - Poor ventilation can contribute
  - Inadequate drying after flooding



Why Does Mold grow Indoors?

- What is “enough moisture”?
- Can use a moisture meter to check
  - Wood products may grow mold if >17%
  - Wallboard - compare to readings of “known dry” material
  - If cloth is damp to the touch it is wet enough to grow mold
  - Any visible moisture is enough

Why Does Mold grow Indoors?

- Controlling the water source is the key to controlling mold growth
- Identify and correct the source of the moisture **before** cleaning!

Is Indoor Mold Growth Dangerous?

- Mold has been attributed to certain health problems
  - Mold spores can cause allergic reactions
  - Those with allergies, pre-existing health issues, or compromised immune systems may be more significantly affected
  - Other "things" can grow in moldy environments too, such as bacteria

How Does Mold Affect My Health?

- "TOXIC MOLD!" is not an accurate term
- The most common health complaints related to mold include:
  - Nasal stuffiness
  - Eye irritation
  - Wheezing
  - Skin irritation
- Individuals with allergies and those with chronic illness or compromised immune systems may be hypersensitive or susceptible to more serious illness

How Do I Clean Up Mold?

The following steps may be required for a large mold clean-up:

1. CONTROL THE WATER SOURCE!
2. Have an asbestos inspection
3. Set up containment as needed
4. Remove un-cleanable materials (when in doubt take it out)
5. Remove mold growth using detergent and water and dry immediately
6. Clean and dry any materials that will remain
7. NEVER mix bleach and ammonia

How Do I Clean Up Mold Growth?

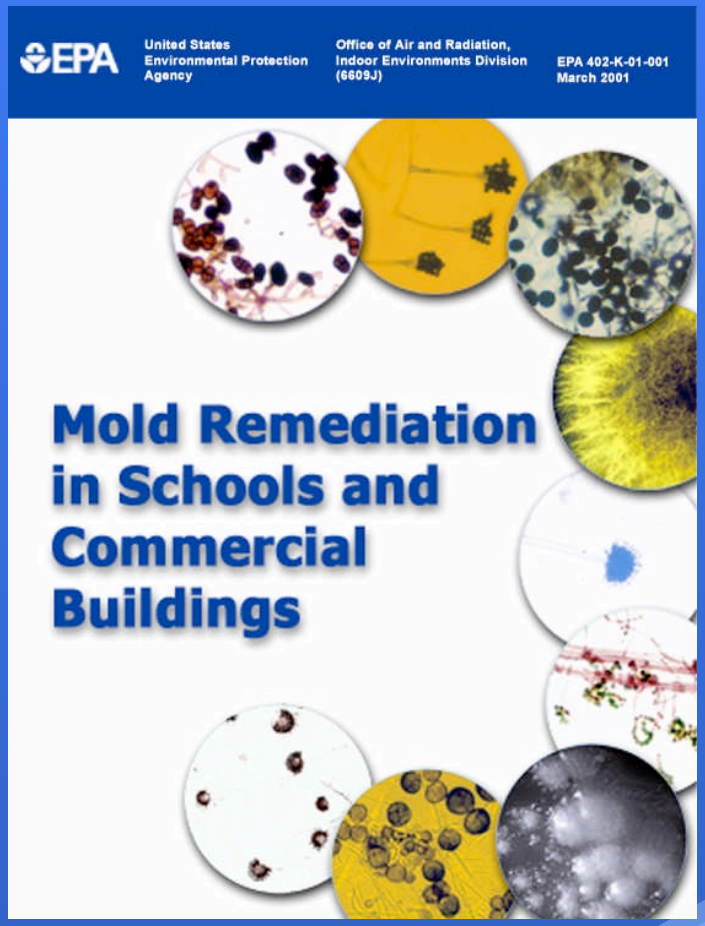
- If you will be disturbing materials with mold growth, or will be entering a severely affected area, you should use PPE

Conclusion and Summary

- IEQ involves a variety of parameters
- Mold is ever present and serves a valuable purpose in the outdoor environment
- Controlling moisture indoors will eliminate mold issues indoors
- Address water incursions immediately to prevent mold growth
- If mold growth occurs, locate and correct the moisture source and clean or remove affected materials

Resources

- Beware mainstream media and internet sources!
- Use the EPA and CDC websites for validated information
- AIHA Mold Resource Center also has useful information and resources



Questions?

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