


Slide 1

# Mold & Remediation Inside HVAC Systems



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## Disclaimer

This presentation is not intended to be a comprehensive program covering all aspects of this topic. All technicians are encouraged to read and follow all applicable standards, codes and regulations related to this topic.

- ✓ It is the responsibility of each individual contractor to follow local building codes and licensing requirements and to work safely in accordance with OSHA guidelines.
- ✓ It is the contractor's responsibility to take proper precautions on each project to prevent cross contamination. Always take the health and safety of the building occupants into consideration before you conduct any cleaning procedures.
- ✓ All of the following tips are only general tips. They do not cover every situation and it is your responsibility to adapt these tips to the individual system you are working on.
- ✓ The instructor is not responsible in any way for the work you perform after viewing this slide show. You are responsible for your own work.
- ✓ The views and opinions following are the instructors opinions and not necessarily the official position of the National Air Duct Cleaners Association.

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## What We'll Learn

- What is Mold & Why is it a Concern
- How Mold Forms inside HVAC
- Signs to Look for
- Cleaning & Remediation

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**Mold & Remediation Inside HVAC Systems**

### What is Mold?

- **Naturally Biological Growth**
  - Associated with decaying vegetation and "food"
  - Over 100,000 species
- **Growth Occurs**
  - Hyphae / Fruiting Bodies (Mycelial)
  - Spore Generation (Sporulation)

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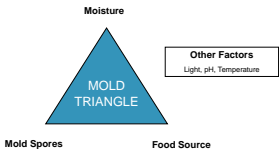
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**Mold & Remediation Inside HVAC Systems**

### Mold Growth



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**Mold & Remediation Inside HVAC Systems**

### Mold Growth & Moisture

- **Moisture Presence**
  - Generally, the controlling factor
  - Water Source / Intrusion
  - Elevated Relative Humidity (>60%)
  - Stagnant air can result in localized elevated relative humidity

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**Mold & Remediation Inside HVAC Systems**

### Why is Mold a Concern?

- Actual Exposures / Illnesses
- Perceived Contamination
- Public Relation Issues
- Legal Issues
- Perceived Health Hazards

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### Mold Spore Hazards

- Respiratory Irritation Symptoms
- Allergy-type Symptoms
- Asthma Conditions
- Respiratory Diseases
- Other

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**Mold & Remediation Inside HVAC Systems**

### Has anyone here ever experienced the following?

• Dry, itchy, irritated eyes	• Sinus congestion or headaches
• Sore, dry, irritated nose or throat	• Sneezing
• Persistent cough	• Asthma
• Stuffy or runny nose	• Nausea
• Allergy symptoms	• Cold-like or flu-like symptoms
• Unusual tiredness or fatigue	

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**Mold & Remediation Inside HVAC Systems**

### Perceived Health Hazards

- **Fear the Unknown** (mental stress)
- **Easy Target**
  - Anything and everything can or will be blamed on mold exposure
  - Any change in someone's health may be attributed to mold exposure
  - May not be remotely connected

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**Mold & Remediation Inside HVAC Systems**

### Mold inside HVAC Systems

- **Where?**
  - Any where when conditions are right?
- **Why?**
  - Water leak in the system
  - Water intrusion into the system
  - Carry-over off the A-coil in the system
  - Condensation in the system

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**Mold & Remediation Inside HVAC Systems**

### Water Leaks in the HVAC System

- **Overflowing Condensate Pan**  
Add Photo
- **Humidifier Leaks**  
Add Photo

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**Mold & Remediation Inside HVAC Systems**

### Water Intrusions into HVAC System

- Roof Leaks
- Roof-top Units (panels left off)
- Overhead Pipe Leak
- Flooding Events
- Subsurface Ducts

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**Mold & Remediation Inside HVAC Systems**

### Carry Over off the A-Coil

- Too High Fan Speed
- Clogged Sections of Coil
- Hydrophobic Conditions
  - Coils designed to be hydrophilic
  - Caused by surface contaminants (grease, oil, wax, polymers, etc.)

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**Mold & Remediation Inside HVAC Systems**

### Condensation inside HVAC System

- Cold Surfaces  
(A-Coil with condensate pan)
- Pressure or Air Speed Changes

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**Mold & Remediation Inside HVAC Systems**

**Remediation inside HVAC System**

- **Methods Vary**
  - Depending on Conditions inside & outside each HVAC system
- **Common Elements**
  - Contaminant removal
  - Use of engineering controls
  - Use of PPE
  - Proper training of personnel
  - Correct the cause of the moisture

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**Mold & Remediation Inside HVAC Systems**

**Biocides / Disinfectants**

- **Use only EPA-registered products**
- **Follow manufacture instructions**
- **Know dwell times**
- **Limited Use inside HVAC Systems**
  - Typically, only allowed for non-duct, hard surfaces (i.e. condensate pans, coils, other HVAC sys. components)
  - Why?

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**Mold & Remediation Inside HVAC Systems**

**Other Remediation Notes**

- **HVAC System Containment**
  - HVAC system under negative pressure with HEPA filtration system
- **Containment outside HVAC System**
  - Depends on the contaminant
  - Depends on the occupants
  - Depends on how with the affected materials are being removed (i.e., vacuum or bulk removal)

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**Mold & Remediation Inside HVAC Systems**

### Conclusions

- **Mold is a Concern**
  - Hazardous to occupants and workers
  - Increase risks (real or perceived)
- **Caused by Moisture**
- **Remediation Complexity**
  - Training, experience & knowledge
- **Must Correct the Moisture Issue**

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Title of Presentation



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**Title of Presentation**

### Presenter Contact Information

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Thank you  
for  
Participating!



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