

# MOISTURE DEFECTS

An Architect's Perspective

## How And Why Buildings Are Impacting Health



CHERYL CIECKO Architect | FALA, AIA, LEED AP

AVOIDINGMOLD.COM | CHERYL.CIECKO.COM



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### Objectives

1. **What** is building mold?
2. **Why** do buildings have mold?
3. **How** to find mold? Building Defects Examples
4. Resources / Learn more
5. Questions




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### INTRODUCTIONS

- Moisture problem in a building?
- Doctors/Health Practitioners?
- Building Industry?
- Scientists?
- Mold Inspectors/Remediators?





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### CHERYL CIECKO FALA, LEED AP

- Licensed Architect – 30+ years
  - B.S. Architecture
  - Master Architecture
- Senior Technical Director – 5 years
- Mom of 4
- Toxin Exposure - 18+ years ago
- Autoimmune Disease /Lyme
- Natural Products/Essential Oils
- **Thriving...finally!**








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### 2005

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The Art of Building Mold

Lessons - Toxins are Everywhere

**Food**  
**Water**  
EMFs  
Sugars  
Vaccines  
Artificial Light  
Chemicals  
Lyme  
Air Fresheners

Heavy Metals  
Parasites  
Antibiotics  
Medications  
Personal Products  
Cleaning Products  
Pesticides  
VOCs

**AIR WE BREATHE**

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Objectives

1. What is building mold?
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4. Resources / How to learn more? - Questions

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Building Mold

- Fungus / Mildew
- Neither plant nor animal
- Defined cell walls
- Lack Chlorophyll
- Reproduce by means of spores
- Feed on **dead organic matter**
  - nature's recycling
- **100,000+ species +**
- Accompanies **BACTERIA**
- Requires **WATER**

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Building Mold






**Mold and Bacteria can be**

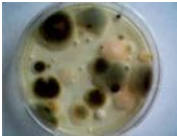
1. Completely concealed/hidden
2. Undetectable with the naked eye
3. Can have no noticeable smell
4. Smells can vary
5. Color and texture can vary
6. Can be missed by testing
7. Caused by moisture
8. Toxic dead or alive

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**Conditions for Mold Growth?**

1. Mold/Fungus Spores 
2. Oxygen 
3. Temperature of 30-130 F  
(most common 40-105 F) 
4. **Nutrient Source** 
5. **Moisture** 

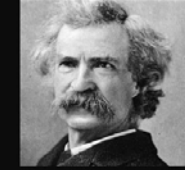


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**Stop Mold by Eliminating the Food Source?**

Mold Proof Materials / Mold Resistant Materials?



It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.  
- Mark Twain


**Read the fine print!**

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**Objectives**

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**Why? Buildings Get Wet**



**No structural material is immune to moisture damage.**

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**Why? No Material is Exempt From MOLD...**




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**Moisture + Dust/Dirt = Mold**



Condensation due to high humidity.



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**More Reasons Houses Have Mold**

1. Unintended consequences
2. All buildings are COMPLICATED
3. Designed, built by HUMANS
4. Qualified ARCHITECTS & other building professionals are often NOT involved in home building
5. Building Codes are overlooked

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**2.1 Unintended Consequences**

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**Groveport Family Settles Mold Death Suit Against Pittsburgh Hospital**

By THE ASSOCIATED PRESS/ABC - SEARCHING AGO

<http://radio.wosu.com/post/groveport-family-settles-mold-death-suit-against-pittsburgh-hospital/>

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**A seventh child who contracted a mold infection at Seattle Children's Hospital has died**

By Nicole Chavez and Rebekah Riess, CNN  
Updated 6:15 AM ET, Fri February 14, 2020

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**2.2 Buildings Are Complicated!**

Bones / Skeleton = Building Frame / Structure

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**Buildings Are Complicated!**

Lungs / Airway = HVAC – Heating, Ventilation, Air Conditioning

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**Buildings Are Complicated!**

Nerves / Kinesiology = Electrical System

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**Buildings Are Complicated!**

Digestive / Vascular System = Plumbing System

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**Air Movement Through the Skin**

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**Air Pressure Differentials are Complicated**

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**2.3 Buildings Are Designed & Built by HUMANS**

Doctors / People = Architects / Buildings

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**2.4 Architects**

**What do Architects do?**

**Commercial Buildings**

- Architects
- Engineers/ Others

**Residential Homes**


- Architects – rarely involved
- Engineers – rarely involved
- 'Designers'
- Builders
- Homeowners

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**cherul nickko** 2.4 Who Designs and Reviews Homes

- Architects are involved in 1%-2% of single family homes.
- "Residential Architects" account for 11-14% of all architecture firms.
- Architects usually involved in the 10% of homes over \$500k



<https://commonedge.org/architects-design-just-2-of-all-houses-why/> [www.avoidmold.com](http://www.avoidmold.com)

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**cherul nickko** 2.4 Humans Build Homes

**Contractor License Requirements Vary**

- Age
- Work Experience/Training
- Fees
- Testing



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**cherul nickko** **Complicated! – Consider Multiple Opinions**




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**cherul nickko** **Objectives**

1. What is building mold?
2. Why do buildings have mold?
3. How to find mold?
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**cherul nickko** **3. How to Find Mold**

- Apparent
- Concealed
- Design Defects
- Construction Defects
- Lack of Maintenance




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**cherul nickko** **Find Mold in Buildings**

- **Screening tests**
  - ERMI
  - Air Testing
  - EMMA



"A **screening test** (sometimes termed medical surveillance) is a medical test or procedure performed on members (subjects) of a defined asymptomatic population or population subgroup to assess the likelihood of their members having a particular disease."

With few exceptions, **screening tests do not diagnose the illness.**

Rather subjects who test positive typically require further evaluation with subsequent *diagnostic tests* or procedures."

**False Negatives are Common!**

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**cherul klicko** **Find Mold in Buildings**

- Screening tests
  - ERMI
  - Air Testing
  - EMMA
- Direct tests
  - Swab
  - Tape Lift
  - Bulk Samples
- **Visual reviews**
- **Moisture Mapping**

*False Negatives are reduced.*

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**cherul klicko** **Visible Mold**

What does mold look like?

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**cherul klicko** **What if there is no visible mold?**

1. Smells?
2. Known water damage?
3. Building defects?
4. Dust/dirt?
5. High humidity?
6. Health problems?

<http://www.epa.gov/mold/mold-testing-or-sampling>

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**cherul klicko** **My Ways to Find Mold**

**Visual Reviews**

- Building Clues – Visual Signs
  - Color changes
  - Texture changes
- Building Symptoms
- Building History

**Other Senses**

- Smell
- Symptoms – Eyes watering, Rashes, Nose Bleeds, Anxiety
- Sensations

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**Interior:**

- Building occupants
- activities

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**cherul klicko** **Signs**

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**Moisture Sources**

**Exterior:**

- Precipitation
- irrigation systems
- water vapor
- groundwater
- Gutters & Downspout

The image includes a diagram showing water infiltration through a foundation wall. Labels include: "Water stored underground in cracks and pores", "Foundation Rock Surface", "Drainage Layer", "Insulation", and "Interior Air". A red 'X' marks the point of water entry.

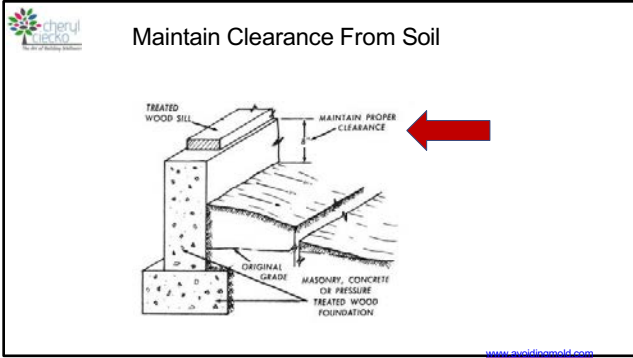
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**Extend Downspouts**

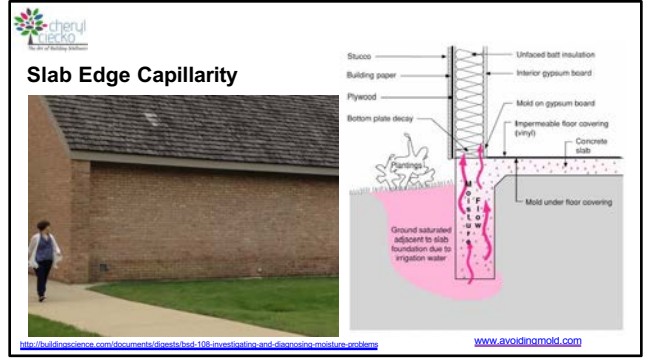
The image shows a diagram and a photograph. The diagram illustrates a downspout being extended away from the foundation wall. Labels include: "wall framing", "floor framing", "foundation wall", "settled backfill", and "basement". A red 'X' indicates the incorrect placement of the downspout. Text next to the diagram says: "water collects next to foundation wall and penetrates into the basement". The photograph shows a downspout being extended away from a brick wall.

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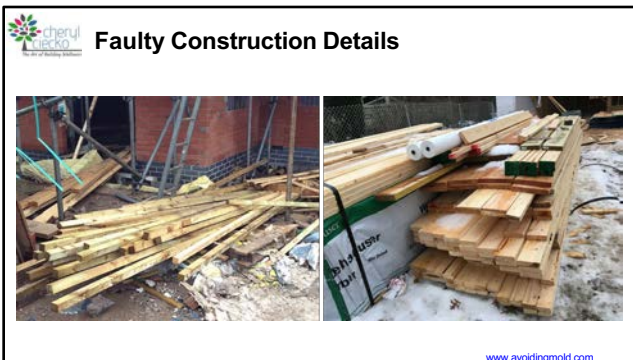
76



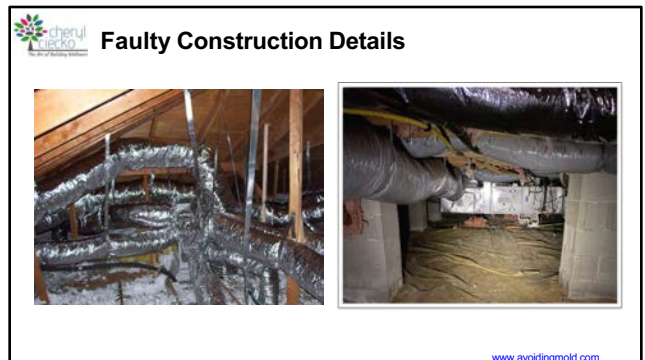
78



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**Sources of Moisture - Exterior**

- Poor Site Drainage
  - Flooding
  - Dampness
  - Gutters
  - Downspouts
  - Lack of Gutters
  - Missing flashing

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**Faulty Construction Details**

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**Mold Requirements...**

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**Mold Requirements...**

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**Summary**

- What is building mold?**
  - Results from WATER
- Why do buildings have mold?**
  - Buildings are Complicated
  - Humans are imperfect
- How to find mold?**
  - Be a DETECTIVE
  - Find Clues
  - Measure Moisture levels

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**Objectives**

- What is building mold?
- Who is affected?
- Why buildings? Why now?
- How to Identify potential building problems...
- Resources / How to learn more? -
- Questions

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- LEARN WHERE MOLD CAN START AND EASY WAYS TO CLEAN FOR PREVENTION
- KNOW THE BASICS OF DUCT CLEANING AND AVOID COMMON SCAMS
- LEARN THE RESEARCH AND SCIENCE ON THE EFFECT OF THEVES ON MOLD

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