



# AN OVERVIEW OF MOLD AND MOLD REMEDIATION

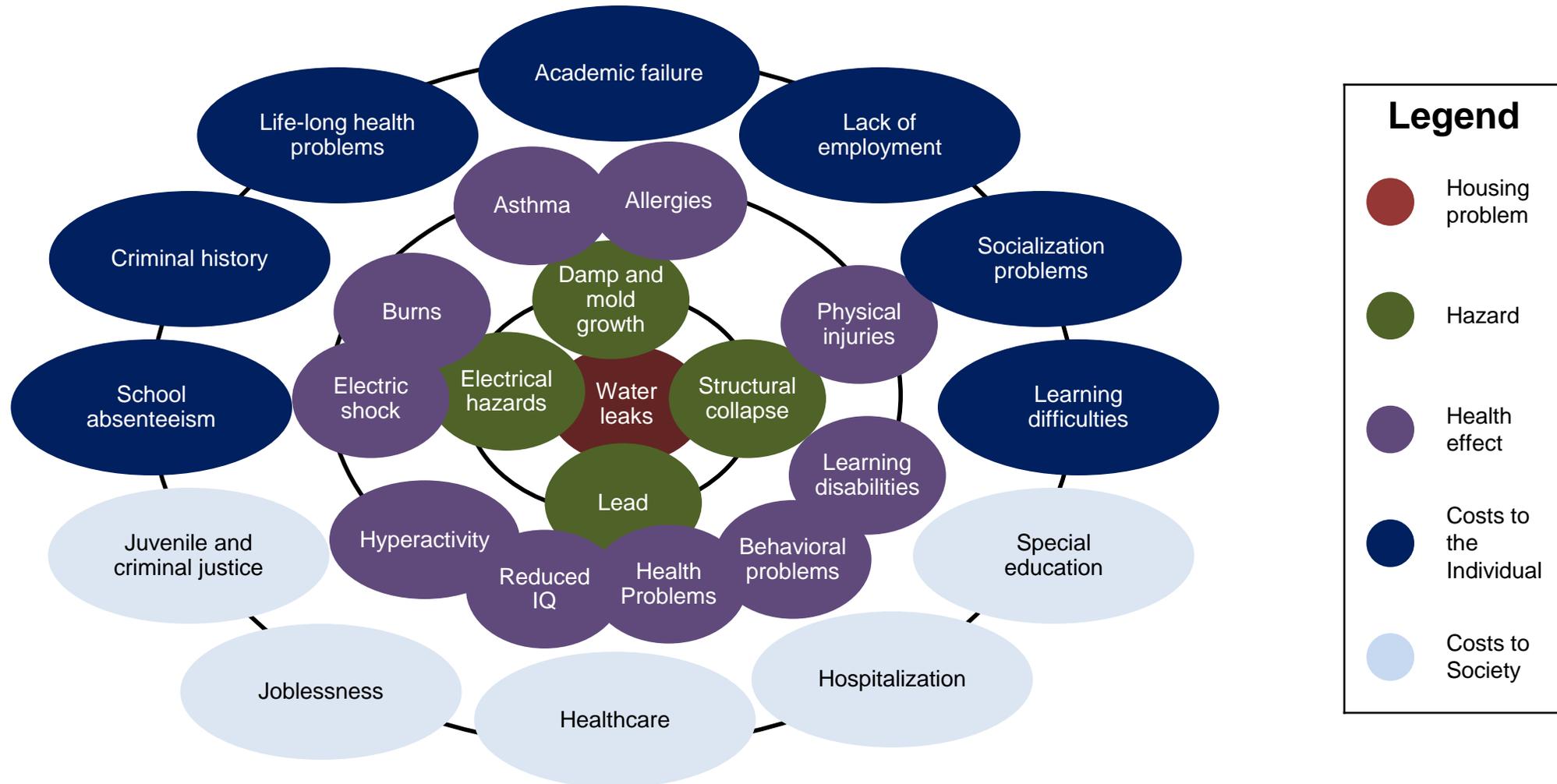


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Office of Lead Hazard Control and Healthy Homes,  
US Department of Housing and Urban Development  
(HUD)

# Multiple Impacts

*Here is an example of how a single housing problem can lead to multiple health effects and economic impacts:*



(Created by OLHCHH for Educational purposes only)

# Mold Overview

What is mold

How mold can be identified

Where to look for mold

Basics of mold remediation



# What mold is:

Fungus (Fungi)

Alive

# What Mold is not:

A plant or a kind of algae

Bacteria or a virus

Rust or water stains

# Mold is alive

- It needs water
- It needs food
- It needs protection  
from the elements

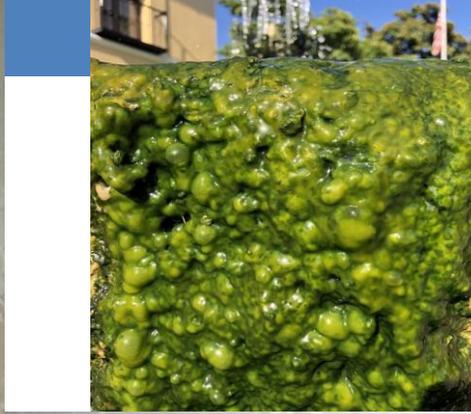
Mold is not a plant

- It doesn't need light

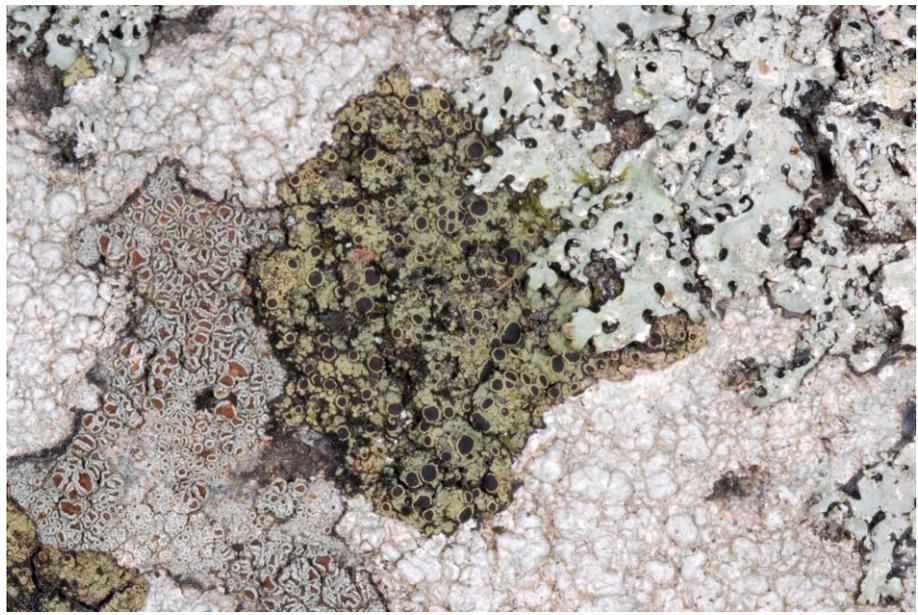


# Dirt (Soil)





**Not Everything is Mold**

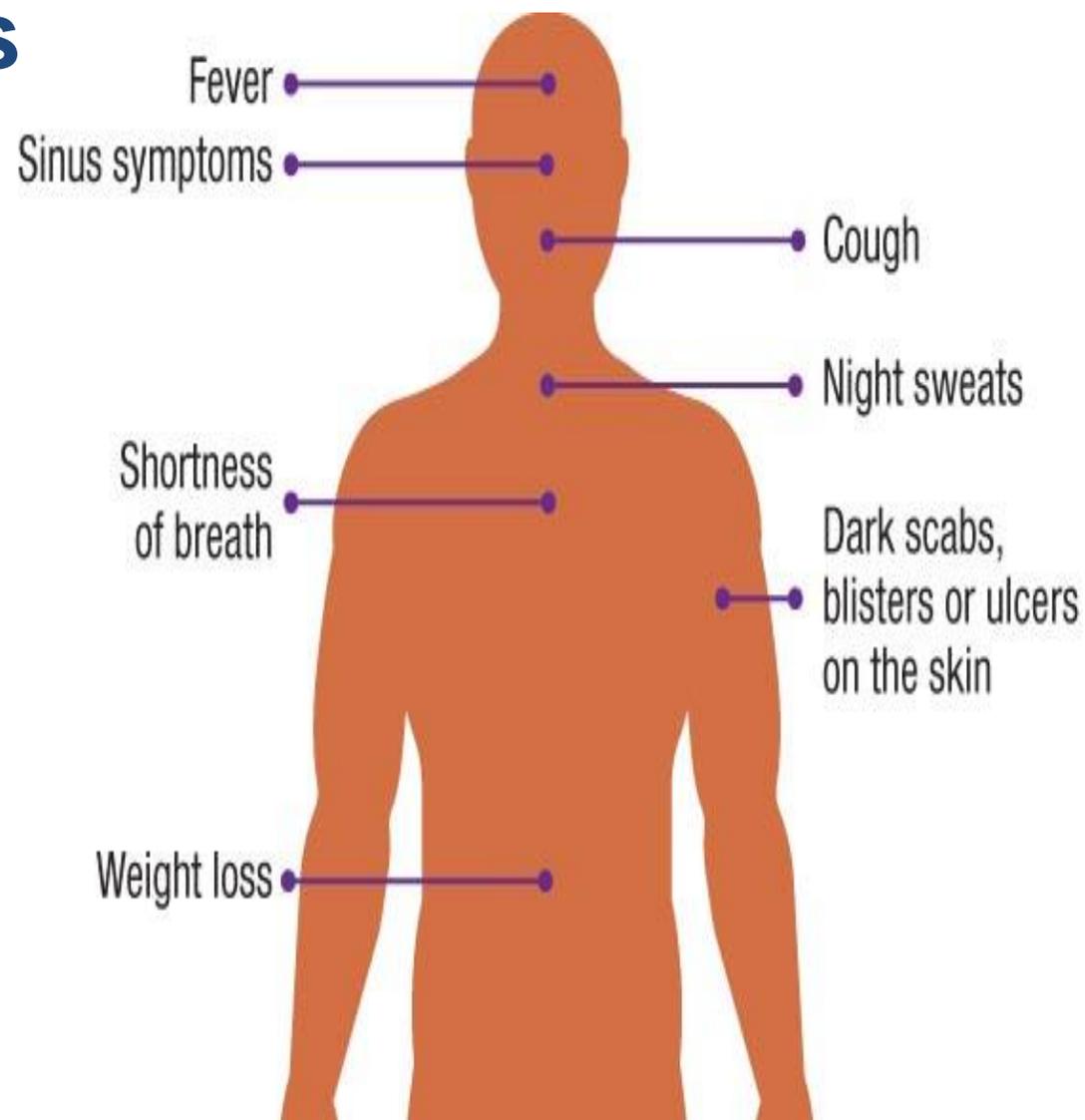


Mold can cause health problems,  
including:

- Allergic reactions
- Asthma triggers

## May cause symptoms such as

- Fever
- Cough
- Night sweats
- Weight loss
- Shortness of breath
- Sinus symptoms
- Dark scabs, blisters, or ulcers on the skin



# How can mold be identified?

- Visually
- Odor (if you can smell it, you're breathing it)
- Microscopy (including mold spore sampling)
- DNA/Sequencing (“molecular identification”)

# Environments that are more likely to have mold growth

- Porous materials: they hold water (and mold)
- Hidden areas such as behind other objects (picture frames, couches/sofas, wallpaper, etc.)

This is not an exhaustive list

# Water leaks and stains

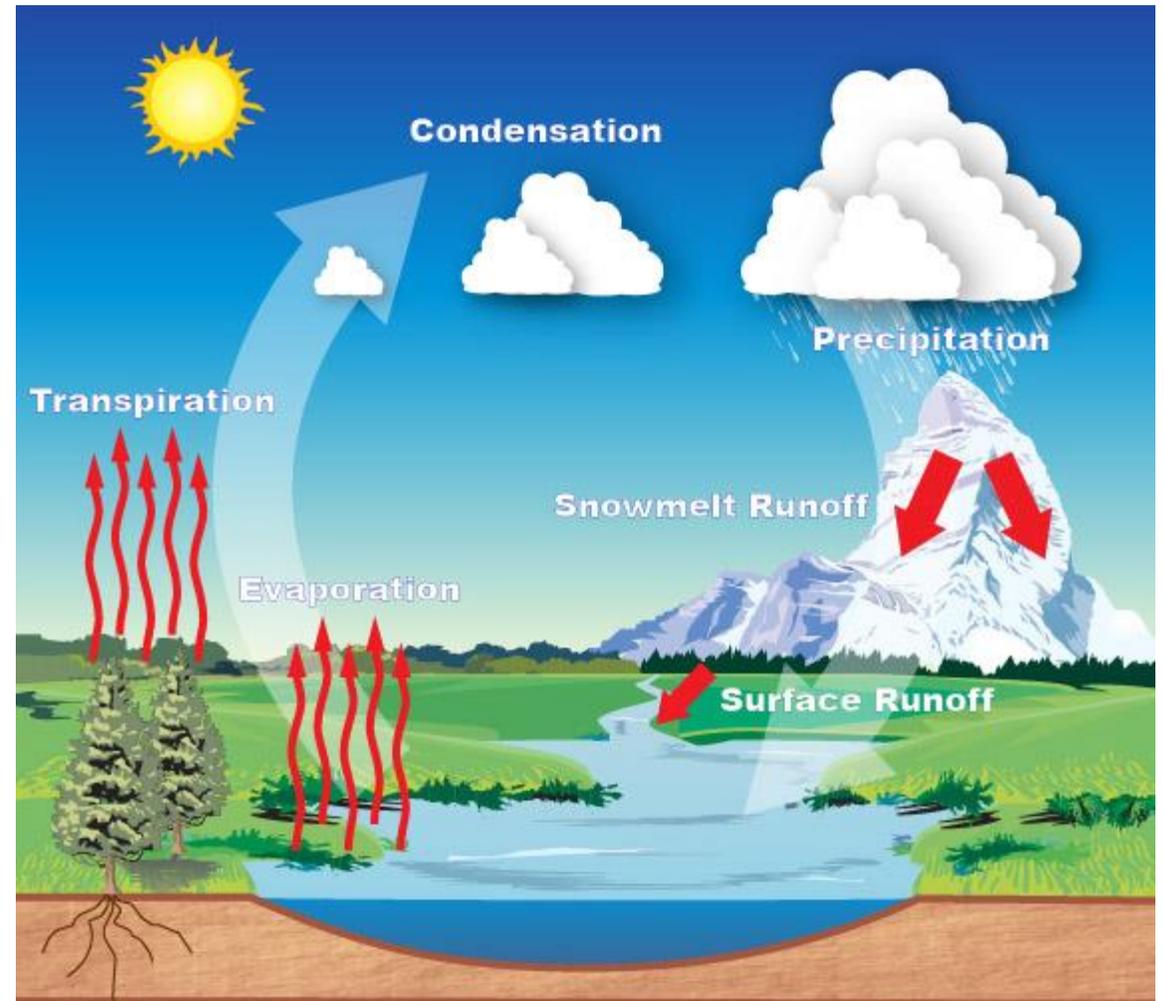
While not mold themselves...

Water leaks contribute to mold growth

Water stains indicate that there was (and may still be) a leak

# Where does the moisture come from?

- The hydrologic cycle
- Evaporation to Condensation (and sometimes drips)
- This can also happen inside the home ... condensation on a cool surface



Mold  
growing on  
ceiling tile



# Mold



# Mold on a wall



# Flood Line Mold



# Other signs of moisture



Rust



Water stains (but could be mold on the other side)



Algae

# Where does mold grow?

Anywhere it has

- Water — from leaks, condensation on surfaces, etc.

*and*

- Sufficient nutrients — food, dust in carpet, paper in gypsum board or drywall, wood, etc.





# Mold Evaluation And Assessment



# Types of Assessment

- **Non-Intrusive/**
- **Visual Assessment**
- Lowest level
- Visual analysis of current conditions
- Used as a basis for determining next steps
- **Scientific Assessment**
- Swabs
- Tapes
- Bulk Samples
- Air Sampling
- These samples go to a mold lab for analysis

# Purpose of Non-Intrusive Inspections

- Report moisture intrusion
- Note water damage
- Note apparent mold growth
- Record the presence of musty odors
- Report conditions conducive to mold growth

# Use your senses

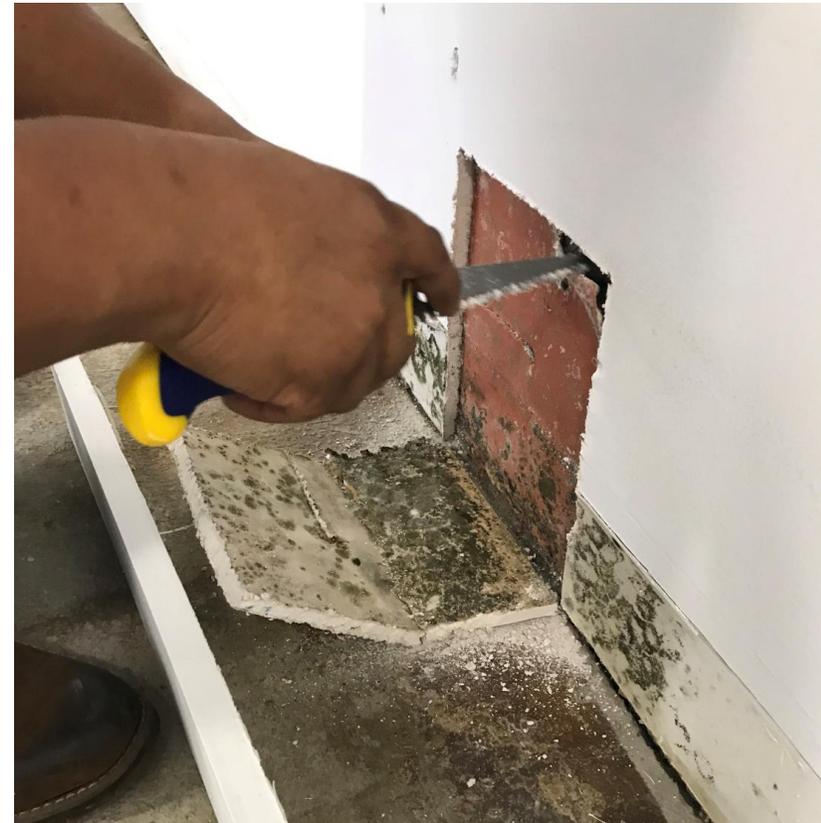
- Look for substances that appear cottony, velvety, granular or leathery, and have varied colors, including white, gray, brown, black, yellow, and/or green.
- Mold often appears as discoloration, staining, or fuzzy growth on the surface of building materials and furnishings.
- Walk around the outside of the property as well as the inside.
- Check:
  - Grading and discharge of roof water
  - Presence of standing water
  - Condition of exterior siding and trim around doors and windows
  - Condition of roof

# Inspection

## Non-Intrusive Inspection

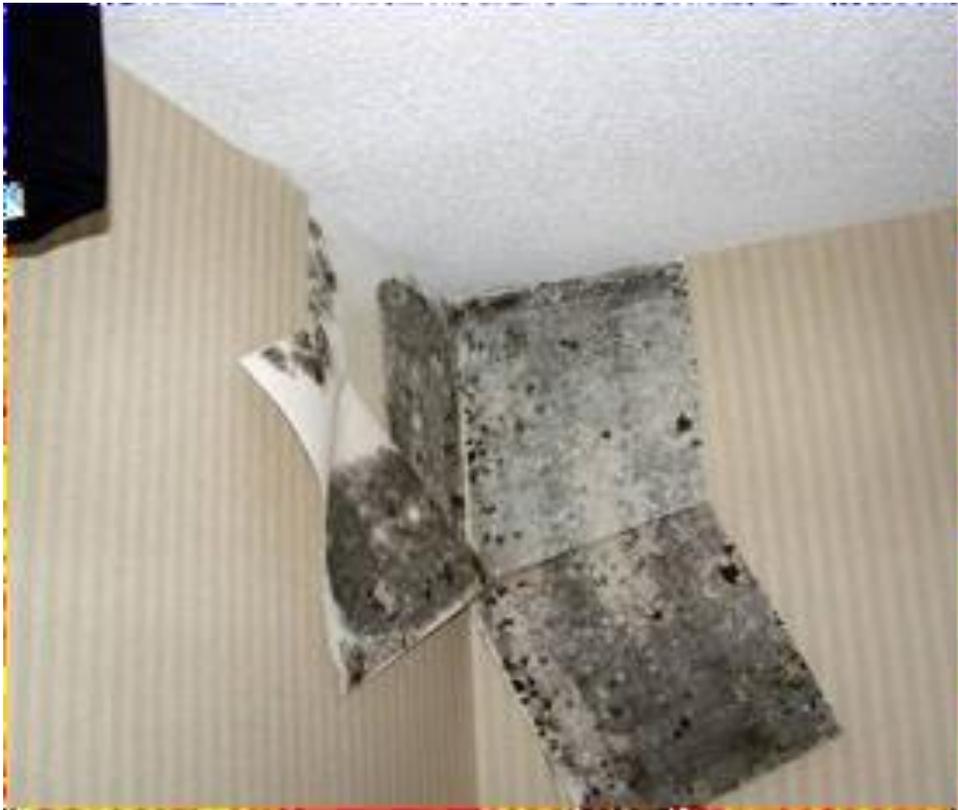


## Intrusive Inspection



# Inspection Continued

Intrusive Inspection (condition)



Moisture Testing of Building Materials



# Inspection Continued

## Deferred Maintenance on a Roof



## Poor Grading



# Mold Inspector Certification

**CERTIFICATE OF ACHIEVEMENT**  
**Mold Inspector and Remediator Initial Training**

This is to certify that JOHN DOE  
 has completed the Mold Inspector and Remediator Initial Training 16-Hour course on  
11/28/2016 with a minimum score of 70%. Training was conducted per the following:

- Mold remediation, mitigation and abatement per "Healthy Homes" concept per CDC.
- OSHA, FEMA, IDPH and CDPH mold cleanup and flood response guidance
- US EPA guidance in "Mold Remediation in Schools and Commercial Buildings"

11/28/2016  
 Course Dates:  
11/28/2019  
 Expires:  
1511MMW01  
 Certificate Number

 **PUBLIC HEALTH & SAFETY**  
111 S. Wacker Drive, Suite 1100, Chicago, IL 60606 Phone: 312-491-0281 Fax: 312-491-0282

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 FORM A M-044D



# Mold Remediation and Abatement



# Remediation

## Occupants

- Cleaning up after a flood can pose health risks
- Wait to re-enter your home until professionals tell you it is safe,
- Contact your insurance company and take pictures of the home and your belongings

## Professionals

- Certifications and training
- Specialized equipment
- Personal protective equipment
- Greater resources

# Remediation

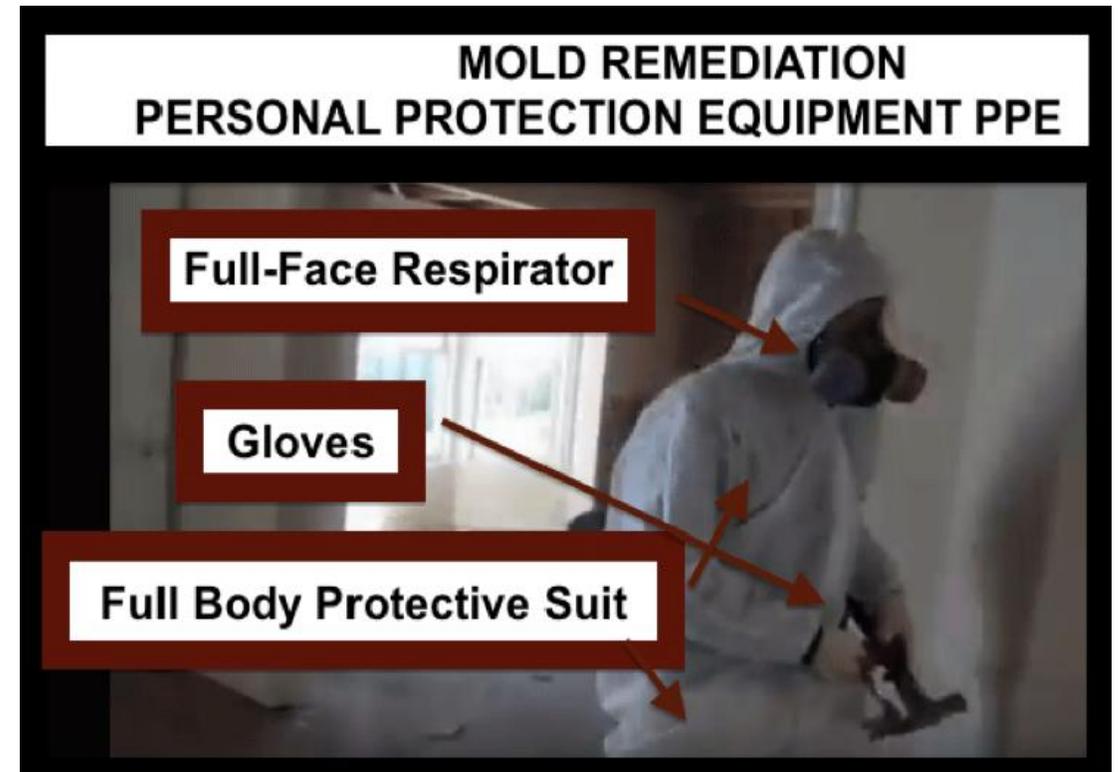
## Occupants

Drying your home and removing water-damaged items is your most important step for preventing mold damage

The key to preventing mold growth is to keep surfaces dry.

Residents want to get back into their homes ASAP to protect/recover valuables.

## Professional



## Level 1

# Minimum Protection



# Mold Respirator



## Level 2

# Containment With Full PPE



Level 3

Containment

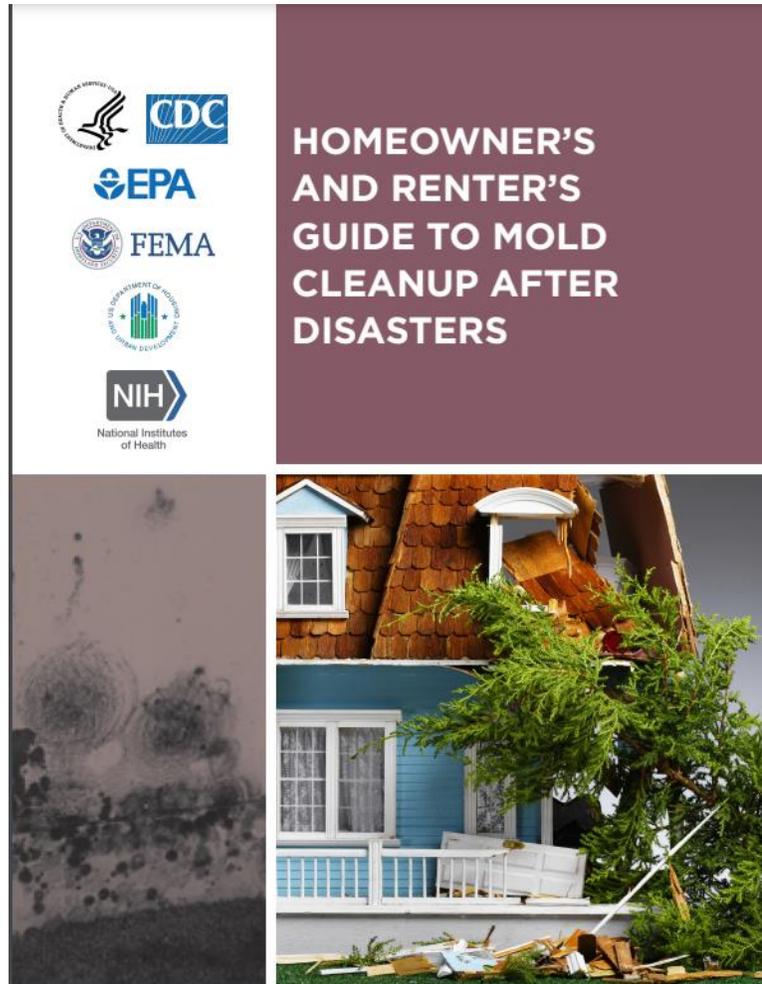


## Level 4

Containment  
with filtered  
negative air  
flow



# HOMEOWNER'S AND RENTER'S GUIDE TO MOLD CLEANUP AFTER DISASTERS



- People with breathing problems like asthma or who have weakened immune systems should stay away from moldy sites
- Children should not take part in disaster cleanup work.
- Check for loose power lines or gas leaks
- Make sure the electricity and gas are turned off

## If You Must do the Work - 1

- Protect yourself
- Remove standing water and wet materials.
- Open doors and windows
- When electricity is safe to use, use fans and dehumidifiers
- Do not use fans if mold has already started to grow; the fans may spread the mold.

## If You Must do the Work - 2

- Fix the water problem completely before you paint.
- Clean with water and a detergent.
- Remove all mold you can see.
- Dry right away.
- **Do not mix cleaning products together.**
- Do not paint over mold

Throw away items that can't be cleaned and dried. Throw away anything that was wet with flood water and can't be cleaned and dried completely within 24 to 48 hours. If you have precious items that you want to preserve, follow the guidelines from the Smithsonian Institution:

[https://www.si.edu/mci/english/learn\\_more/taking\\_care/mnm.html](https://www.si.edu/mci/english/learn_more/taking_care/mnm.html)

# Is the Work Completed?

- If you still see or smell mold, you have more work to do.
- You may need to ask a mold remediation professional if your mold problem is completely fixed.
- Sampling for mold is usually not recommended; instead, a careful inspection for completion of the cleanup and absence of mold-related odors is usually appropriate.
- If you have health problems that get worse when you return home, like asthma or allergy attacks or skin or eye irritation, you may still have some mold.

# Key Takeaways

- It is not the inspector's responsibility to determine if a tenant has been exposed to mold spores or if the exposure poses a health hazard.
- The type of containment required has nothing to do with the amount of room square footage affected by mold.
- The EPA and others have guidelines to ensure the safety of those removing mold and to control the spread of mold during the process.

# Key Takeaways

- There are four levels of protection for mold removal.
- A mold remediation protocol plan varies from case to case.
- The use of personal protective equipment is critical to ensure health and safety.

# Mold Myths

1. Housing units should be completely free of mold.
2. Mold is harmless.
3. Once you've killed mold, the removal is optional.
4. Bleach kills mold.
5. Mold remediation is something tenants can easily handle themselves.
6. A small amount of mold generally does not indicate a problem.

## Some additional resources

About Mold and Moisture / US Department of Housing and Urban Development (HUD)

[https://www.hud.gov/program\\_offices/healthy\\_homes/healthyhomes/mold](https://www.hud.gov/program_offices/healthy_homes/healthyhomes/mold)

Healthy Homes Principles / US Department of Housing and Urban Development (HUD)

[https://www.hud.gov/program\\_offices/healthy\\_homes/healthyhomes](https://www.hud.gov/program_offices/healthy_homes/healthyhomes)

## Some additional resources

- Mold Remediation in Schools and Commercial Buildings Guide / US Environmental Protection Agency (EPA) <https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide-chapter-1>
- Indoor Air Quality in Multifamily Housing / US Environmental Protection Agency (EPA) <https://www.epa.gov/indoor-air-quality-iaq/indoor-air-quality-multifamily-housing>

## Some additional resources

- Moisture Control Guidance for Building Design, Construction, and Maintenance / US Environmental Protection Agency (EPA)  
<https://www.epa.gov/sites/default/files/2014-08/documents/moisture-control.pdf>
- Musty Smells, Mold, and Moisture in the U.S. Housing Stock / U. S. Department of Housing and Urban Development (HUD)  
<https://www.huduser.gov/portal/periodicals/cityscpe/vol23num1/ch8.pdf>

# Thank You

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