OSHA OUTREACH COURSES

JOB AID

HEALTHY BUILDINGS MOLD AWARENESS AND PREVENTION

Healthy Buildings: Mold Awareness and Prevention

What Is Mold?
Mold is a fungus, which is a living organism. Mildew is a type of mold. Mold is microscopic (2-20 µm). It has root-like structures (hyphae) and spores. Mold is present all around us and inside buildings. Too much mold or certain types of mold can affect the health of people in the building.

The most common effect of exposure to mold is that it worsens allergies and asthma. Mold can also attract insects that create a nuisance, carry disease and spread spores. It's rare, however, for mold in buildings to produce airborne spore levels associated with toxic health effects.

To survive and thrive (spread), mold requires water (from a direct source or the air), organic material and comfortable temperatures, usually 60-80 °F (15-27 °C).

The lifecycle of mold is:

1. Mold spores travel in the air.
2. Spores land on organic material.
3. Mold breaks down and consumes the material.
4. Mold grows and produces spores. In just 48 to 72 hours, mold can produce millions of spores.

Organic materials are materials from living matter, including those we refine or use in products. In buildings, this may include wood, paper, textiles, wallboard, carpeting, adhesives and insulation. Buildings are an excellent source of food for mold. Mold can damage the integrity of buildings.

Mold can enter buildings through outdoor air, dust from construction and people, and plants, soil and rotten food.

Places in buildings where mold thrives include:

- Damp areas (windows, roofs, building envelopes and landscaping)
- Areas where there are plumbing leaks or floods
- Buildings with improper moisture or humidity control
- Heating, ventilation, and air conditioning (HVAC) systems

HVAC systems have components that feed and house mold and spread its spores throughout a building. Without intervention, this can create an endless mold lifecycle.

Mold Management Plans

A mold management plan is a written operations and maintenance protocol to: •

Educate building personnel about mold issues

- Protect building occupants from mold exposure
- Describe proactive strategies for early signs of moisture
- Prevent the recurrence of mold growth in the building

The mold management plan should include roles and responsibilities, an introduction to mold, management considerations, mold prevention and building maintenance practices, building inspections and documentation, and mold remediation.

Prevention
To prevent mold growth, we must remove what it needs to survive and thrive. It's not practical to eliminate sources of organic material or to make building temperatures uninhabitable, so that leaves **water** as the one thing we can control. That means we must control sources of moisture, maintain building envelopes,

keep humidity below 65% (dew point < 60 °F or 15 °C), and prevent flooding or respond quickly.

Maintain the building envelope, which includes the roof, doors, windows, floors, walls and foundation. Proper construction and maintenance can protect the interior from rain and other weather, pipe leaks and ambient moisture. Be aware that moisture can become trapped during construction and create major problems like mold and odors later in the life of the building.

Some tips for controlling moisture sources to prevent mold include:

- Eliminating cold spots and thermal bridges across your building envelope
- Properly draining condensate trays
- Using vapor retarders appropriately
- Maintaining a slightly positive interior pressure in the building

To prevent mold, react as swiftly to a **flood** as you would to a fire. Clean up small volumes of water immediately (< 48 hours) and call a professional for large floods. Dry the space as thoroughly as possible (do NOT use fans if mold is visible). Remove affected carpet, baseboards and drywall on BOTH sides of the wall. Drill holes in the base of the walls to facilitate drying. Use industrial dehumidifiers to help remove water from the space.

Prevention is not something you can do alone. Make sure construction crews, designers and architects have plans to prevent moisture incursion. Keep building managers and engineers focused and informed regarding mold issues. Delegate some responsibility to tenants; they must control moisture in their space.

Identification

The common ways to discover that mold is present are your senses, inspections, reports by building personnel or tenants, and using measurement tools. Occupant, renovation and housekeeping activities will disturb settled spores.

Look for areas of staining and discoloration. Mold may look like black, brown or white fuzzy spots or circles. Feel for dampness or evidence of water leaks. Smell for damp or musty odors. Listen for complaints – especially about allergy symptoms.

During inspections:

- Check for visible mold growth
- Find the sources of moisture, stains, standing water and prior leaks
- Identify areas of high humidity (> 65%)
- Check areas prone to leaks, such as fountains, kitchens and coolers
- Ensure plants are not over-watered
- Examine the inside of HVAC systems

Employees or tenants may report mold. Never ignore their reports. Activate the mold management plan, which includes steps, roles and responsibilities for mold remediation. Help to address fears by communicating clearly and openly about how you will protect and isolate people from the problem. Several diagnostic tools, including moisture meters, infrared thermometers and infrared cameras, are available to pinpoint uncontrolled moisture sources. Sampling can help you confirm if mold is present, determine its type, and monitor the progress of remediation efforts. Use qualified consultants to help you obtain and interpret data.

Response

Treat mold as soon as you find it to prevent it from spreading. Unchecked mold can affect people and cause costly damage.

The size of the area damaged by mold determines the remediation methods you should use: •

Level 1: < 10 ft^2(1 m^2)

• Level 2: 10-30 ft^2(1-3 m^2)

• Level 3: 30-100 ft^2(3-9 m^2)

• Level 4: > 100 ft^2(9 m^2)

For Level 1, you may be able to use a simple mildew stain remover as directed on the label. Remember to wear personal protective equipment. Generally, anything above Level 1 should be handled by trained professionals. As the levels increase, the levels of effort and protection increase. Level 4 remediation efforts require special protective equipment as well as containment, air locks and decontamination areas.

For all mold remediation:

• Work when the area is unoccupied

• Suppress dust by misting the area with antifungal/mildewcide agents

• Vacuum contaminated surfaces with vacuums that have high efficiency particulate air (HEPA) filters

• Put materials that you cannot clean in plastic bags, taped plastic sheets or glove bags • Wipe hard surfaces with rags soaked in fungicide or diluted bleach and then scrub the surface with detergent

• As the last step, vacuum the area with a HEPA filtered vacuum

Recommendations by Level

	Level 1	Level 2	Level 3	Level 4
Allow trained maintenance staff to perform remediation	X	X		
Hire mold remediation professionals		X	X	X
Wear disposable N95 respirators, gloves and safety goggles	X	X	X	
Wear full-face HEPA respirators, gloves and disposable clothing				X
Establish containment*			X	X
Use negative air machines with HEPA filtration			X	X
Establish an air lock with a decontamination area				X
Perform a clearance inspection and obtain air samples			X	X

*Containment involves protecting adjacent areas, including covering HVAC ducts and grills with plastic

sheets and tape.