

micro ecologies inc.

Industrial Hygienists and Environmental Health Investigators

Micro Ecologies, Inc. Mold Clean-up Guidelines for Residents

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About Mold and Men

Mold has been with us for as long as recorded history, and has a long record of association with human disease. The Laws of Purity and Atonement given by God to Moses and Aaron as recited in the Book of Leviticus, Chapter 14 verses 33-50 was the world's first consumer mold advisory and appears on the back cover of this booklet.

Do I Have a Mold Problem?

Small spots and patches of discoloration (usually brown, green, or black) on recurrently wet or water damaged walls and ceilings are probably mold, and white powdery blisters on painted surfaces frequently contain mold. Early response is the best way to eliminate mold or to prevent mold growth from getting out of control. If the cause of the water damage is not corrected, then the mold growth will recur, even if you clean regularly. Early response means: 1) Cleaning small areas of mold growth when you first see it, and if necessary, cleaning weekly to prevent it from spreading (see mold cleaning protocol below), and; 2) identifying and repairing the source of the water damage. For many residents it is already too late for an early response. They are already in need of a major clean-up. These residents need to **know how** to evaluate their mold problem, and need to **know if and how** it is safe to clean up their mold problem. Providing that "**know-how**" is the purpose of this booklet.

How Does Mold Affect Our Health?

By the time mold growth can be seen, it is likely that millions of invisible sized mold spores are covering the surface of that growth. These tiny spores can easily become airborne, much like dandelion seeds, and then be inhaled or come in contact with eyes, ears, and skin. Most mold spores can cause allergic reactions that can lead to asthma, sinusitis, and eczema. Many mold spores contain toxins that can cause such diverse health effects as liver and brain damage, respiratory hemorrhage, immunosuppression, and cancer. Some mold spores can cause eye, ear, and sinus infections even in healthy people. People whose immune systems are compromised by chemotherapy, AIDS, and other factors are especially at risk of fungal (mold) infection. Mold is almost always accompanied by bacteria that often includes *Staphylococcus* and other pathogens.

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How Can the Source of Water Damage Be Identified and Repaired?

Water damage to walls and ceilings is normally caused by either condensation or by leaks and floods.

Water Damage from Condensation

In bathrooms, water damage from condensation is usually caused by hot, steamy showers and poor ventilation. To prevent this, showers should be limited in duration and the bathroom door or window should be kept open slightly while showering. Bathrooms without windows are required by the NYC Building Code to be equipped with an exhaust opening that has suction at its face opening 24 hours a day, and this exhaust reduces the build up of steam from showers. If your exhaust is not functioning (if a tissue will not hold by suction to the face of the exhaust opening) then a complaint should be filed with your building management or the Department of Buildings 212-312-8467. Backdraft from non-working exhaust openings is a common source of exposure to mold spores and other allergens. These non-working exhaust openings should be covered until suction is restored.

Condensation sometimes forms on the interior surfaces of poorly insulated exterior walls during very cold weather, both on sheetrock and plaster. The only permanent solution to this problem is to have the mold-damaged walls safely removed by a qualified contractor (in accordance with the NYC DOH *Guidelines for Assessment and Remediation of Fungi in Indoor Environments* available by calling 212-442-9666 or at www.ci.nyc.ny.us/html/doh/home.html), then properly reinsulated, and rebuilt.

Condensation often forms on windows in cold weather and trickles down onto window sills and walls. Towels should be placed on these window sills to absorb the water and these towels should be frequently changed and laundered.

Condensation often forms on the A/C ducts above drop ceilings and drips onto ceiling tiles. Water damaged ceiling tiles should always be promptly removed, before serious mold growth appears. If brown, green, or black discoloration of ceiling tiles is evident, then follow the instructions below under “How Can I Safely Remove Contaminated Ceiling Tiles?”

Water Damage from Leaks and Floods

Floods, plumbing leaks, roof leaks, deteriorated mortar between bricks on building exteriors, deteriorated seals on exterior window ledges, deteriorated grout between ceramic tiles in bathtub and shower enclosures, and overflows from air conditioning condensate pans are all common causes of water damage. It is essential that the cause of your water damage be identified and promptly repaired. A single clean water leak does not usually cause a serious mold problem. However, if the leak is not promptly identified and repaired, and water damage is recurrent, mold growth can be expected. Left unattended, toxic species of mold are likely to become prevalent. If your building’s management is not responsive to your request to repair the leak, then the water leak problem should be reported to NYC HPD (212-960-4800) or the NYC DOH (212-442-9666). However, it may take months for plumbing, roofing and pointing repairs to be ordered by City agencies and for the leaks to be repaired by the building’s contractors. Until the leak is fixed, it is important for the resident to expend the extra effort required to prevent the mold from spreading. The cleaning or encapsulation directions outlined below should be carefully followed.

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Why Is It Important to Know If the Walls and Ceilings are Sheetrock or Plaster?

Sheetrock and plaster are both made from gypsum, but the gypsum in sheetrock comes in preformed 4 x 8 ft sheets that have a paper covering on both sides. Gypsum contains no nutrient to support mold growth. When wet or damp, the paper covering of sheetrock provides the ideal nutrient mix for toxic mold growth. One very toxic mold that thrives on the paper covering of sheetrock is *Stachybotrys*, the dense black mold that produces toxins that may cause fatal hemorrhaging in the lungs of infants and serious health effects including hemorrhaging from the ear, nose, and lungs, immunosuppression, and brain damage in children and adults. In addition to sheetrock, *Stachybotrys* thrives on recurrently water damaged cartons, paper, and ceiling tiles. *Stachybotrys* growth is too dangerous to be cleaned by residents. The areas of affected sheetrock must be removed and replaced by a qualified contractor in accordance with the NYC DOH *Guidelines for Assessment and Remediation of Fungi in Indoor Environments* available by calling 212-442-9666 or on the internet at www.ci.nyc.ny.us/html/doh/home.html. If the source of the water damage to the sheetrock is a leak, then the leak must be repaired before new sheetrock is installed.

If the water damage was caused by a recurrent leak or a flood, and the construction is sheetrock then there is a high probability that any blackish colored mold growth is *Stachybotrys*.

Sheetrock at the base of the rear wall inside the fan-coil type forced air heating and A/C units (located under a window in each room in most post-war apartments) often gets wet from condensate pan overflows during the summer or from leaks. *Stachybotrys* growth often occurs on this sheetrock, allowing mold spores to get sucked into the air flow and distributed into the room air. This problem must be handled by a qualified contractor in accordance with the NYC DOH *Guidelines* (see above).

Mold on plaster is either growing on top of the paint or into the paint. Many molds can eat paint. Frequently, the plaster will be blistered and powdery. The paint and powdery white deposits can be cleaned following the cleaning protocol below. After the leak is repaired, plaster ceilings over concrete construction may take up to 3 months to become dry enough to replaster and repaint.

If you're not sure whether the wall is sheetrock or plaster, ask the superintendent or a qualified building trades person.

Is It Safe for Me to Clean the Mold?

There are some molds that are not safe to clean, especially black molds that have grown into the paper covering of sheetrock (as discussed above), and any area of mold growth larger than 10 sq. ft. If the mold growth covers less than 10 sq. ft. and is limited to the painted surface of plaster and sheetrock, then this mold can generally be safely cleaned by residents if they follow these instructions:

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Mold Cleaning Protocol

- Before starting your mold clean-up project, be sure you have the following personal protective equipment and cleaning supplies:

Personal Protective Equipment - available at your local paint store

- Mask - preferred: HEPA filtered respirator
Minimum: dust mask with 2 elastic straps and cinchable nose piece.
- Goggles
- Disposable gloves
- Cap to cover hair and ears.

Cleaning Supplies

- Plastic spray bottles (2)
 - Clorox solution - mix 10% Clorox with water and add dishwashing liquid.
(Warning: never mix bleach with ammonia)
 - Paper towels
 - Trash bags
 - Drop cloths (1 or 2 mil clear plastic sheeting)
 - Duct tape or masking tape
 - Ladder
- Next, develop a plan to prevent your possessions and other areas of your home from becoming contaminated during the mold clean-up. If the mold growth is in the bathroom, empty the bathroom before starting work, and keep the door closed while working. If the mold growth is in any other room, isolate the work area by taping a drop cloth to the ceiling so that it extends to the floor and forms a barrier around the work area. All possessions within the work area should be removed or covered with drop cloths.
 - The release of some mold spores into the air inside the work area during clean-up can be reduced by 90% if you follow these instructions, but some release is unavoidable. That's why it's essential that you wear the personal protective equipment listed above.
 - When cleaning mold, the discolored surface should be thoroughly sprayed with the Clorox solution (walls) or water (ceilings) before any wiping begins. Wet dust, including mold spores, does not fly.

Wall surfaces should then be wiped with paper towels, the paper towels should be disposed of in the trash bags, the wall should be sprayed again with the Clorox solution, and then wiped again with new paper towels.

Ceilings cannot be safely sprayed with the Clorox without risk of exposure to skin and eyes. Therefore, ceilings should be sprayed with water, and then wiped twice with paper towels that have been sprayed with the Clorox solution. To reduce exposure to mold spores while wiping, the person wiping the ceiling should be standing on a ladder with their head at ceiling level and their arm fully extended.

- After cleaning the mold, all surfaces within the work area should be wiped with the Clorox solution and paper towels. Do not vacuum inside the work area because mold spores and bacteria will be released in the vacuum exhaust. Before removing the plastic sheeting and barriers, spray their inside surfaces with water, and then remove the barrier, folding the damp side inward.
- Dispose of used paper towels, plastic sheeting, and disposable masks, gloves and caps in a tightly sealed trash bag.
- Place the clothes you wore for the work into the laundry, and take a shower.

How Can I Safely Remove Contaminated Ceiling Tiles?

Water damaged ceiling tiles generally display a gold to brownish discoloration if the water damage is an isolated event. With recurrent water damage, however, a black center to the discoloration frequently appears. There is a high probability that the black discoloration is *Stachybotrys*. These cellulose containing tiles are perfect amplification sites for toxigenic fungi. So, for the sake of your own health and occupant health, don't take chances when removing water damaged ceiling tiles. This should be a **zero dust release** procedure to avoid possible acute exposures. Carefully cover the visibly discolored area with a piece of poly sheeting or other solid material that has been cut to size and duct taped around the perimeter. Then, adhesive-side up, press the cover over the discolored area. Then, approaching the now-covered tile by removing an adjacent clean tile, repeat the procedure by covering any discolored area on the top side of the tile. Then, you can safely remove the contaminated tile, which must be turned at a diagonal for removal.

When Mold Can't Be Cleaned, Can It Be Encapsulated?

What Not To Do

- Molds literally eat paint, so painting over mold is like adding fuel to a fire, and most anti-fungal paint additives are ineffective. The mold will quickly grow through the new paint, and the problem will become more severe. If the roots of the mold (called hyphae) have grown into the paint, which often occurs, then the discolored paint needs to be completely scraped off before the wall or ceiling is repainted. **Warning: lead paint may be released when scraping or cleaning mold.** Residents should contact NYC DOH for lead paint removal guidelines, and painting contractors should be required to follow these Guidelines which include isolating the work area, wet-scraping, and proper clean-up. Lead Check swabs, available at better hardware stores, can be easily used by residents to test for lead paint.
- Water damaged or moldy walls should never be covered with sheetrock, which is like giving an invitation to *Stachybotrys* to grow in your home.

What You Can Do

If mold is not safely cleanable (more than 10 sq ft or black mold growing on the paper covering of sheetrock), and there is likely to be a delay in properly removing the mold in accordance with the NYC DOH *Guidelines* (see above), then residents have two options for encapsulating the mold to prevent the release of spores into the indoor air:

- There is a specially formulated high viscosity encapsulant paint called Fosters 40/20 that is highly effective in killing the existing mold and is highly resistant to mold regrowth or grow-through. Foster 40/20 is available through some community health services or can be purchased from Micro Ecologies, Inc. Fosters 40/20 is a low toxicity product, but does contain VOC's and does have a paint-like odor. Also, during the painting work, it can be expected that some mold spores will be released. Therefore, areas being encapsulated should be well ventilated, the precautions outlined above in the cleaning protocol should be carefully followed, and residents should not live in the apartment for 1-2 days or until the paint odors are substantially diminished.
- Alternatively, as a temporary measure, the moldy walls and ceilings can be covered with poly sheeting (drop cloths or trash bags) affixed with duct tape around the perimeter. This method has a disadvantage in that the mold and bacteria growth under the poly sheeting may be amplified. However, this disadvantage is outweighed by the importance of preventing further exposure to the mold spores and bacteria.
- If you need further advice on a mold problem after reading this booklet, you can call Micro Ecologies, Inc. at 212-755-3265.