mold

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Fighting Mold — The Homeowners' Guide

Understanding mold

- Mold can be harmful or helpful — depending on where it grows.
- Mold needs moisture to grow.
- Mold does not grow on dry materials.
- Mold growing inside a home can affect the occupants.
- Occupants can learn to recognize mold.

Molds are microscopic fungi, a group of organisms which also includes mushrooms and yeasts. Fungi are highly adapted to grow and reproduce rapidly, producing spores and mycelia in the process.

You encounter mold every day. Foods spoil because of mold. Leaves decay and pieces of wood lying on the ground rot due to mold. That fuzzy black growth on wet window sills is mold. Paper or fabrics stored in a damp place get a musty smell that is due to the action of molds.

Molds can be useful to people. The drug penicillin is obtained from a specific type of mold. Some foods and beverages are made by the actions of molds. The good kinds of molds are selected and grown in a controlled fashion.

Molds are undesirable when they grow where we don’t want them, such as in homes. Over 270 species of mold have been identified as living in Canadian homes. Molds that grow inside may be different from the ones found outdoors.

What makes molds grow?

Molds will grow if we provide them with moisture and nutrients. If we keep things dry, molds do not grow.

High moisture levels can be the result of water coming in from the outside, through the floor, walls or roof; or from plumbing leaks; or moisture produced by the people living in the home, through daily activities like bathing, washing clothes or cooking. Water enters the building when there is a weakness or failure in the structure. Moisture accumulates within the home when there is not enough ventilation to expel that moisture.

Different kinds of molds grow on different materials. Certain kinds of molds like an extremely wet environment. Other kinds of molds may be growing even if no water can be seen. Dampness inside the material can be enough to allow them to grow.

Why are molds a concern?

Damage to materials is one concern. Materials get stained or discoloured, and over time they are ruined. Moldy paper and cardboard disintegrate over time. Fabrics are damaged.

Continued mold growth can be indicative of moisture conditions favourable for growth of fungi that cause wood rot and structural damage.

When molds are growing inside the home, there may be health concerns. Molds release chemicals and spores.

Health experts indicate that, depending on the type of mold present in a home, the amount and degree of exposure, and the health condition of the occupant, the health effects of mold can range from being insignificant to causing allergic reactions and illness.

Pregnant women, infants, the elderly and those with health problems, such as respiratory disease or a weakened immune system, are more at risk when exposed to mold. Consult your family physician if you believe there is someone who may be at risk.

Is there a mold problem?

Molds are always found in the air outside and in all buildings. They come into the home in many ways — through open windows or doors, on clothing, pets, food or furniture. The problem starts when mold grows inside the home.

Some mold growing, for example on the window sill but not elsewhere, is not a cause of concern. You can clean the mold yourself. The presence of mold is a sign that there is too much moisture in your home — a situation which must be corrected.

Inspect the home to find the extent of the mold.

How can you tell if it is mold?

Discoloration

Discoloration is a sign of mold. However, all discoloration is not due to mold. Carpeting near baseboards, for example, can be stained by outdoor pollution entering the home. Stains or soot may also be caused by the smoke from burning candles or cigarettes.

Mold may be any colour: black, white, red, orange, yellow, blue or violet. Dab a drop of household bleach onto a suspected spot. If the stain loses its colour or disappears, it may be mold. If there is no change, it probably isn't mold.

Smell/Odour

Sometimes molds are hidden and cannot be seen. A musty or earthy smell often indicates the presence of molds. But a smell may not be present for all molds. Even when you don't notice a smell, wet spots, dampness or evidence of a water leak are indications of moisture problems and mold may follow.

How much mold is growing?

One way to know is to estimate the area of the mold.

Mold is considered to cover a **"small area"** if the patch is no larger than a square meter. There should be no more than three patches, each patch smaller than a square meter. Clean up small areas yourself using a detergent solution, household rubber gloves and a dust mask for protection. Refer to How to clean-up small problems for the procedure.

Small moldy areas in homes may become larger over time, if ignored, so it's important to clean up and remove even small patches of mold.

The mold area is considered **"moderate"** if there are more than three patches, each patch smaller than a square meter, or there is one or more isolated patches larger than a square meter but smaller than 3 square metres (size of a 4 x 8 foot sheet of plywood). Assessment by a professional is recommended. You can clean up moderate amounts of mold but you must follow the proper procedures and use the proper protective equipment. Refer to Moderate area clean-up for the procedure.

A mold area is considered **"extensive"** if a single patch of mold is larger in area than a sheet of plywood. Being exposed to this much mold is not a good idea. Do not attempt to clean up large areas of mold yourself. You need professional help to determine why the mold is there in the first place and how to clean it up.

When should you seek professional help?

You may need professional help when:

- There is a lot of mold
- The home is very damp and moist
- Mold comes back after repeated cleaning
- A family member suffers from asthma or respiratory problems or other health problems that appear to be aggravated inside the home

How do you get professional help?

Contact your local CMHC office for a list of individuals who have completed the CMHC Residential Indoor Air Quality Investigator program. A trained IAQ investigator, who operates a private business and sells his/her services, examines the indoor air quality of your home and documents your concerns. He/she identifies the problems, finds their sources and suggests solutions in a written report. Recommendations are provided to you in an action plan that consists of various options to improve the indoor air quality in your home.

How to clean up mold problems

- **"Small areas"** of mold can be cleaned with a detergent solution.
- Wear a mask, safety goggles and rubber gloves.
- Seek professional help if there is a lot of mold or if mold comes back after cleaning.

Bleach is NOT recommended

The presence of organic (humic) materials, the pH (acidity/alkalinity) of the water, the surface material and contact time affect the effectiveness of bleach for disinfection. Since these factors are not generally controlled, bleach cannot be relied upon for disinfection. The most compelling reason for advising against bleach is that fumes are harmful but in addition, overuse of bleach will result in increased releases of chlorinated effluents which can be harmful to the environment.

"Small area" clean-up

You can clean up **"small areas"** of mold (fewer than three patches, each smaller than a square meter) yourself. The minimum protective wear needed are:

- safety glasses or goggles;
- a disposable dust mask (3M 8210 or equivalent); and
- household rubber gloves.

Infants and other family members with asthma, allergies or other health problems should not be in the work area or adjacent room during the cleaning.

Washable surfaces:

Scrub with an unscented detergent solution; then sponge with a clean, wet rag and dry quickly.

Using an unscented detergent will make it easier for you to detect residual moldy odours.

Moldy drywall:

Clean the surface with a damp rag using baking soda or a bit of detergent. Do not allow the drywall to get too wet.

Mold that comes back after cleaning is usually an indication that a source of moisture has not been removed. Seek professional help from a trained IAQ investigator.

"Moderate area" clean-up

- Clean **"moderate areas"** of mold, but wear proper protective equipment and follow precautions.
- Seek professional help if there is a lot of mold or if mold comes back after cleaning.

If you follow the proper procedures and use the proper protective equipment, you can clean up **"moderate areas"** of mold. **"Moderate"** means more than 3 patches of mold, each smaller than one square meter, or one or more isolated patches larger than one square meter but smaller than 3 square meters (size of a 4 x 8 foot sheet of plywood).

Safety precautions

- Wear a disposable dust mask (for example, 3M 8210 or equivalent), glasses or safety goggles and household rubber gloves.
- Isolate the area to be cleaned with plastic sheeting, taped to walls and ceiling.
- Infants and other family members suffering from asthma, allergies or other health problems should not be in the work area or adjacent room during the cleaning.

A small clean up should take minutes (not hours) to finish. When the clean up takes hours to a day to finish, it is suggested that you upgrade to a better filter, such as a half-face respirator with charcoal cartridges. An exhaust fan installed in a window in the room being cleaned would prevent contamination of other areas of the house as well as provide ventilation.

General cleaning

Vacuum surfaces with a vacuum cleaner which has a **H**igh **E**fficiency **P**articulate **A**ir (HEPA) filter or is externally exhausted. Scrub or brush the moldy area with a mild unscented detergent solution. Rinse by sponging with a clean, wet rag. Repeat. Dry quickly. HEPA vacuum the surfaces that were cleaned as well as surrounding areas.

Cleaning wood surfaces

Vacuum loose mold from wood surfaces using a HEPA or externally exhausted vacuum. Try cleaning the surface of the wood with detergent and water. Rinse with a clean, damp rag and dry quickly. If the staining does not come off, sand and vacuum the surface of the wood with a vacuum/sander combination. It is important to vacuum at the same time to prevent mold spores from being dispersed into the air. Note that wood affected by rot may need to be replaced.

Cleaning concrete surfaces

Vacuum the concrete surfaces to be cleaned with a HEPA or externally exhausted vacuum cleaner. Clean up surfaces with detergent and water. If the surfaces are still visibly moldy, use TSP (trisodium phosphate). Dissolve one cup of TSP in two gallons of warm water. Stir for two minutes. Note: **TSP must not be allowed to come in contact with skin or eyes**. Saturate the moldy concrete surface with the TSP solution using a sponge or rag. Keep the surface wetted for at least 15 minutes. Rinse the concrete surface twice with clean water. Dry thoroughly, as quickly as possible.

Moldy drywall

The paper facings of gypsum wallboard (drywall) grow mold when they get wet or repeatedly wet and don't dry quickly. Cleaning with water containing detergent not only add moisture to the paper but also can eventually damage the facing. If the mold is located only on top of the painted surface, remove it by general cleaning (see above). If the mold is underneath the paint, the moldy patch and other moldy material behind it are best cut out and the surrounding areas also cleaned. This should be done by a mold clean-up contractor. New materials may become moldy if the moisture entry has not been stopped. If this is the

case, replacement of the materials should be deferred until the source of the moisture is corrected. The affected areas should be temporarily covered with plastic sheeting and sealed at the edges.

Any areas that show new patches of mold should be cleaned promptly.

Dealing with an ongoing problem

Repair to the building envelope is required if moisture is entering the home from the outside. At the same time, steps should be taken inside the home to reduce the occupants' exposure to mold.

Step 1 — Discard moldy or damaged materials

Wear a dust mask and gloves. Furnishings, such as mattresses, carpets, or sofas that got wet or have been stored in damp conditions should be discarded. Discard items that are no longer needed. Use this opportunity to reduce the amount of furnishings — this means fewer materials to absorb moisture and grow mold. Clothes and other items that have been cleaned should be stored in sealed plastic bags to prevent re-contamination.

Step 2 — Vacuum

Proper vacuuming reduces the amount of mold spores. All surfaces in the home (floors, walls, ceilings, shelves) and non-washable furnishings (such as sofas, chairs, etc.) must be vacuumed thoroughly.

Step 3 — Prevent

Keep moisture generated within the home to a minimum by conscientiously following the prevention steps presented in the next section.

Step 4 — Clear wet areas

Pull carpets and furnishings away from walls that get wet. Carpets and underpads that are moldy should be cut out and discarded.

Step 5 — Dry

Take steps to dry up areas that get wet. Monitor the relative humidity of the air. Use a portable dehumidifier, if necessary. Ensure that the condensate drain pan of the dehumidifier is emptied regularly.

Step 6 — Isolate

If the mold is limited to one area, isolate the area if possible. Cover the affected surfaces with plastic sheeting secured at the edges with duct tape. Note that this is only a temporary measure to minimize your exposure.

Step 7 — Clean

Healthy individuals can regularly clean **"small"** and **"moderate"** areas of mold, thus preventing these from getting out of hand, by following the safety precautions and cleaning guidelines.

Step 8 — Seek professional help

Consider seeking professional help from trained IAQ investigators to identify appropriate remediation steps inside the home. Removing large amounts of mold will require the services of mold clean-up contractors.

Preventing mold

- Keep the home dry.
- Find and fix water leaks.
- Discard clutter and excess stored materials.
- Clean and maintain the home regularly.
- Encourage lifestyle practices that reduce moisture.

Basic steps to prevent and reduce mold growth

Mold needs moisture to grow. Controlling the moisture and keeping the home dry prevents the growth of mold.

- Check your home for signs of moisture and molds.
- Find out if water is coming in from the outside and if substantial moisture is produced inside the home.
- Fix any water leaks promptly.
- Think of the different ways moisture is produced inside the home (for example, cooking, bathing, plant jungle). Remove the moisture as it is produced by using exhaust fans. In the absence of fans, open windows for a short time, but note that the wind can push the moisture to other parts of the home.
- Measure how much moisture is in the air. To find the relative humidity in your home, you'll need a hygrometer. You can buy one at a hardware store or electronics store. A hygrometer costs from $10 to $60. Relative humidity in the home should be under 45 per cent in the winter (or lower to avoid condensation on windows). If necessary, use a dehumidifier to lower the relative humidity.
- Reduce the amount of stored materials, especially items that are no longer used. Molds grow on fabrics, paper, wood and practically anything that collects dust and holds moisture.

Mold-proofing your home, room by room

Basement or crawl space

- Reduce the amount of clothes, paper and furnishings stored in the basement. Discard badly damaged materials. Eliminate clutter to improve air circulation. Only washable items should be stored.

- Dehumidify the basement during the warm months.

- Avoid carpets on slab-on-grade or below grade floors.

- Periodically clean the drain in your basement floor. Use half a cup of bleach, let it stand for a few minutes, then flush with plenty of water. Keep the drain trap filled with water.

- Avoid standing water. Keep sump pits covered (you can use plywood wrapped with plastic).

- Regularly clean and replace furnace filters. Use a pleated one-inch filter, not a coarse filter.

- If you have a heat recovery ventilator (HRV), clean the filter inside the HRV often.

- If you notice molds or signs of dampness, such as water on your windows or wet spots elsewhere, do not humidify. Disconnect furnace humidifiers that are no longer used.

- If you have electric baseboards, vacuum the units, or have a professional clean them for you.

Laundry areas

- Check that your clothes dryer exhausts to the outside.

- Remove lint every time you use the dryer.

- Don’t hang-dry laundry indoors.

- Dry your laundry tub and washing machine after you use them.

Bathrooms

- Check the bathroom fan to make sure it exhausts to the outside.

- Turn the bathroom fan on when you shower. Keep it running for a few minutes after you finish your shower.

- Take short showers.

- Keep surfaces that get wet, such as the walls around the bathtub and shower, clean and dry.

- If there is a carpet in your bathroom, remove it.

- Check for water leaks.

- Keep drains in good shape by removing debris from them.

To clean a drain:

- Pour a handful of baking soda into it.
- Add a cup of vinegar.
- Put the plug in the drain.
- Let the vinegar and baking soda work for about 20 minutes.
- Run fresh water into the drain.

If the drain is still clogged, use a small plumbing snake.

Kitchen

- If the fan over your stove exhausts outside, use it when you cook.
- Minimize open boiling.
- Keep your drains in good shape. Follow the steps in the Bathrooms section above.
- There's a drip pan at the back of the refrigerator. Pull the refrigerator out to clean the drip pan. At the same time, vacuum dust from the coils at the back of the refrigerator.
- Check under the kitchen sink to make sure there are no leaks.
- Take out the garbage daily to prevent odours and spoiling.

Closets and bedrooms

- Get rid of clothes and other stored items that you don't use. Keeping your closets and bedrooms tidy makes it easier for air to circulate — and harder for mold to grow.

Other parts of the home

- A dehumidifier helps to reduce moisture in the home during the warmer months. Close the windows when the dehumidifier is running.
- When family and friends come into the home, have them take off their shoes.
- Vacuum often. If you are buying a vacuum cleaner, try to get one with a HEPA filter. (See below).
- Clean hard floors with a damp mop.
- Do not bring in furniture, clothing, books etc. that have been stored in a moldy place into your home.

- Cut down the number of potted plants in the house—soil is a good place for mold.

Exterior

- Regularly check the condition of the roof and exterior finish for any places where water might enter.
- Make sure that eavestroughs and downspouts are connected and working properly and that they are free of debris.
- Install downspout extensions to lead water away from the building.
- Deal promptly with any problems that you find.

Frequently asked questions about mold

Should I have my house air tested for mold?

This is the question most frequently asked by homeowners who think their home may have a mold problem. Testing is generally not recommended for homeowners. Testing of moldy materials or an air sample identifies the types of molds that may be present but does not identify the cause/source of moisture. The type of mold does not change the procedures for cleaning up areas of mold less than 3 square meters. You have to clean up the mold and correct the problem irrespective of the type of mold. The cost of testing may be better spent hiring a professional investigator or fixing the problem.

Testing of a moldy material involves sending a swab, an imprint on a Scotch tape or a piece of the material to a competent laboratory. Air sampling requires specialized equipment. An air sample typically captures mold spores in a period of minutes. Since replicate samples must be taken due to variations in the airborne molds over time (even hours) and compared with outdoor samples, air testing is both expensive and time-consuming. Interpretation of test results may not be very useful, since there are no advocated "safe levels" of indoor molds and the results will not tell the health risks from the molds.

The air feels dry — can I humidify?

Before you add moisture to the air, measure the relative humidity. Air that feels dry may not be really dry. It may be moldy. High relative humidity (over 45 per cent) promotes the growth of molds and dust mites. The moisture in the air may condense on colder exterior walls where molds start to grow.

If your physician has advised you to use a humidifier in your child’s bedroom at night, monitor the relative humidity. Turn the humidifier on and off as necessary. In the morning, take steps to make sure the room gets dry. Clean and empty the humidifier after each use.

What advantages do HEPA vacuums provide?

Ordinary vacuums capture large particles only — small mold spores pass through the vacuum into the air. HEPA vacuums have special filters that capture small particles. A central vacuum cleaner which is exhausted to the outside also removes mold spores. A regular portable vacuum is useful only if its exhaust goes outside the home. Vacuuming

removes settled dust that contains an accumulation of mold spores over time. Reducing the settled dust reduces molds.

Vacuuming with any vacuum cleaner (ordinary, central or HEPA) stirs dust and mold during the process. Wear a dust mask so you will not be breathing more mold.

Is vacuuming with a HEPA or externally exhausted vacuum cleaner recommended for serious mold problems only?

Vacuum regularly with a HEPA or externally exhausted vacuum cleaner to prevent the ongoing accumulation of dust and molds. The need for HEPA or external exhaust vacuuming increases with the severity of the mold problem.

If a furnishing has been wet at some time in the past or has been exposed to dampness over a prolonged period of time, vacuuming with HEPA or externally exhausted vacuum is unlikely to remove the mold growing beneath the surface. It is better to discard the item.

Where do you find a HEPA vacuum cleaner?

Vacuum cleaner dealers carry HEPA vacuums. Consider purchasing one as an upgrade to what you may be using. A HEPA vacuum is a good investment in the long term whether you have mold or not. A generic canister HEPA vacuum cleaner costs approximately $300. Brand name products of the same type may cost more. You may inquire if the dealer has a HEPA vacuum cleaner to rent. Contractors who clean up or renovate houses for mold should also have this equipment.

Does painting over a moldy surface take care of the mold?

Painting over mold only masks the problem. Paint does not kill the mold nor stop it from growing. Surfaces that are washable should be cleaned with a detergent solution, following the procedure suggested above, then allowed to dry. If you are going to paint, remove mold first.

Does cleaning stop the mold growth?

Mold will reappear until its source of moisture is removed. High moisture levels that are not corrected can make the molds grow back quickly. Cleaning is only a temporary but essential measure.

You can help by making a conscious effort to keep the home dry. Obviously, water must be prevented from entering the home. But you can help by controlling moisture that you produce.

How does one clean clothes that are moldy?

Non-washable clothing can be dry cleaned.

Wash clothes with a detergent solution to which a cup of bleach is added. Make sure the detergent you use does not contain ammonia. Repeat as necessary until the moldy odour is gone.

Clothes and other items that have been cleaned should be stored in sealed plastic bags to prevent re-contamination.