



mold and moisture

Keeping your home free from mold
and moisture problems



Mold and moisture



Mold is a type of fungus. Mold spores are found in both the indoor and outdoor air. They will grow if they find the right conditions.

Mold needs three conditions to grow:

1. Moderate temperatures
2. Nutrients from organic matter
3. Moisture

Mold can start to grow on building materials and furnishings if there is too much moisture. Building materials and furnishings are often coated with dust and made from wood, which are types of organic matter. Mold grows by feeding on organic matter and damages the materials it grows on.



Mold in your home can cause health problems.

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Health effects

Health effects from mold can vary greatly from person to person. Healthy people can be affected by mold. Damp environments may increase the risk of developing asthma and respiratory infections. Symptoms can include:

- Coughing
- Runny nose
- Wheezing
- Burning eyes
- Worsening of allergies or asthma
- Skin rash
- Sore throat
- Shortness of breath
- Development of asthma in some children

Molds can produce substances that are harmful to your health. It does not matter what the mold looks like. Allergens and irritants from mold can cause illness. Indoor mold growth should be removed promptly.



Some people have more severe reactions

- Children are more likely to suffer from respiratory illnesses, affecting airways.
- People with asthma and allergies may experience worsening symptoms.
- People with weakened immune systems, including those who have HIV, are on chemotherapy, or had an organ transplant, may be at greater risk for mold infections.

Anyone with concerns about health effects from a moldy environment should contact their healthcare provider.



Living in moldy or damp environments can contribute to the development of asthma in children.

Home investigation

To find a mold problem you can start by using your eyes and nose to find signs of excess moisture and mold growth. You may be able to find the mold through a careful inspection, including in hidden areas.

Signs of mold

- Mold can have a cottony, velvety, granular, or leathery texture.
- Mold color can vary from white, gray, brown, black, green, or other colors.
- Mold damage may look like discoloration or staining on the surface of building materials or furnishings.
- Mold odors may smell 'musty' or 'earthy'.



Signs of moisture or water damage

- Water leaks
- Standing water
- Water stains
- Condensation problems

Search behind and underneath furnishings, stored items, and building materials (for example, under carpet and pad, wallpaper, vinyl flooring, sink cabinets, or dry wall). Check hidden areas, like attics, crawl spaces, and inside areas with plumbing.



Common Sources of Mold and Water



- 1 Leaking roofs and ice dams.
- 2 High humidity in bathrooms and kitchen.
- 3 Leaking pipes.
- 4 Condensation on windows and exterior walls.
- 5 Flooding in basement.
- 6 Pooling water at foundation.

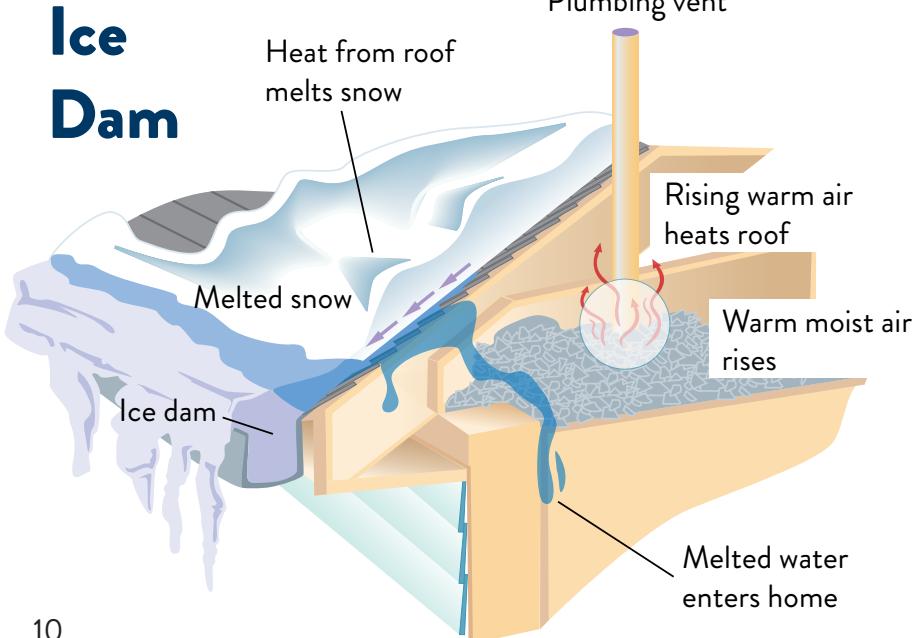
Moisture in your home

Mold needs water to grow. Controlling moisture in your home is the best way to prevent mold problems.



Repair leaks and spills quickly

- Periodically check plumbing, roofing, foundations, gutters, attic, crawl spaces, and sump pumps.
- Dry wet materials in 24 – 48 hours to avoid mold growth.
- Insulate and seal air leaks between the attic and the house to prevent ice dams.



Divert water away from the house

- Clean and maintain gutters.
- Slope the ground and sidewalks away from the foundation.
- Install and use a sump pump.

Reduce condensation

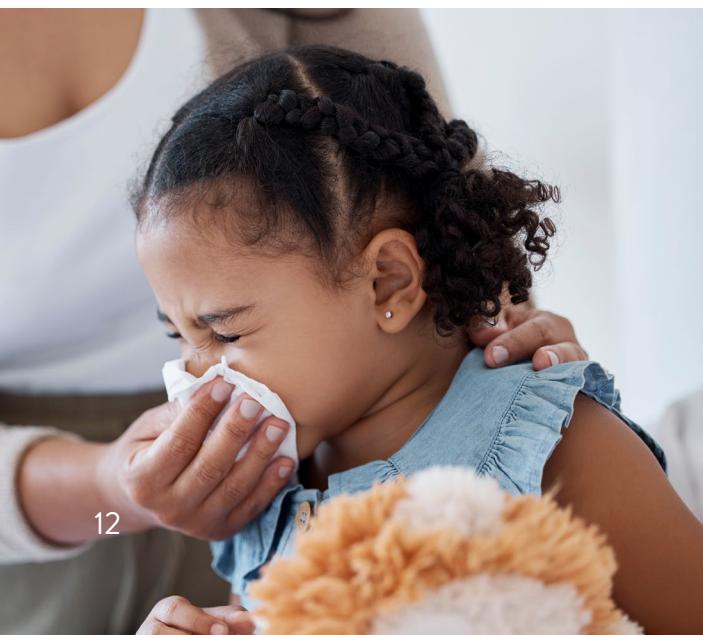
- Install and use exhaust fans in the bathrooms and kitchen that are ducted to the exterior.
- Maintain appliances so they vent outside (water heater, gas fireplaces, furnaces, and clothes dryers).
- Insulate or seal cold spots. For example, insulate water pipes that are by exterior walls.
- Reduce use of humidifiers.
- Use a dehumidifier.
- Raise the temperature and increase air circulation to colder parts of the home.

Mold testing

Many people want to test their home for mold. In most situations, MDH does not recommend mold testing because:

- Proper mold testing is expensive.
- There is no health based standard for mold levels in the air.

If you see or smell mold in your home, you know you have a mold problem. In order to get a good idea of the problem, several types of tests are needed. It is usually better to spend the money used on testing to solve the moisture problem and clean up the mold.



Everyone reacts differently to mold. There is not enough research to determine how much mold is safe.

MDH recommends that you consider any mold growing indoors a potential health hazard. Color does not matter — green, red, black.

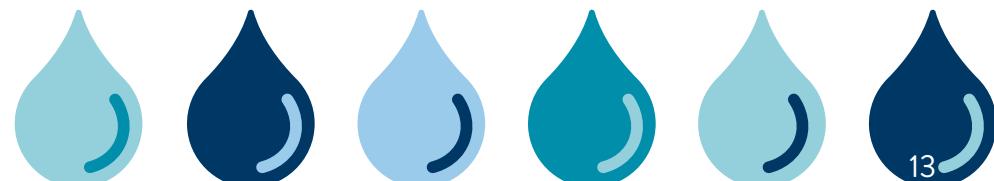


Seeing any mold growing inside is a problem.

There are some situations where testing may be valuable:

- To confirm a material has mold growth.
- To document clean-up has met expectations.

In these cases it is important to use a skilled investigator. They will interpret the results for you and help you reach a decision. Testing should not be a substitute for a good visual inspection.



Mold removal

Cleaning mold can be a do-it yourself project when the project is small. For large or complex problems, a professional is recommended.

Protect yourself

Wear personal protective equipment (PPE) when handling or working around mold contaminated materials. The following equipment should be considered:



Rubber Gloves



Safety Goggles



**N95 or N100
Respirator**



**Outer
Clothing**



Protect others and the building

When cleaning larger mold problems, it's important to protect other people in the building and prevent contamination of other areas. The following work practices are recommended:

- Furnishings and other items are removed from the work area.
- Moldy material is enclosed in plastic bags or sheets before carrying them through the home.
- The work area is separated from the rest of the home using plastic sheeting.
- Air supply and return vents are covered in the work area.
- Use a fan to pull contaminated air out of the work area and exhaust it outdoors.
- An air scrubber can be operated in the area.
- Outer layer of work clothing is removed inside the work area and washed separately, or bag and discard the clothing.

Clean-up steps

- 1 Identify and fix the moisture problem**
- 2 Dry wet materials**
- 3 Remove mold growth**
- 4 Optional: Treat with a disinfectant/sanitizer**
- 5 Remain on mold alert**
- 6 Rebuilding**

1 Identify and fix the moisture problem

This is a critical step. If you don't fix the moisture problem the mold will likely return. Refer to the section on *Home investigation*.

2 Dry wet materials

Begin drying as soon as possible. You can dry the materials using wet/dry vacuums, dehumidifiers, and fans. Materials dried quickly, within 24 – 28 hours, will have a lower chance to grow mold. Porous materials contacted by sewage should always be thrown out.

3

Remove mold growth

Your approach to removing mold growth depends on whether the type of material is porous.

Porous materials should be bagged and thrown away if they are growing mold. Some examples include:



Carpet



Drywall



Paper



Upholstery



Particle Board



Insulation

Non-porous and semi-porous materials can be cleaned if they are structurally sound. Some examples include:



Glass



Concrete



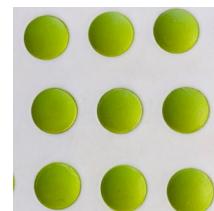
Metal



Solid
Wood



Tile



Hard
Plastic



Steps for cleaning mold:

1. Remove the physical mold growth. Scrub the surface with a stiff brush, hot water, and household detergent.
2. Collect the cleaning solution. For example, you can use paper towels, wet/dry vacuum, sponge, or a mop.
3. Rinse area with clean water.
4. Dry the area completely.

4

Optional: Treatment with a disinfectant/sanitizer

After cleaning has removed the mold growth, a disinfecting or sanitizing product may be used to kill mold, if missed by steps 1 – 3. Bleach is readily available but there are "greener" and "healthier" alternatives. **If you choose to use bleach, handle bleach with caution.** Never mix bleach with other chemicals and only use it in well-ventilated areas. Protect your eyes and skin.

If the water damage and mold growth are due to overland flooding or sewage, then use a disinfectant to treat the cleaned surfaces.

Steps for applying bleach:

1. Dilute 1/4 to 1/2 cup bleach per gallon of water.
2. Apply to the area with a sponge or rag. Do not apply too much water to the area.
3. Collect excess bleach solution.
4. Allow at least 30 minutes before rinsing the area.
5. Dry the area completely.

5

Remain on mold alert

Keep an eye out for signs of moisture problems or mold growth. If the mold returns, fix the moisture problem and repeat the cleaning steps again.

6

Rebuilding

Reconstruction needs to wait until the materials are completely dry. This may take several days, weeks, or even months.



Resources

MDH does not provide inspection or testing services and we advise people to investigate potential mold problems on their own first. We can provide technical advice by phone or email.

Homeowners can hire indoor air quality service providers to assist in investigating and correcting the mold problem. Professionals may have useful tools such as moisture meters, scoping cameras, and infrared cameras.

There are also mold remediation professionals that specialize in cleaning and removing mold. Neither Minnesota or any federal agency licenses or certifies mold investigators and remediaters.



Scan for information on
selecting an IAQ
consultant

Renters

Generally, the landlord is responsible for controlling moisture problems and removing mold, unless it is an issue related to the tenant's behavior. Renters can address some minor moisture problems themselves.

Tenants and landlords should work cooperatively to investigate and correct moisture and mold problems. If the owner is unwilling to help, the renter may seek outside advice. MDH does not inspect rental properties. How local agencies respond to complaints varies throughout the state.

If the case cannot be addressed with a local building, housing, or health inspector, a renter may wish to contact an attorney or a tenant's organization to discuss legal options.



Scan for MN Attorney
General's publication
"Landlords and Tenants:
Rights and Responsibilities"



Scan for
information on
mold

Indoor Air Unit
PO Box 64975
St Paul, MN 55164-0975
651-201-4601
health.indoorair@state.mn.us

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