



Centers for Disease Control and Prevention

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Facts about *Stachybotrys chartarum* and Other Molds

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I heard about "toxic molds" that grow in homes and other buildings. Should I be concerned about a serious health risk to me and my family?

The term "toxic mold" is not accurate. While certain molds are toxigenic, meaning they can produce toxins (specifically mycotoxins), the molds themselves are not toxic, or poisonous. Hazards presented by molds that may produce mycotoxins should be considered the same as other common molds which can grow in your house. There is always a little mold everywhere - in the air and on many surfaces. There are very few reports that toxigenic molds found inside homes can cause unique or rare health conditions such as pulmonary hemorrhage or memory loss. These case reports are rare, and a causal link between the presence of the toxigenic mold and these conditions has not been proven.

In 2004 the Institute of Medicine (IOM) found there was sufficient evidence to link indoor exposure to mold with upper respiratory tract symptoms, cough, and wheeze in otherwise healthy people; with asthma symptoms in people with asthma; and with hypersensitivity pneumonitis in individuals susceptible to that immune-mediated condition. The IOM also found limited or suggestive evidence linking indoor mold exposure and respiratory illness in

otherwise healthy children. In 2009, the World Health Organization issued additional guidance, the [WHO Guidelines for Indoor Air Quality: Dampness and Mould](http://www.euro.who.int/document/E92645.pdf)  [PDF - 2.52 MB] (<http://www.euro.who.int/document/E92645.pdf>)  (<http://www.cdc.gov/Other/disclaimer.html>). Other recent studies have suggested a potential link of early mold exposure to development of asthma in some children, particularly among children who may be genetically susceptible to asthma development, and that selected interventions that improve housing conditions can reduce morbidity from asthma and respiratory allergies, but more research is needed in this regard.

A common-sense approach should be used for any mold contamination existing inside buildings and homes. The common health concerns from molds include hay fever-like allergic symptoms. Certain individuals with chronic respiratory disease (chronic obstructive pulmonary disorder, asthma) may experience difficulty breathing. Individuals with immune suppression may be at increased risk for infection from molds. If you or your family members have these conditions, a qualified medical clinician should be consulted for diagnosis and treatment. For the most part, one should take routine measures to prevent mold growth in the home.

How common is mold, including *Stachybotrys chartarum* (also known by its synonym *Stachybotrys atra*) in buildings?

Molds are very common in buildings and homes and will grow anywhere indoors where there is moisture. The most common indoor molds are *Cladosporium*, *Penicillium*, *Aspergillus*, and *Alternaria*. We do not have precise information about how often *Stachybotrys chartarum* is found in buildings and homes. While it is less common than other mold species, it is not rare.

How do molds get in the indoor environment and how do they grow?

Mold spores occur in the indoor and outdoor environments. Mold spores may enter your house from the outside through open doorways, windows, and heating, ventilation, and air conditioning systems with outdoor air intakes. Spores in the air outside also attach themselves to people and animals, making clothing, shoes, bags, and pets convenient vehicles for carrying mold indoors.

When mold spores drop on places where there is excessive moisture, such as where leakage may have occurred in roofs, pipes, walls, plant pots, or where there has been flooding, they will grow. Many building materials provide suitable nutrients that encourage mold to grow. Wet cellulose materials, including paper and paper products, cardboard, ceiling tiles, wood, and wood products, are particularly conducive for the growth of some molds. Other materials such as dust, paints, wallpaper, insulation materials, drywall, carpet, fabric, and upholstery, commonly support mold growth.

What is *Stachybotrys chartarum* (*Stachybotrys atra*)?

Stachybotrys chartarum (also known by its synonym *Stachybotrys atra*) is a greenish-black mold. It can grow on material with a high cellulose and low nitrogen content, such as fiberboard, gypsum board, paper, dust, and lint. Growth occurs when there is moisture from water damage, excessive humidity, water leaks, condensation, water infiltration, or flooding. Constant moisture is required for its growth. It is not necessary, however, to determine what type of mold you may have. All molds should be treated the same with respect to potential

health risks and removal.

Are there any circumstances where people should vacate a home or other building because of mold?

These decisions have to be made individually. If you believe you are ill because of exposure to mold in a building, you should consult your physician to determine the appropriate action to take.

Who are the people who are most at risk for health problems associated with exposure to mold?

People with allergies may be more sensitive to molds. People with immune suppression or underlying lung disease are more susceptible to fungal infections.

How do you know if you have a mold problem?

Large mold infestations can usually be seen or smelled.

Does *Stachybotrys chartarum* (*Stachybotrys atra*) cause acute idiopathic pulmonary hemorrhage among infants?

To date, a possible association between acute idiopathic pulmonary hemorrhage among infants and *Stachybotrys chartarum* (*Stachybotrys atra*) has not been proved. Further studies are needed to determine what causes acute idiopathic hemorrhage.

What if my child has acute idiopathic pulmonary hemorrhage?

Parents should ensure that their children get proper medical treatment.

What are the potential health effects of mold in buildings and homes?

Mold exposure does not always present a health problem indoors. However some people are sensitive to molds. These people may experience symptoms such as nasal stuffiness, eye irritation, wheezing, or skin irritation when exposed to molds. Some people may have more severe reactions to molds. Severe reactions may occur among workers exposed to large amounts of molds in occupational settings, such as farmers working around moldy hay. Severe reactions may include fever and shortness of breath. Immunocompromised persons and persons with chronic lung diseases like COPD are at increased risk for opportunistic infections and may develop fungal infections in their lungs.

In 2004 the Institute of Medicine (IOM) found there was sufficient evidence to link indoor exposure to mold with upper respiratory tract symptoms, cough, and wheeze in otherwise healthy people; with asthma symptoms in people with asthma; and with hypersensitivity pneumonitis in individuals susceptible to that immune-mediated condition. The IOM also found limited or suggestive evidence linking indoor mold exposure and respiratory illness in otherwise healthy children.

How do you get the molds out of buildings, including homes, schools, and places of employment?

In most cases mold can be removed from hard surfaces by a thorough cleaning with commercial products, soap and water, or a [bleach solution \(/mold/stachy.htm#note\)](/mold/stachy.htm#note) of no more

than 1 cup of bleach in 1 gallon of water. Absorbent or porous materials like ceiling tiles, drywall, and carpet may have to be thrown away if they become moldy. If you have an extensive amount of mold and you do not think you can manage the cleanup on your own, you may want to contact a professional who has experience in cleaning mold in buildings and homes. It is important to properly clean and dry the area as you can still have an allergic reaction to parts of the dead mold and mold contamination may recur if there is still a source of moisture.

If you choose to use bleach to clean up mold:

- Never mix bleach with ammonia or other household cleaners. Mixing bleach with ammonia or other cleaning products will produce dangerous, toxic fumes.
- Open windows and doors to provide fresh air.
- Wear non-porous gloves and protective eye wear.
- If the area to be cleaned is more than 10 square feet, consult the U.S. Environmental Protection Agency (EPA) guide titled *Mold Remediation in Schools and Commercial Buildings*. Although focused on schools and commercial buildings, this document also applies to other building types. You can get it by going to the EPA web site at http://www.epa.gov/mold/mold_remediation.html (http://www.epa.gov/mold/mold_remediation.html) [ⓘ](http://www.cdc.gov/Other/disclaimer.html) (<http://www.cdc.gov/Other/disclaimer.html>).
- Always follow the manufacturer's instructions when using bleach or any other cleaning product.

What should people do if they determine they have *Stachybotrys chartarum* (*Stachybotrys atra*) in their buildings or homes?

Mold growing in homes and buildings, whether it is *Stachybotrys chartarum* (*Stachybotrys atra*) or other molds, indicates that there is a problem with water or moisture. This is the first problem that needs to be addressed. Mold growth can be removed from hard surfaces with commercial products, soap and water, or a [bleach solution \(/mold/stachy.htm#note\)](/mold/stachy.htm#note) of no more than 1 cup of bleach in 1 gallon of water. Mold in or under carpets typically requires that the carpets be removed. Once mold starts to grow in insulation or wallboard, the only way to deal with the problem is by removal and replacement. We do not believe that one needs to take any different precautions with *Stachybotrys chartarum* (*Stachybotrys atra*), than with other molds. In areas where flooding has occurred, prompt drying out of materials and cleaning of walls and other flood-damaged items with commercial products, soap and water, or a [bleach solution \(/mold/stachy.htm#note\)](/mold/stachy.htm#note) of no more than 1 cup of bleach in 1 gallon of water is necessary to prevent mold growth. Never mix bleach with ammonia or other household cleaners. If a home has been flooded, it also may be contaminated with sewage. (See: [After a Hurricane or Flood: Cleanup of Flood Water \(http://emergency.cdc.gov/disasters/floods/cleanupwater.asp\)](http://emergency.cdc.gov/disasters/floods/cleanupwater.asp)) Moldy items should be removed from living areas.

How do you keep mold out of buildings and homes?

As part of routine building maintenance, buildings should be inspected for evidence of water damage and visible mold. The conditions causing mold (such as water leaks, condensation, infiltration, or flooding) should be corrected to prevent mold from growing.

Specific Recommendations:

- Keep humidity levels as low as you can—no higher than 50%—all day long. An air

conditioner or dehumidifier will help you keep the level low. Bear in mind that humidity levels change over the course of a day with changes in the moisture in the air and the air temperature, so you will need to check the humidity levels more than once a day.

- Use air conditioner or a dehumidifier during humid months.
- Be sure the home has adequate ventilation, including exhaust fans in kitchen and bathrooms.
- Use mold inhibitors which can be added to paints.
- Clean bathroom with mold-killing products.
- Do not carpet bathrooms.
- Remove and replace flooded carpets.

I found mold growing in my home; how do I test the mold?

Generally, it is not necessary to identify the species of mold growing in a residence, and CDC does not recommend routine sampling for molds. Current evidence indicates that allergies are the type of diseases most often associated with molds. Since the reaction of individuals can vary greatly either because of the person's susceptibility or type and amount of mold present, sampling and culturing are not reliable in determining your health risk. If you are susceptible to mold and mold is seen or smelled, there is a potential health risk; therefore, no matter what type of mold is present, you should arrange for its removal. Furthermore, reliable sampling for mold can be expensive, and standards for judging what is and what is not an acceptable or tolerable quantity of mold have not been established.

A qualified environmental lab took samples of the mold in my home and gave me the results. Can CDC interpret these results?

Standards for judging what is an acceptable, tolerable or normal quantity of mold have not been established. If you do decide to pay for environmental sampling for molds, before the work starts, you should ask the consultants who will do the work to establish criteria for interpreting the test results. They should tell you in advance what they will do or what recommendations they will make based on the sampling results. The results of samples taken in your unique situation cannot be interpreted without physical inspection of the contaminated area or without considering the building's characteristics and the factors that led to the present condition.

Summary

In summary, *Stachybotrys chartarum* (*Stachybotrys atra*) and other molds may cause health symptoms that are nonspecific. At present there is no test that proves an association between *Stachybotrys chartarum* (*Stachybotrys atra*) and particular health symptoms. Individuals with persistent symptoms should see their physician. However, if *Stachybotrys chartarum* (*Stachybotrys atra*) or other molds are found in a building, prudent practice recommends that they be removed.

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