

Stachybotrys chartarum (atra): A mold that may be found in water-damaged homes

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Fungi: Fungi are common in nature and serve a central role as breakdown agents for organic matter. They contain fragments, or spores, which are found in virtually every home and building (Jarvis).

Stachybotrys chartarum: *Stachybotrys chartarum* (SC) is a greenish black fungus that grows on material with a high cellulose and low nitrogen content, such as fiberboard, gypsum board, paper, dust, and lint, that becomes chronically moist or water damaged due to excessive humidity, water leaks, condensation, water infiltration, or flooding. No one knows how often this fungus is found since buildings are not routinely tested for its presence. However, one study in Southern California found it in 2.9% of 68 homes (Kozak). *S. chartarum* may (under specific environmental conditions) produce several toxic chemicals called mycotoxins. These chemicals are present on the spores and the small fungus fragments that are released into the air. Although spores and other parts of this fungus are usually trapped in a wet, slimy mass of fungal growth, many health officials are concerned that spores may become airborne when the fungus dies and dries up. Because *S. chartarum* spores are very small, some may be drawn into the lungs when airborne spores are inhaled.

Health Effects: The health effects of *Stachybotrys chartarum* were first noted as diseases in Russian and Eastern European farm animals that ate moldy hay. The first reported human effects were seen in agricultural workers who handled the moldy straw or hay that was affecting the farm animals (Jarvis). After consuming contaminated cereal grains, people experienced symptoms included burning sensations in the mouth, nausea, vomiting, diarrhea and abdominal pain (Schiefer). SC in humans is much less common than in animals, and no lethal cases have been reported (Jarvis).

Much less is known about SC when it occurs in indoor environments, such as homes or office buildings. In general, the intensity of exposure and health effects from SC in such environments are much less severe than those in farm animals and workers handling contaminated hay or straw (New York Panel).

If SC spores are released into the air, there is a potential for humans to develop symptoms such as coughing, wheezing, runny nose, irritated eyes or throat, skin rash, or diarrhea. There are a few reports in the scientific literature of improvement of symptoms when people left an area where SC (Croft, Johanning) or other molds (Auger) were found, or after moldy materials were removed from a dwelling or workplace.

It is theorized that the above symptoms may result from an allergic response to the SC, or from toxins produced by SC or from another environmental agent (New York panel). However, it is difficult to show that these types of symptoms are due to SC for several reasons:

- 1) When buildings are sampled, usually several other molds are found in addition to SC, and these molds could also cause symptoms;
- 2) These symptoms are very nonspecific and can be related to other allergens (such as dust mites, animal hair, pollen, etc.), or to infectious agents such as bacteria or viruses;
- 3) Currently, research has not clarified what level of SC is necessary to produce symptoms.

A task group of the World Health Organization concluded that "an association between trichothecenes (the type of mycotoxins produced by SC and some other molds) and human disease is possible, however only limited data is available . . . conclusive evidence in humans has not been shown" (WHO).

Laboratory Tests for SC: An antibody test for SC has been used by a few physicians. However, this laboratory test is not always positive in the presence of SC. In one study of 48 people possibly exposed to SC, only 4 had an elevated antibody test for it. (Johanning) In addition, since we do not know how long the antibody may remain positive after SC exposure, it is also possible that a positive test may be evidence of an earlier encounter with SC, not a current one.

A New York expert panel on SC concluded "Laboratory tests for immune markers associated with SC exposure are not helpful at this time. Research should be pursued to refine such tests and characterize them more fully" (New York panel, 1993).

Prevention of Mold in Dwellings: As part of routine building maintenance, buildings should be inspected for evidence of water damage and visible mold. Conditions causing mold (such as water leaks, condensation, infiltration, or flooding) should be

corrected.

Correction of Visible Mold: Visual identification of black mold in a chronically wet area is considered to be a possible indicator of SC or other mold. The New York City Department of Health convened an expert panel on SC in May 1993, which recommended different methods of mold removal depending on the size of the mold problem. Their recommendations are summarized here:

1) **Level I:** *If the area of mold is 2 square feet or less.*

A) The area can be cleaned by individuals who have received training on proper clean up methods, protection and potential health hazards. These individuals should be free from asthma, allergy and immune disorders. Gloves and a half face respirator should be worn.

B) Contaminated material should be placed in a sealed plastic bag before taking it out of the building. This will prevent contamination of other parts of the building.

C) Surrounding areas should be cleaned with household bleach.

2) **Level II:** *If the area of mold is more than 2 square feet but less than 30 square feet.* The recommendations are the same as Level I, with the added precaution that moldy materials should be covered with plastic sheets and taped before any handling or removal is done. For instance, a moldy panel of gypsum board (measuring 4 feet by 8 feet) wall would need to have plastic sheeting taped over the affected area on the wall before the wallboard is cut to remove the contaminated section. Once cut from the wall, that section should be placed within another layer of plastic before it is carried through the building for disposal.

3) **Level III:** *If the area of mold is more than 30 square feet.* Personnel trained in handling of hazardous materials (such as asbestos) are necessary. Specific recommendations for hazardous materials workers can be found in the New York document.

4) **Level IV:** *If SC is shown to be present in the heating, ventilation, or air conditioning system.* Recommendations are the same as for Level III.

Summary: In summary, SC and other molds may cause health symptoms that are nonspecific. At present there is no test that proves an association between SC and particular health symptoms. Individuals with persistent symptoms should see their physician. However, if SC or other molds are found in a building, prudent practice recommends that they be removed. The simplest and most expedient remediation that properly and safely removes mold should be used.

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