

# Wikipedia: Mold health issues

## Mold health issues

[http://en.wikipedia.org/wiki/Mold\\_health\\_issues](http://en.wikipedia.org/wiki/Mold_health_issues)

From Wikipedia, the free encyclopedia

Light micrograph of the hyphae and spores of the human pathogen *Aspergillus fumigatus*Molds are ubiquitous in nature, and mold spores are a common component of household and workplace dust. However, when mold spores are present in large quantities, they can present a health hazard to humans, potentially causing allergic reactions and respiratory problems.

Some molds produce mycotoxins that can pose serious health risks to humans and animals. Exposure to high levels of mycotoxins can lead to neurological problems and in some cases death. Prolonged exposure, e.g. daily workplace exposure, can be particularly harmful. The term toxic mold refers to molds that produce mycotoxins, such as *Stachybotrys chartarum*, and not to all molds in general.

The health hazards produced by mold have been associated with sick building syndrome.

## Contents [hide]

- 1 History
- 2 Health issues and symptoms
  - 2.1 Mold spores
  - 2.2 Mold-produced mycotoxins
- 3 Causes / Growing conditions
- 4 Remedies
- 5 Notes
- 6 References
- 7 See also
- 8 External links

## [edit] History

Since Biblical times it has been known that indoor mold growth can be a health hazard. (See Leviticus 14:39-47.) In the 1930s, mold was identified as the cause behind the mysterious deaths of farm animals in Russia and other countries. *Stachybotrys chartarum* was found growing on wet grain used for animal feed.

In the 1970s, building construction techniques changed in response to the energy crises. As a result, homes and buildings became more air-tight. Also, cheaper materials such as drywall came into common use. This combination of increased moisture and suitable substrates contributed to increased mold growth inside buildings.

Today, the agriculture industry keeps a close eye on mold and mycotoxin levels in grains in order to prevent the contamination of animal feed and human food supplies. In 2005 Diamond Pet Foods, a US pet food manufacturer, experienced a significant rise in the number of corn shipments containing elevated levels of aflatoxin. This mold toxin eventually made it into the pet food supply, and dozens of dogs died before the food could be recalled.

[edit] Health issues and symptoms

See also: Category:Fungal diseases

Environmental illnesses can be difficult for healthcare practitioners to diagnose. Those who are living in houses contaminated by the mold may not be able to smell any odor and may be unaware that the problem exists.

[edit] Mold spores

See also: spores, allergy, allergens, bioaerosol, and Allergic bronchopulmonary aspergillosis

Health problems associated with high levels of airborne mold spores include[1] allergic reactions, asthma episodes, irritations of the eye, nose and throat, infections, sinus congestion, and other respiratory problems. When inhaled, mold spores may germinate, attaching to cells along the respiratory tract and causing further problems in those with weak immune systems.

Another serious health threat from mold exposure is systemic fungal infection. Immunocompromised individuals exposed to high levels of mold, or individuals with chronic exposure paired with mycotoxin exposure may become infected. Sinuses and digestive tract infections are most common; lung and skin infections are also possible. Alcohol and mycotoxin production may result from the fungal growth, leading to myriad symptoms. Sudden food allergies and digestive problems can mislead diagnosis. Treatment can be long-term (many years). Systemic infection may be of the environmental mold itself, or by other common food-related molds consumed under a weakened immune system. A weakened immune system may also give rise to opportunistic infections, for example bacterial infection.

[edit] Mold-produced mycotoxins

Molds excrete liquids or gases as defecatory matter; not all can be detected by smell. Some molds generate toxic liquid or gaseous compounds, called mycotoxins. Of these molds, some only produce mycotoxins under specific growing conditions. Mycotoxins are harmful or lethal to humans and animals when exposure is high enough. Serious neurological problems can result from prolonged exposure to mycotoxins. One example of toxic mold is *Stachybotrys chartarum* which has been associated with sick building syndrome.

Some mycotoxins produced by molds are harmful to humans.[2]. Other mycotoxins cause immune system responses that vary considerably, depending on the individual. The duration of exposure is a key factor in triggering immune system response. Farm animals often die or suffer from mycotoxin poisoning. Mycotoxins resist decomposition from cooking, and remain in the food chain.

Human bodies can tolerate mycotoxins in small quantities. At what point they constitute a health hazard depends on each individual. Immune system reactions vary; the health effects of mycotoxin exposure include chronic fatigue and irritability, flu-like symptoms, respiratory problems, headaches, cognitive problems, and skin problems. A stressed immune system results in a weakened individual.

[edit] Causes / Growing conditions

Main article: Mold growth

Because common building materials are capable of sustaining mold growth, and mold spores are ubiquitous, mold growth in an indoor environment is typically related to an indoor water or moisture problem. Leaky roofs, building maintenance problems, or indoor plumbing problems can lead to mold growth inside homes, schools, or office buildings. Another common cause of mold growth is flooding.

Generally - removing one of the three requirements for mold reduces or eliminates the new growth of mold. These three requirements are 1) Moisture, 2) Food source for the mold spores (dust, dander, etc), and 3) Warmth (mold generally does not grow in cold environments).

HVAC systems can create all three requirements for significant mold growth. The A/C system creates a difference in temperature that allows/causes condensation to occur. The high rate of dusty air movement through an HVAC system may create ample sources of food sources for the mold. And finally, since the A/C system is not always running - the ability for warm conditions to exist on a regular basis allows for the final component for active mold growth.

Because the HVAC system circulates air contaminated with mold spores and sometimes toxins - it is vital to prevent any three of the environments required for mold growth. A) Highly effective return air filtration systems are available that eliminate up to 99.9% of dust accumulation (as compared to 5% elimination by typical HVAC air filters). These newer filtration systems usually require modification to existing HVAC systems to allow for the larger size of electrostatic 99.9% filters. However, thorough cleaning of the HVAC system is required before usage of high efficiency filtration systems will help. Once mold is established - the mold growth and dust accumulation must be removed. B) Insulation of supply air ducts helps to reduce or eliminate the condensation that ultimately creates the moisture required for mold growth. This insulation should be placed externally on the air ducts, because internal insulation provides a dust capture and breeding ground for mold.

[edit] Remedies

Main article: Mold assessment and remediation

The first step in solving an indoor mold problem is stopping the source of moisture. Next is to remove the mold growth. Common remedies for small occurrences of mold include:

Sunlight

Ventilation

Non-porous building materials

Household cleansers - especially bleach

Significant mold growth may require professional mold remediation and removal of affected building materials. A conservative strategy is to discard any building materials saturated by the water intrusion or having visible mold growth.

There are many ways to prevent mold growth; see ventilation issues in houses.

In extreme cases of mold growth in buildings, it may be easier to condemn the building rather than clean the mold to safe levels; see Deutsche Bank Building.

Certain contractors are capable of repairing mold damage - usually by removing the affected areas and eliminating the cause of the excess moisture.

There are also cleaning companies that specialize in Fabric Restoration - a process by which mold and mold spores are

removed from clothing to eliminate odor and prevent further mold growth and damage to the garments.

[edit] Notes

^ Mold: A Health Hazard (Release #1605-096). FEMA (November 8, 2005). Retrieved on 25 September 2007.

^ Ryan KJ; Ray CG (editors) (2004). Sherris Medical Microbiology, 4th ed., McGraw Hill, pp. 633–8. ISBN 0838585299.

[edit] References

De Chacon, Jeffrey R.. Building Hygiene: A New Area Of Concern For Safety Professionals. Best's Safety Directory. Retrieved on 21 December 2006.

Nelson, Berlin D. Stachybotrys chartarum: the toxic indoor mold. APSnet. American Phytological Society. Retrieved on 19 September 2005.

Questions and Answers on Stachybotrys chartarum and other molds. Air Pollution & Respiratory Health. National Center for Environmental Health. Retrieved on 19 September 2005.

[edit] See also

Mold assessment and remediation

Mold

Bioaerosol

Fungal diseases

Sick building syndrome

Building biology

Occupational asthma

Ventilation issues in houses

Indoor air quality

Environmental engineering

Environmental health

Occupational safety and health

[edit] External links

NIH: Environmental Health Perspectives Volume 108, Number 1, January 2000 : Mycotoxins: of Molds and Maladies

MSI Mold and Spore Information: Toxic Mold Symptoms

CDC: <http://www.cdc.gov/mold/default.htm>

US EPA: Mold Information - U.S. Environmental Protection Agency

US EPA: EPA Publication #402-K-02-003 "A Brief Guide to Mold, Moisture, and Your Home"

NIBS: Whole Building Design Guide: Air Decontamination

NPIC: Mold Pest Control Information - National Pesticide Information Center

Toxic Mold Research Studies

Mycotoxins in grains and the food supply:

<http://www.indianacrop.org/Mycotoxin.htm>

<http://cropwatch.unl.edu/aflatoxin.html>

<http://agbiopubs.sdstate.edu/articles/FS907.pdf>

Retrieved from "[http://en.wikipedia.org/wiki/Mold\\_health\\_issues](http://en.wikipedia.org/wiki/Mold_health_issues)"

Categories: [Building biology](#) | [Mycology](#) | [Industrial hygiene](#) | [Environmental engineering](#)

This page was last modified 08:07, 27 November 2007. All text is available under the terms of the GNU Free Documentation License. (See Copyrights for details.)

Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a U.S. registered 501(c)(3) tax-deductible nonprofit charity.

[Privacy policy](#) [About Wikipedia](#) [Disclaimers](#)