



Facts Regarding Mold on Wood Structural Building Components

Issues involving mold on building materials, whether during construction or in completed and occupied structures, have gained considerable media attention in recent years. Unfortunately, the emotion of these situations leads to actions unsupported by facts. Here are the facts about mold on lumber and wood structural building components.

HEALTH EFFECTS

Fact: Humans are exposed constantly to molds in the environment. Mold spores are in the air we breathe, the soil in our gardens, and in and around virtually every part of our home.

Fact: Exposure to mold can happen through skin contact, inhalation and ingestion. Framing lumber and structural building components in a newly finished house are typically encased by panels or siding on the outside and drywall on the inside—thus, there is virtually no chance for occupants in a home to be exposed to any mold on the wood through skin contact or ingestion. Inhalation exposure to this mold may be possible, but is extremely rare.

Fact: One testing company, GlobalTox, sampled several buildings with chronic water leaks and large amounts of enclosed mold. The company reported that mold concentrations in these buildings were similar to or less than the levels found outdoors. Given this fact, it is reasonable to infer that any small amounts of mold not remedied at the time of construction and enclosed in walls, floors, or ceilings will not have a large impact on the indoor air quality.

Fact: Adverse health effects from inhalation of mold spores in water-damaged buildings are not supported by available peer-reviewed reports in medical literature.

Fact: There is no health-based standard for exposure to mold. According to the Centers for Disease Control and Prevention (CDC): “There are very few case reports that toxic molds (those containing certain mycotoxins) inside homes 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 toxic mold and these conditions has not been proven.” The majority of common molds are not a concern to healthy individuals.



Fact: The CDC further reported in 2000—“At present there is no test that proves an association between *Stachybotrys chartarum* (or *Stachybotrys atra*, two different scientific names for the same mold) and particular health symptoms.”

GENERAL FACTS

Fact: Moisture content above 19 percent for approximately one week is required for significant surface mold growth to occur on lumber and/or wood structural building components. Lumber surface mold growth occurs on most species of wood when the moisture content by weight is between 20 and 28 percent.

Fact: Surface mold growth is a superficial phenomenon that does not affect the strength or long-term durability of the wood.

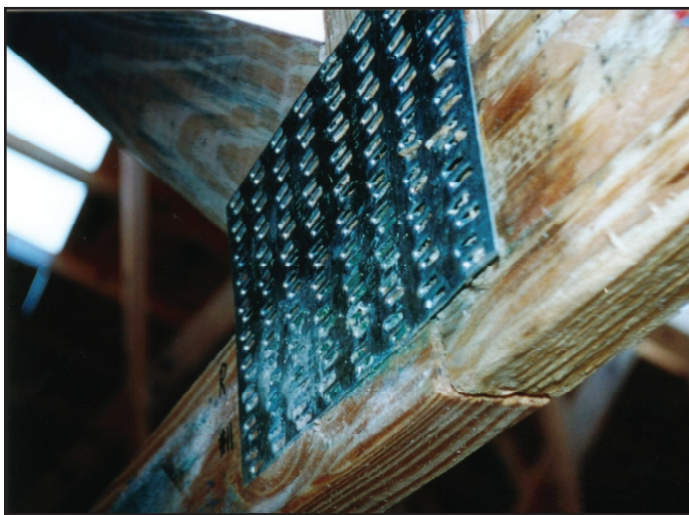
Fact: Wood decay fungi, on the other hand, require much higher moisture levels to grow, as the moisture content of the wood must be above the fiber saturation point (i.e., approximately 28 percent by weight, varying for different species) for more than one week.

Fact: Molds can grow on cloth, carpet, leather, wood, wallboard, household dust or anything that is made of organic material. Sustained mold growth requires moisture, organic material (a food source), and a suitable temperature generally in the range of 40° F to 100° F. Ideal temperatures for mold growth are between 68° F and 86° F. When one or more of these three conditions does not exist, the mold colony will become dormant. The easiest condition to control is moisture.

Fact: Any well-designed, well-constructed and well-maintained home, regardless of the materials used in its construction, will not support conditions suitable for the growth of mold. If built properly, the inside of the home (including the interior spaces and the building cavities) will stay dry enough to prevent mold spores from becoming active.

Fact: A few potential sources of unwanted moisture in buildings include: (1) improperly maintained A/C systems that can create excessive condensation, (2) plumbing leaks, (3) gaps in flashing, roofs, siding or masonry, (4) poorly sealed windows, (5) porous slabs and foundations, (6) inadequate drainage, (7) faulty roof drains and downspouts, and (8) poor ventilation and/or air circulation combined with high indoor humidity—from showers, cooking or other activities. All of these things can result in condensation that promotes mold growth.

Fact: Mold can occur naturally on the surface of structural wood components during both the manufacturing process and construction if the optimal temperature and moisture conditions exist. Surface molds, which come from a variety of sources (including airborne spores) feed off the sugars and starches that are readily available on the surface of the wood.



Fact: Mold on the surface of lumber does not cause rotting or otherwise affect the strength of wood framing. Mold is a symptom of high moisture which, if allowed to exist for prolonged periods, can be damaging to any structure and will promote the development of wood decay fungi.

Fact: Reasonable amounts of wetting can be expected during the typical construction process. Wood structural building components will dry out under dry outdoor weather conditions after the structure is put under roof, sheathed, sided and roughed-in (mechanicals) — assuming the structural components are not exposed to further wetting from rain.

Such drying must occur before the components are “closed-in” (e.g. covered up with insulation and drywall). Adequate conditioning of the interior of the building is required for the proper application of insulation and drywall, and may require additional heat and/or ventilation to speed up the process.

Fact: Before closing-in the structure, it is essential to allow wet building components a chance to dry. Good construction planning allows construction projects to be sequenced to protect all moisture-sensitive building materials, including structural components, from excessive wetting that could lead to mold growth.

Fact: Drying lumber, while reducing the likelihood of mold formation, does not guarantee the wood will remain free of mold. The lumber must remain dry in order to prevent mold growth.

Fact: Homes with exposed dirt crawl spaces and basements tend to have more airborne mold spores than homes that don't.

Fact: Although there is no evidence to support the claims that mycotoxins from certain mold spores are causing illness in humans, prudent avoidance is still advised.

Fact: Active mold growth indicates an underlying moisture problem that should be corrected. Moisture also promotes the growth of bacteria and dust mites that may cause illness by themselves or in concert with molds.



REMEDICATION OF MOLD ON STRUCTURAL BUILDING COMPONENTS

Fact: While mold does not affect the performance of the wood, the general public increasingly perceives it as a problem. Superficial mold can be easily removed by scrubbing with water and detergent followed by rinsing.

Recommendation: If mold on structural components is detected before close-in:

- Identify and correct any underlying moisture infiltration or exposure problems.
- Scrub the surface of the component with detergent and water, rinse and allow drying before covering, enclosing or painting.
- Remove and replace damaged building materials that cannot be cleaned.

Fact: The goal of mold remediation is the removal of most of the mold; it is not necessary to kill the mold. The mold cleanup is complete when the involved area is free of dust, and no residue transfers to a clean cloth or glove when wiped across the involved surface.

Fact: It is not necessary to test for mold once it has been identified. Testing air samples for mold is rarely useful in any building and is of no value in a new building during construction.

Fact: A permeable latex paint can be used to cover products that show residual staining or discoloration. Some paints contain zinc, which acts as an inhibitor of mold growth.

Fact: Mold spores cannot be permanently eradicated by cleaning or disinfecting. While such cleaning will remove spores present at the time of cleaning, it will not protect surfaces against mold spores that arrive at any time after the cleaning solution is gone.

REFERENCES, ADDITIONAL READING & TRAINING

American Lung Association

www.lungusa.org • 212/315-8700
Information on indoor air quality.

American Society for Testing and Materials (ASTM)

www.astm.org • 610/832-9585
ASTM Manual 40: Moisture Analysis and Condensation Control in Building Envelopes; 2001 and ASTM MNL 18: Manual on Moisture Control in Buildings, H. Trechsel (Ed.); 1994.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE)

www.ashrae.org • 800/527-4723
Information on mold and moisture management.

California Department of Health Services (CDHS)

www.cal-iaq.org
Indoor Air Quality Infosheets and related links.

Canada Mortgage and Housing Corporation (CMHC)

www.cmhc.ca • 613/748-2000
Several documents on mold-related topics available.

Carpet and Rug Institute (CRI)

www.carpet-rug.com • 706/278-3176
Carpet maintenance, restoration guidelines for water-damaged carpet, other carpet-related issues.

Centers for Disease Control and Prevention (CDC) National Center for Environmental Health (NCEH)

www.cdc.gov/mold/basics.htm • 800/232-4636
Information on health-related topics including asthma, molds in the environment, and occupational health. Questions and answers on *Stachybotrys chartarum* and other molds.

Council on Scientific Affairs (CSA)

www.cca-acc.com/mould/literature/pdf/blackmold.pdf
CSA Report 1-I-02 Subject:
Black Mold and Human Illness
Presented by: O. Edwin McClusky, MD, Chair

Canadian Wood Council

www.cwc.ca • 613/747-5544

Forintek Canada Corp.

www.forintek.ca • 604/222-5690

GlobalTox

www.globaltox.com • 519/766-1000

Health Canada

www.hc-sc.gc.ca/index_e.html

Search for a 1995 scientific report entitled *Fungal Contamination in Public Buildings: A Guide to Recognition and Management*. This report provides a protocol for investigating buildings with suspected fungal problems affecting human health.

NAHB Research Center

www.nahbrc.org • 800/638-8556

The Research Center has excellent information on mold and related construction topics. See ToolBase Services for documents on mold, moisture and leaks.

National Association of Mutual Insurance Companies (NAMIC)

www.moldupdate.com

This site provides current news related to the insurance industry.

New York City Department of Health & Mental Hygiene Bureau of Environmental & Occupational Disease Epidemiology

<http://home2.nyc.gov/html/doh/html/epi/moldrpt1.shtml>

Guidelines on Assessment and Remediation of Fungi in Indoor Environments.

Structural Building Components (SBC) Magazine

www.sbcmag.info/past/2003/03jan/moldconstruc.php

Nathan Yost, M.D. Building Science Corporation, Mold & Construction; January/February 2003. 608/271-1176

University of Minnesota

www.dehs.umn.edu/iaq.htm

The section on Indoor Air Quality provides background on terms, identification, and abatement of mold.

U.S. Environmental Protection Agency (EPA)

www.epa.gov/mold/moldresources.html

202/343-9370

U.S. EPA/Office of Radiation & Indoor Air
Indoor Environments Division
1200 Pennsylvania Ave., NW
Mail Code 6609J
Washington, DC 20460

Western Wood Products Association (WWPA)

www.wwpa.org/index_lumberandmold.htm

503/224-3930

The page on Mold and Wood Products contains the report *Mold, Housing and Wood (TG-2)* by Coreen Robbins, Ph.D. and Jeff Morrell, Ph.D.; 2002.

WTCA's Truss Technology Workshop: Mold & Structural Wood Components

ttw.sbcindustry.com • 608/274-4849

This workshop teaches the facts on mold and other fungi and how their presence affects structural wood components such as metal plate connected wood trusses. Participants will learn the conditions that lead to mold growth, how to remediate existing mold, why public attention to this issue has increased and some recommended steps to deal with mold.



To view a non-printing PDF of this document, visit www.sbcindustry.com/ttbmold.

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Truss Technology in Building

An informational series designed to address the issues and questions faced by professionals in the building construction process.

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