

Mold

Is it the next ASBESTOS?

Black mold is nothing new. It has been around in homes and in commercial buildings for years. However, in the last decade or so, there has been a significantly increased awareness of black mold throughout the construction industry. In fact, it is estimated that during the next decade mold growth will be one of the most serious environmental concerns the construction industry faces.

There are many reasons why mold has taken center stage. One popular theory as to why mold has generated so much recent interest is that today's commercial structures are built to much tighter tolerances than buildings in the past, particularly as energy costs have risen and energy efficient building design has become a necessity. As a result of improved engineering and technology,

today's buildings are much more airtight than those built just a few decades ago. As such, these buildings simply do not "breathe" as well as buildings did in the past. When such a structure has a leak, the continuous influx of moisture combined with the lack of ventilation can

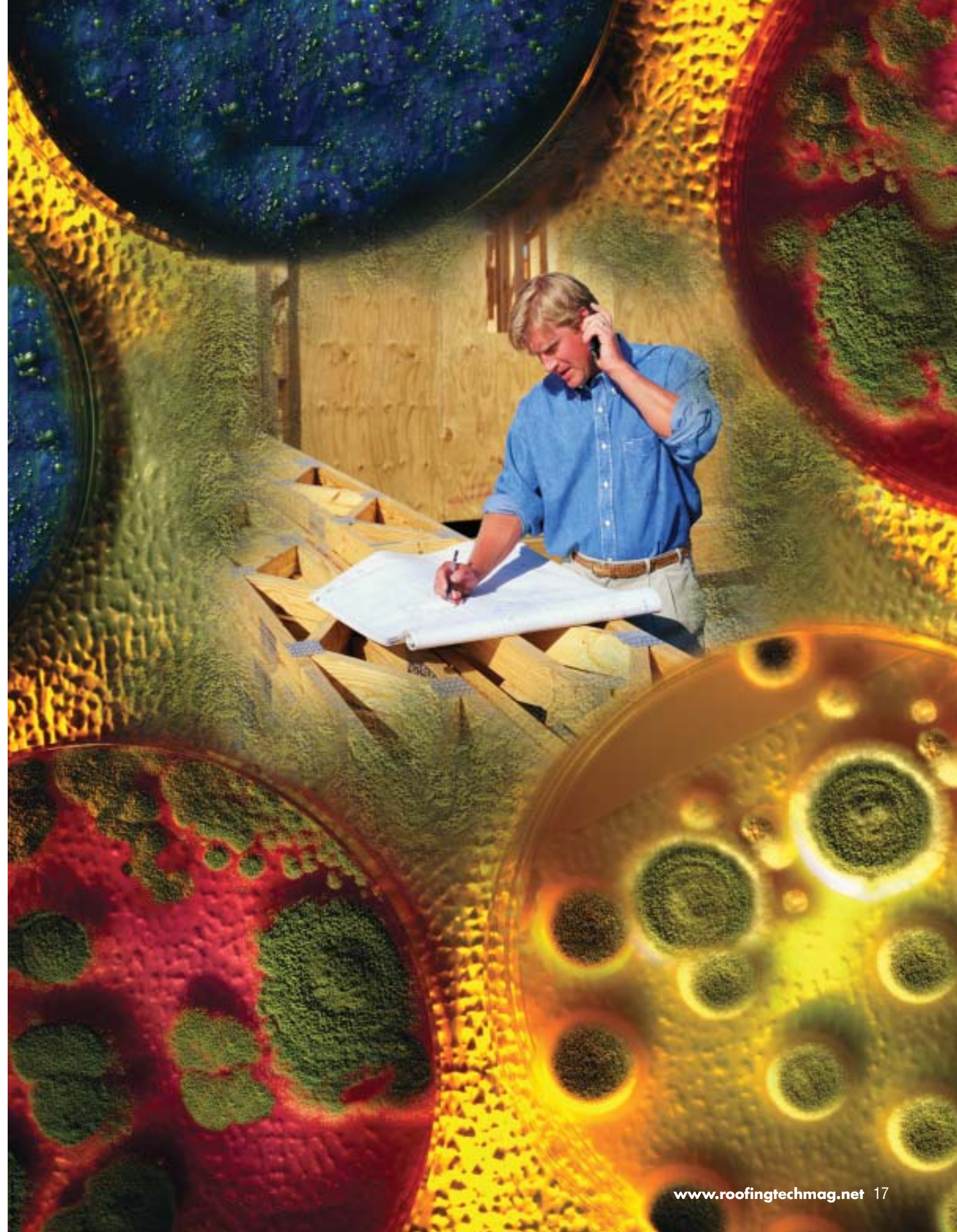
result in high humidity levels inside the building, which may be enough moisture to keep a colony of mold growing.

The Bad Actor

Estimates suggest that there are more than 100,000 known species of mold, and at least 1,000 of them are common in the U.S. Of those, the Center for Disease Control has identified about 25 different types of toxic mold – molds that emit chemicals called mycotoxins – which may cause health problems if present in high concentrations.

The most prominent of these bad actors are a fungus called *Stachybotrys chartarum* and a related species called *Stachybotrys atra* (or simply, Stachy), a greenish-black mold. Other common

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toxic molds are *Penicillium*, *Aspergillus* and *Fusarium*.

Stachy has been getting a lot of press lately. As is the case with most molds, Stachy looks black, but it is not the same mold that you might see in plain sight, say behind a washer or on the grout in a shower or bathroom. That's because Stachy does not grow where it is exposed to light and air. This mold needs an on-going water source (or high humidity) to grow and feeds on organic material with a high cellulose and low nitrogen content.

Instead of on visible surfaces, Stachy grows insidiously in



places like inside walls, in wood sub-floors and joists such as under a leaking toilet seal, under carpet installed on concrete floors, and above suspended ceilings, especially if there's a water leak from above.

Four conditions must be present for Stachy to grow and proliferate:

1. A long-term and continuous source of moisture (not a one-time wetting);
2. An organic material "food" source — any cellulose-containing materials such

as drywall, gypsum, wood and plywood, ceiling tiles, insulation, paint, paper, cardboard and some adhesives are all ideal food sources.

3. No ultraviolet light;

4. No ventilation.

Under these conditions, Stachy spores can grow and colonize, sometimes to the point where the mold is believed by some to become hazardous to human health and/or cause extensive property damage. While there are four conditions necessary for Stachybotrys to grow, it is the presence of moisture that is the most important. As long as moisture is present, the fungus will reproduce — so if your building is kept dry the mold will not grow. However, keeping your building dry and mold-free is not as easy as it sounds. In fact, according to the U.S. Environmental Protection Agency, one-third to one-half of all U.S. buildings have areas damp enough to support mold growth.

Impact on Health

To date, several studies on toxic black mold have been conducted with no conclusive findings to substantiate serious health effects. In fact, according to the Southwestern Insurance Information Services, no scientific studies have been performed that establish a direct relationship between mold contamination and health impacts.

That may be so, but many molds, or the mycotoxins they produce (some of which are known carcinogens), are believed to be the cause of a wide variety of ailments, including asthma, coughing, wheezing or breathing difficulties, runny nose, irritated eyes or throat, skin rashes, diarrhea, memory loss, hearing loss, dizziness and bleeding in the lungs, among others.

So if you are hearing about these types of ailments in your building, and if you think you have a mold problem, contact a professional testing company to come in and

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take air and physical samples that can be incubated and tested.

Getting Rid of Mold

Regardless of whether or not people in the building are experiencing adverse health issues, one thing is for sure: the presence of *Stachybotrys chartarum* or *Stachybotrys atra* or other molds in buildings virtually always indicates that there is a water leak or the presence of excessive moisture somewhere in the facility. Stachy, in particular, requires a fair amount of water and is considered a third-wave mold, meaning that in wet drywall for example, some of the more common species of mold are likely to appear first. If the drywall remains wet, *Penicillium* and *Aspergillus* may grow, followed eventually by Stachy.

Clearly, the most effective way to prevent mold contamination is by removing moisture from the equation and correcting any and all voids that allow water into the building envelope. In addition, it's a good idea to try to make sure that any building materials that get wet during construction are completely dry and free of any visible or active mold growth before the project is completed and the materials are "sealed" into the building.

The Importance of Roofing

A building's roof is usually the first suspect when tracking down leaks, but

keep in mind that leaks can occur from a wide variety of other sources including faulty or plugged-up drains, air-conditioning units, window and door jambs, leaky water pipes — the list goes on and on. At some point in the future it will be both important, and very difficult, to ascertain exactly when, how and why moisture first started entering the building envelope. What was the root cause of the problem?

If indeed the roof is suspected, other questions arise. Was the roof originally installed correctly, or did leaks occur due to building-owner neglect, poor roof installation workmanship, flawed building or roof-deck design, failed roofing materials, or the addition of new rooftop equipment that was not properly installed? This list of possibilities is extensive, and therein lies the problem for building owners.

As the person responsible for the building assets, there may be several things you can do to help minimize the potential for mold to grow in your facility.

1. Whenever you are having construction work done on your facility, whether that work is to replace the roof or put an extension on the existing building, consider hiring a full-time inspector throughout the project.
2. To the extent possible, make sure that any materials that get wet during construction are dry before they are sealed in place. As a practical issue, this may not always be possible as many construction projects continue in wet weather; however, minimizing the amount of wet materials that get sealed into the structure is generally beneficial.
3. When you are installing a new roof, consider having your roofing contractor provide a certified moisture survey once the roofing work is complete. This will let you know how much — if any — moisture is in the system from the start. The process should be repeated periodically to make sure



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that additional moisture is not being introduced into the roofing system.

4. If moisture is accumulating anywhere in the building envelope, e.g. around doors, windows, in the roof, etc., aggressively look for the source of the leak and have it fixed quickly. Also, you want to make sure that you document any changes or fixes that involve the roofing system.
5. Lastly, it is important to inspect your building's roof at least twice each year — in the early spring and in the late fall. There are a variety of things to look for during the roof inspection process (see "Tips to Extend the Life of Your Single-Ply Roof," *Roofing Technology*, Vol. 1 Issue 1), but in short you are looking for any areas where moisture or water can enter the envelope.

Mold has been around for years and is clearly here to stay. When it comes to preventing mold from entering your facility, a best offense is a strong defense against allowing moisture to enter your building. So when you find that water is getting in, aggressively track down the source of the leak and fix it immediately.▲

Additional Sources of Information:

- New York City Dept. of Health and Mental Hygiene www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html
- American Lung Association www.lungusa.org
- U.S. Environmental Protection Agency www.epa.gov
- Centers for Disease Control www.cdc.gov/nceh/airpollution/mold/stachy.htm
- California Indoor Air Quality Program www.toxic-mold-stachybotrys.com
- California Department of Health Services www.dhs.cahwnet.gov/ehib/ehib2/topics/stachygp00.doc
- Toxic Mold and Tort News www.toxic-mold-news.com/toxic_mold/stach.html

This article was written based on a variety of source materials, including:

- "Seek and Destroy" by Judy Rose, *Detroit Free Press*, Feb. 16, 2003
- MoldUpdate.com — National Association of Mutual Insurance Companies
- California Department of Health Services (www.cal-iaq.org)
- Centers for Disease Control (www.cdc.gov)
- "Mold and Mildew: A Roofing Disaster?" by Dick Fricklas, *RSI Magazine*, May 2003
- "Uncovering Mold" by Steven Phillips, *Professional Roofing Magazine*, September 2002

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