

# Builders' New Weapons in Battle Against Mold

By Charles Perry



Over the past several years, mold has crept into thousands of commercial buildings and multi-family dwellings across the country, causing serious concern for builders. Builders are beginning to realize that mold is growing on their bottom line.

Perception is reality, and if the perception is that there is mold on-site, then the builder's reputation has been tarnished, even if that particular strain of mold does not affect health. This is especially true in today's market for three reasons.

- First, there is no longer coverage for mold in any commercial or multi-family property-casualty insurance – a builder's first line of defense prior to the past three years.
- Second, since that coverage is gone, the next alternative for a financial solution is litigation – which is one of the primary reasons lawsuits involving mold and real estate are being filed at the rate of ten or more per day in the U.S.
- Third, despite a decade of environmental changes in building protocols having to do with issues such



*A favorite hiding spot for mold – inside wall cavities.*

as asbestos, lead paint, and leaking underground storage tanks, mold is an altogether different enemy. At least with any of those other environmental hazards, if they were removed, the owner knew they were gone, and the owner and lender moved on. Unfortunately, that's not

the case with mold; in fact, it's not even close. This problem cries out for prevention. The best approach is to stop mold before it starts.

While the scientific debate crawls forward over how mold affects physical health, there is no doubt that mold affects the

financial health of commercial and multifamily properties. The effects have become so apparent that major builders' and bankers' associations have formed taskforces to research, assess, and recommend risk mitigation techniques. The author has been researching this issue for more than a year on behalf of his company's clientele, which includes companies that build and maintain roofs. This article offers suggestions aimed at prevention that we believe all builders should know about now.

As a real estate lender for 20 years and a consultant concerning environmental issues in real estate for more than 12 years, this author believes that unless builders drastically change the way they approach the mold problem, the worst is yet to come. Some say the days of huge multi-million-dollar jury prizes in mold cases are over. This may be true for bad faith claims between individuals and insurers, which were not really about mold in the first place but more about bad faith later. Mold liability lawsuits, however, initiated by retail tenants, commercial employees, and multi-family residents, are rising each month.

We live in a litigious society, and these lawsuits have spread across the country like mold, because insurers in 43 states and the District of Columbia have written mold exclusions or drastic deductibles in their standard property-casualty policies. In addition, states like California now hold builders accountable for mold damage on properties for ten years post-construction. The only other risk excluded across the board with this kind of speed is terrorism. Why? Mold contamination is certainly not as catastrophic as a terrorist attack, but the reaction from the insurance industry was similar, which underscores how serious the mold issue has become.

#### **Understanding Mold**

The conditions under which mold occurs, according to an analysis developed by the University of Florida, require the existence of spores, moisture, a normal temperature range, and the presence of a food source (cellulose—as in paper). Because temperatures, airborne spores, and moisture are issues dealing with Mother Nature, the only truly controllable variable is the food source. The food source primarily



*Water intrusion during construction can wreak havoc on interior drywall, setting the stage for mold contamination.*

The logo for the Roof Consultants Institute Foundation (RCIF) is centered within a white rectangular frame. It features a stylized city skyline with several buildings of varying heights. Below the skyline, the letters "RCIF" are written in a large, bold, serif font. Underneath "RCIF", the words "ROOF CONSULTANTS INSTITUTE FOUNDATION" are written in a smaller, all-caps, sans-serif font. Below the main text, there is a line of smaller text: "to support research, education, and the dissemination of information for issues important to the industry". At the bottom left of the frame, the phone number "800-828-1902" is listed, and at the bottom right, the fax number "fax: 919-859-1328" is listed.

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includes products with organic content, which account for approximately 80 percent of the surface area of a building. Water plus organic material means mold. As one consultant tells me, "It means mold 100 percent of the time."

Organic products have been major factors in buildings and construction for decades: carpets, ceiling tiles, insulation, and paper-faced wallboard. When it comes to products with organic content, there are only two kinds: those with mold and those that will have mold.

#### Four Myths about Mold

##### 1. If moisture can be controlled, mold can be controlled.

The fact is that humidity is here forever. If one lives in or builds and finances properties in certain parts of the country, it will likely be worse, and accidents like leaky roofs happen. We humans with our four bathrooms and our dishwashers emit more water in a day than is caused by poor construction. Water is a fact of life.

##### 2. Remediation is the solution.

Unfortunately, that is not true. If mold is present and a remediator is paid to remove it, (given

the right climate or the unseen water-soaked area of the building), if mold has 48 hours, it will be back for another visit. If the conditions are right next year—how about another attack in another area of the building? Let's speculate that it is in an area that won't be detected until it's too late. The ugly cycle starts again.

Once mold has become visible and able to be remediated, it's too late. No matter what is done, unless you remove everything that might have caused the problem, or "scrape the ground," as they say, mold will likely return.

Today's average cost of remediating mold in a 2,000-square-foot business is \$40,000 or more, and that's just the first time around. In contrast to that jaw-dropping figure, you could spend as little as a few hundred dollars on preconstruction mold prevention on that same building and

solution for the future. It lies in prevention, not in remediation.

**3. Inspections reveal mold.** A recent interview with a number of remediators showed that more than 80 percent believed that a mold inspection only is productive and helpful if the mold is visible. Beyond that, we have no standards to judge whether the mold present is above or below a certain standard. Imagine the complexity of attempting to set stan-



*Moisture and condensation are terrific conditions for mold. Moisture-laden wood wets paper-faced drywall, creating a feast for mold.*

stand a very good chance that you'll not have to worry about mold contamination. One builder who specializes in \$1 million to \$3 million houses on the East Coast, said, "The equivalent of making these homes mold resistant is probably the same as upgrading a sink and a light fixture in a bathroom." But I'll get back to prevention in a moment.

I'm not disparaging mold remediators, I'm just saying that there is a much better

standards for, say, 100,000 types of mold and 1 million different types of immune system reactions; it simply is not going to happen. This is unfortunate, because standards would help builders a lot.

##### 4. "Mold accumulates within structures over long periods of time."

Wrong. The majority of serious mold problems start before construction begins. The way in which building

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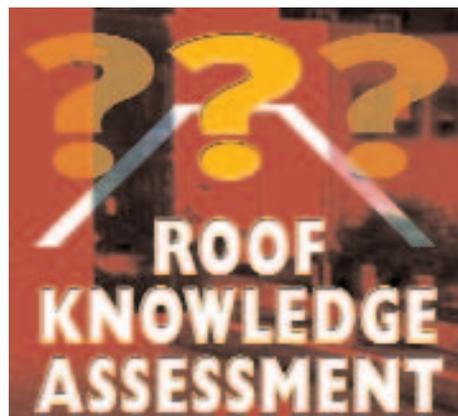
materials are stored at the warehouse, transported to the site, and stored on-site will often determine the probability of mold damage down the line. Because of leaky storage facilities and unsealed conditions on trucks and construction sites, building materials are often exposed to mold spores before a contractor puts hammer to nail.

### Builders Taking Action

Builders have an opportunity to prevent the likelihood of mold in the future by educating themselves on the latest best-practice, mold-resistant building protocols and mold-resistant building materials. Real estate lenders are considering new guidelines that require the use of mold-resistant building products, mold-resistant construction techniques, and effective inspection practices, especially inspections that take



*Leaking pipes and high moisture environments, combined with paper-faced drywall, can turn a recreation room into a mold room.*

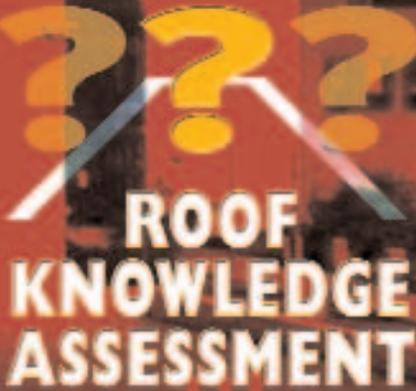


Test your knowledge of roofing with the following questions, developed by Donald E. Bush Sr., RRC, FRCI, chairman of the RRC Examination Development Subcommittee.

These humidity-related questions are based on information contained in Heinz R. Trechsel's "Moisture Analysis and Condensation Control in Building Envelopes," ASTM Stock Number MNL 40, Chapter I – Moisture Primer.

1. What is the meaning of “absolute humidity?”
2. What is the meaning of “humidity ratio?”
3. What is the meaning of “specific humidity?”
4. What is the meaning of “relative humidity?”
5. What is the meaning of “water vapor pressure?”

Answers on page 30



## ROOF KNOWLEDGE ASSESSMENT

### Answers from page 29:

1. **Absolute humidity** — the ratio of the mass of water vapor to the total volume of the air sample. In SI [International System of Units] units, absolute humidity is expressed as  $\text{kg}/\text{m}^3$ . In inch/pound units, it is expressed as  $\text{lb}/\text{ft}^3$ .
2. **Humidity ratio** — the ratio of mass of water vapor to the mass of dry air contained in the sample. In SI units, humidity ratio is expressed as grams (g) of water vapor per kilogram (kg) of dry air.
3. **Specific humidity** — the ratio of the mass of water vapor to the total mass of the dry air. In SI units, specific humidity is expressed as kilograms of water vapor per kilogram of dry air.
4. **Relative humidity** — the ratio, at a specific temperature, of the moisture content of the air sample if it were at saturation, and the actual moisture content of the air sample. It is given as a percentage.
5. **Water vapor pressure** — the partial pressure exerted by the vapor at a given temperature, also stated as the component of atmospheric pressure contributed by the presence of water vapor. In inch/pound units, vapor pressure is given most frequently in inches of mercury (in Hg); in SI units, it is given in Pascals (Pa).

place while the building products lay on the ground at the very start of construction. Builders, who are just as exposed as lenders, should lead rather than follow on this issue.

Wallboard is the most common element of any post-1960s building; unfortunately, the paper facing on the front and back provides a great home for mold. Builders should use paperless wallboard, which is sheathed with fiberglass rather than paper. These kinds of products have recently been developed for the inside of buildings, a technology that has been universally accepted and extremely successful for the exterior for 20 years. To back that up, builders should also require inspections before, during, and after construction that check for the presence of mold and mold-resistant products.

In other words, if one were to build a building of totally inert materials, such as fiberglass, aluminum, and other man-made inorganic materials, and it was built wisely, there probably would be no mold problem. Contractors and architects are becoming somewhat concerned about the difference in price when they bid. However, the cost increase — a trivial fraction of the property's sale price — now pales compared to the future benefits to all involved. If a property owner, investor, or lender understands that a specifier or builder is trying to protect him from this potential financial disaster, he will likely look at the bids in a different way and not just go for the low ball.

Builders should follow this check list to prevent moldy construction projects:

1. Use mold-resistant building materials (i.e., fiberglass-faced roofing panels, paperless wallboard, non-woven house wrap, non-paper-faced insulation, etc.) The additional cost of building with mold-resistant materials is miniscule compared to the dramatic costs to remediate a mold infestation, not to mention the

costs associated with third-party lawsuits stemming from bodily injury claims and construction defects.

2. Follow construction protocol to prevent moisture from entering a building. Techniques include installing a waterproof roofing system, effective location of vapor barriers, putting in windows with low potential for condensation, and using newly developed mechanical ventilation systems. Moisture cannot be prevented from entering the structure, but steps may be taken to avoid excess accumulation and reduce the likelihood of leakage. In addition, the Environmental Assurance Group (EAG) is encouraging the use of new applications such as spray-on coatings that prevent mold, as well as fire and other perils.
3. Order mold inspections before, during, and after construction. Unlike most inspections, a mold-specific (indoor air quality) engineer will know where, how, and when to look for it, saving the client, specifier, and builder thousands of dollars. I know a builder who caught a subcontractor putting up wallboard by nailing slats that were already black with mold into a ceiling. These were new materials that had just been sitting at the jobsite for a couple of days, and already mold had totally covered them. If the builder hadn't caught it, those slats would have stayed in the ceiling, and the mold would have metastasized to the paper-faced wallboard and spread throughout this million-dollar home.

