

MOLD

TELLING FACT FROM FICTION

A TIGHTER BUILDING ENVELOPE MAKES IT MORE IMPORTANT
THAN EVER TO BE INFORMED AND VIGILANT ABOUT MOLD

By Felicia Oliver

Back in 2001, a couple living just outside Austin, Texas, won a suit against a subsidiary of Farmers Insurance Group for bad faith in handling what had begun as a water leak and eventually turned into black mold, making the home's occupants sick and rotting out their 22-room mansion. Two years later, Johnny Carson's sidekick, Ed McMahon, won a similar case after he and his wife got sick and his dog had to be put down due to the mold in their home. These high-profile cases—not of rundown homes in forlorn areas but of mansions in elite neighborhoods, one occupied by a beloved TV celebrity—put the unglamorous subject of mold in the spotlight.

There have been other, more recent, cases. In October 2012, Rudy Tomjanovich Jr., former Houston Rockets player and coach, and his wife were ordered by a Los Angeles County Superior Court to pay more than \$2.7 million in compensatory damages and \$250,000 in punitive damages to the owners of a Pacific Palisades home that the Tomjanovichs had sold them in 2007, while failing to disclose the existence of water

leaks and mold in the residence during the sales transaction.

And in March 2014, the New York State Court of Appeals affirmed the dismissal of a tenant's personal injury claims against her landlord because of exposure to mold, dust, and other toxins in her apartment. But the judge's dismissal contended that the facts of the tenant's case didn't hold up.

According to the Centers for Disease Control, exposure to damp, moldy environments may or may not cause a variety of health issues, from the mild—stuffy nose and throat or skin irritation—to the serious: lung infections for those with mold allergies or compromised immune systems. The Environmental Protection Agency states in its document, "Moisture Control Guidance for Building Design, Construction and Maintenance," that many common moisture problems can be traced to poor decisions in design, construction, or maintenance. So builders are painfully aware that they risk culpability for how they manage moisture and mold in the homes they build.

But, compared with the early 2000s, we don't hear much today

about mold problems in homes or builders being sued by homeowners for damages. Does that mean builders now have a firm grasp on mold issues, that lessons have been learned, and the problem is solved? The answer depends on whom you ask.

A SHIFTING LANDSCAPE

The 2001 lawsuit “got everybody’s attention,” says Mike Humphrey, vice president of operations at David Weekley Homes, in Houston. “I think everyone has learned and made adjustments.” On the other hand, says Joe Lstiburek, principal with Building Science Corporation, “The reason you don’t hear much about it today is because the attorneys haven’t been successful at class-action lawsuits and insurance companies don’t cover it [anymore]. The legal landscape has changed, so we don’t hear as much about it. But it’s there.”

The truth lies somewhere between these two points of view.

“While mold is still an issue, clearly the hysteria has died down,” says David Jaffe, vice president, construction liability, in the Office of Legal Affairs at the NAHB. “The media has lost interest; they’ve moved on to other things. The attorneys have lost interest—it turned out that in most instances mold wasn’t ‘gold,’” he says, meaning it wasn’t easy money if a plaintiff decided to sue.

Jaffe also says that insurers started denying coverage for mold-related claims, were seeking exclusions for mold coverage, and balked at paying mold claims to consumers under standard homeowner policies. So despite a few successful cases, “when insurance money wasn’t available, these cases became less attractive to plaintiffs’ attorneys.”

That said, builders still need to do all they can to avoid any building practices conducive to mold developing in the homes they build. So, it’s to your advantage to be able to tell fact from fiction when it comes to managing moisture and preventing mold.

DISPELLING THE MYTHS

MYTH: If you build the way you always have and you’ve never had mold problems before, just keep doing what you’re doing.

FACT: Changes in materials and techniques demand shifts in the way you build.

“Everybody has experience building homes that have performed adequately,” says Andre Omer Desjarlais, program manager for building envelope systems research at Oak Ridge National Laboratory, “and [to them] the key for success next time is to repeat the [process].”

Bill Hayward, CEO of Hayward Lumber, in Monterey, Calif., says, “The building trade is very slow to change,” citing responses such as, “Well, I’ve always done it that way,” or “I’ve

been doing it that way for 20 years.”

It’s possible that you as a builder have never had a mold problem because you’re doing everything right. Or, as Hayward points out, it could be that you’ve been building flawed structures without ill consequences simply due to a run of good luck.

For Hayward, the scourge of mold is personal. He purchased what he thought would be his dream home, only to abandon it after his entire family got sick because of mold and other off-gassing toxins. His experience led him to found Hayward Healthy Home—an information resource for owners, buyers, architects, builders, and more—in 2015, but the idea for it had begun to take shape in 2008 when the Haywards started having issues with their home.

Hayward says that the tighter building envelopes that are becoming more common often bring poor moisture management issues to the surface. What’s more, without adequate ventilation or dehumidification, moisture never completely dries out, providing an environment suitable for mold growth.

According to Lstiburek, the major changes in materials and insulation over the last two decades warrant building differently. “We’re going to be using more and more engineered and manufactured composite materials,” he points out. “And that means it’s no longer business as usual. I don’t believe mainstream builders realize the significance of these changes.”

At David Weekley Homes, Humphrey says the builder stays on top of changes that affect building quality. “We go to seminars, we read books, and we read articles,” he says. “And if we feel something may be changing, or not, we reach out to other builders.” Keeping trades educated on new technologies and building materials is crucial. Familiar products can change formulations or revise recommended applications or uses that, when not adhered to, void manufacturer warranties. “You can design things, put them on a set of blueprints,” says Chris Gibson, director of business development at Owens Corning, “but if the trades don’t understand why you’re doing something and how it impacts the overall home, they’ll just do it the way they’ve been doing it.”

MYTH: The way you build to control moisture is the same, regardless of climate.

FACT: Moisture-control methods depend on the temperature, humidity, and precipitation in the climate where you build.

Moisture management takes a different form when you’re in cool, wet Portland, Ore., versus hot, dry Tucson, Ariz., or hot, humid, New Orleans.

“When you’re trying to build a really energy-efficient home,” Gibson says, “that will be comfortable, durable, and not create any possible health issues, then you need to start paying attention to the assemblies and building practices for that particular climate zone because the moisture levels, rain levels, and temperature levels are going to be different. That’s where you get into issues.”

[CONSTRUCTION]

Of particular concern is where to place the vapor barrier. The second law of thermodynamics says that heat, air, and moisture all naturally flow from an area of more to an area of less. So moisture moves from wet to dry, heat moves from hot to cold, and air moves from high to low pressure. So a vapor barrier should ideally be placed on the warmer side of a wall, that is, on the inside for cold climates; on the outside for warm climates; and for mixed climates, such as in Memphis, Tenn., it's trickier still, since whichever side you choose for the vapor barrier, you're going to be wrong for half the year.

"A vapor retarder on the wrong side of the wall can be problematic," says Thomas Kenney, vice president of engineering and research at Home Innovation Research Labs (formerly the NAHB Research Center). "In the hot, humid south, the vapor drive over the course of the year is basically in one direction because they don't have much of a heating climate. So it's going from outdoors to indoors." A misplaced vapor barrier, such as a vinyl wall covering on the inside wall, could trap moisture in the wall cavity.

Kenney describes such a case he observed when doing forensics on a home in Hilton Head, N.C. "They were putting vapor barriers—polyethylene sheets—up on the gypsum, up on the studs against the insulation, and the drywall on top of that," he says. "It wasn't more than four or five years [later]; the moisture built up to the point where the framing was literally rotting away."

MYTH: Vapor barriers/retardants are essential to moisture control and prevent mold.

FACT: In some cases, vapor barriers do more harm than good. Speaking of vapor barriers, their use—once considered essential to moisture management—could in fact be counterproductive. Water can get trapped in walls during construction, or even after homeowners move in if a breach in the building envelope exists or develops. Many experts believe that a permeable wall makes it possible for moisture to escape in these instances. "We used to use a lot of vapor barriers in our construction," Desjarlais says. "But we ended up finding that not only does a vapor barrier prevent moisture from getting in, it prevents moisture sources from other areas from getting out."

If you're confused about where to place your vapor barrier, Lstiburek says you're better off omitting it altogether. "You shouldn't put vapor barriers on the inside of buildings that are air conditioned," he says. "We're not going to give up air conditioning, so don't put vapor barriers in the wrong place.

The short answer is that if you don't know where the right place [for the vapor barrier] is, you're better off not having one than having one."

MYTH: Wet building materials aren't a big deal; they'll dry out before mold develops.

FACT: If you don't completely dry out the building before sealing the building envelope, you run the risk of mold growth.

"Building materials often arrive wet, and builders often build in rain," Hayward says. "But builders haven't historically thought about a plan to dry the building out prior to closing it."

He says that in some parts of the country—the Pacific Northwest, for example—builders hire a service to tent a house that's in progress, heat it up, and dry it out for a couple of days before closing it. These forward-thinking builders who don't want to take any chances "hire a certified industrial hygienist to come out and moisture sample every inch of the building to make sure there's not a problem," Hayward says.

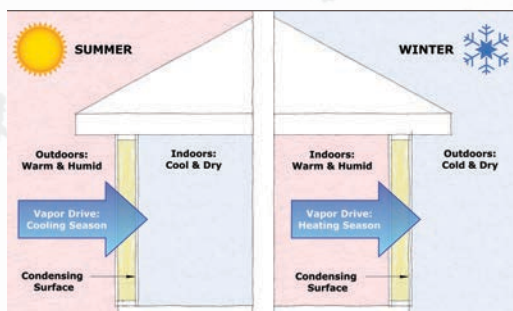
Carl Grimes is managing director of Hayward Healthy Home. Grimes cites, as a related myth, the relative harmlessness of "lumberyard mold"—mold that appears on lumber that's been left outside before use. "Contractors will typically look at it

and say, 'Yeah, it's mold, so what? You can put it in the house. It's not mold that grew in the house, so it can't be a problem.'"

But Grimes says it is, in fact, a problem because that mold is evidence of a moisture issue. If you build a house with wet materials, it's going to take time for them to dry out. Probably long enough that any natural spores that are in the air or on the surface of the wood can start growing." He says that wood manufacturers and their trade associations are concerned when mold intrudes into wood enough to affect its structural integrity. But it's generally not considered a health issue for the occupants who eventually live in the house.

There are many more myths builders believe about mold. Those mentioned in this article are simply common ones our experts cited. But your best weapon against mold as a home builder is to be proactive. Arm yourself with knowledge before you need it. Ask questions, share information, and be vigilant about moisture control at every step of the building process, and follow Humphrey's commonsense advice: "When you have a water intrusion or water leak or water problem, you've got to move quickly. It's urgent." **PB**

Felicia Oliver, a writer who covers home building, is based in Chicago.



In summer or in warm, humid climates, vapor drives from outside to inside; in winter or cold climates, from inside to outside. The surface where condensation accumulates will vary accordingly, so when a vapor barrier is used, it must be placed on the correct side of the wall assembly to prevent moisture and possible mold development in the wall cavity.
(Image: courtesy Home Innovation Research Labs)