Q&A

Causes of Attic Mold

by Paul Fisette

Q. *I've been a builder for more than 20 years and have come across my first serious mold problem — in my own home in Maine. The house was for sale and under contract pending a building inspection. The inspection revealed mold growth on one entire underside of the roof sheathing (the other side was not affected). The home has adequate soffit-to-ridge ventilation, and no signs of bath ventilation failure or roof leaks. However, there is a lake 75 feet away to the north, on the affected side. Could this be the cause? Can I remove the mold myself?*

A. *Paul Fisette responds:* It's important to correctly identify the source of the problem before you try to remove the mold contamination. Certainly evaporation from the lake elevates the humidity of the air surrounding your home and likely adds to your mold problem. But there are probably other contributing factors.

In an "ideal" attic design, the air in the attic should be completely isolated from the conditioned air of the home. As a result, the temperature and humidity of the attic space would be very close to ambient outdoor conditions. If you have mold on the attic sheathing, you would then also typically find mold on the outside of the home.

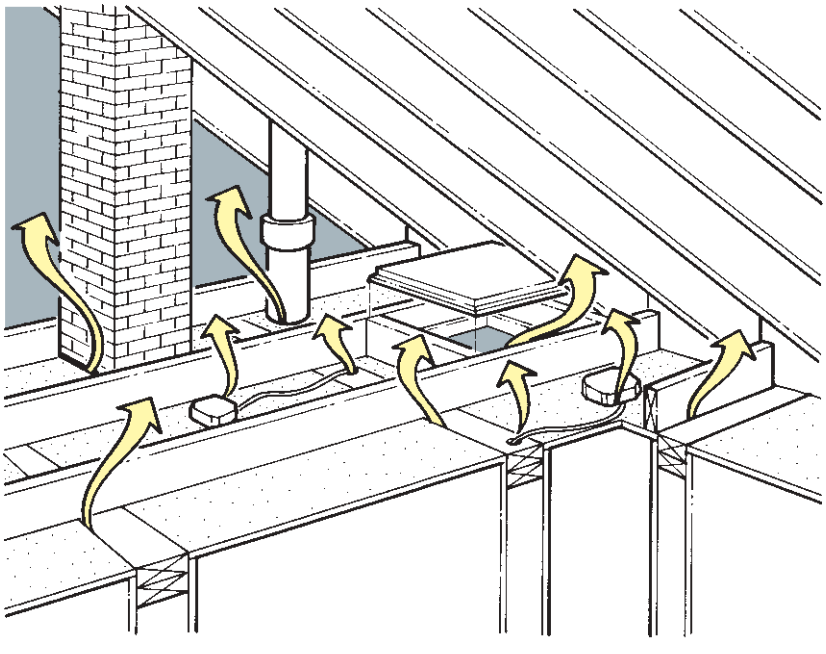
Most homes aren't perfect, however: They have air-leakage pathways that allow indoor air to pass into the attic, bringing household moisture along for the ride. If the attic air is cooler than the air that eventually reaches the attic, the relative humidity (RH) of the attic air will rise and you run the risk that mold will grow in the attic. Attic ventilation is installed with the goal of removing moisture from the attic. But if the outdoor air is damp, ventilation is not as effective.

You report that you have mold on only one side of the roof sheathing — the north face. The underside of north-facing roof sheathing is typically damper than south-facing roof sheathing. This is because the daytime sun beats on the south-facing roof, keeping it warmer and drier. The daytime sun also works to warm the attic air. Thus, if the only source of attic moisture were outdoor air, then the RH of the attic air would be, on average, lower than the outdoor air due to the drying effect of the hot sun. This supports the notion that you may have moist indoor air leaking into the attic.

The remedy is to find and seal the air leaks. Go up into the attic, lift up all the insulation, and seal any penetrations with expanding foam and caulking. Seal all pipes, wires, junction boxes, fans, ducts, recessed lights, and chimney penetrations. Also pay attention to the places where interior wall plates intersect the home's ceiling. Indoor air enters the wall cavities, rises up within the wall, and passes into the attic through the gap that exists between the wall's drywall and the top plate that it's nailed to.

Once the leaks are sealed, carefully replace the insulation and work to

Common Attic Air Leaks



remove the mold. Nisus Corporation (800/264-0870; www.nisuscorp.com) sells a full line of products designed to eliminate and control wood-destroying organisms and mold.

Why Paper a Roof?

Q. *What is the purpose of tar-papering a roof other than to keep water out until the shingles are laid down? It seems that if water does get past the shingles that the tar paper, having all of those staple and nail holes, would do little to keep the water out.*

A. *Paul Fisette responds:* Tar paper, or roof felt, is required by most building codes. Roof shingle manufacturers require it to maintain the warranty on the shingles. And, as you point out, roof felt provides temporary protection from weather while you close in the house. Also, the fire rating of a roof covering is assigned to an entire roof assembly, including roof felt. If you don't install the felt, you don't earn the fire classification that may be required by the local code. Applying roof felt can reduce telegraphing of sheathing seams through thin asphalt roof shingles. However, if you install the felt carelessly, it can create a lumpy look.

Roof felt does provide a long-term benefit — a second line of defense if water gets past the roof covering. Strong wind can blow rainwater in along the edges of the roof, or even lift off shingles. True, the roof felt does have nail penetrations and water can leak through these nail holes. But the holes are small and fasteners do not penetrate most of the roof surface, so the membrane can keep a lot of damaging water out of the roof frame. If there's no roof felt and you develop a leak, the water will run down under the shingles and pour through the seams in the roof sheathing.

Overall, water intrusion is likely to be much less with felt than without. It may buy you time to repair the roof before any major damage is done to the structure.

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Got a question?

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