

# AVOIDING MOISTURE PROBLEMS IN THE WINTER



## WATER VAPOR GENERATED BY HOUSE OCCUPANTS IS MOST TROUBLESOME IN THE COLD MONTHS



*By: Paul Scelsi, Marketing Communications Manager at Air Vent Inc.*

When we breathe while inside our homes, we're generating water vapor. Some of that water vapor can potentially be damaging to our attic, our home's building materials and to us. The need to properly ventilate residential attics is most obvious in the warmer months to help remove heat buildup. But wintertime moisture is equally a concern when evaluating attic ventilation.

In the book *Moisture Control in Buildings*, the following activities by occupants of the house are identified as water vapor generators:

- Cooking
- Cleaning
- Laundry
- Showering
- Hang drying wet clothes indoors
- Breathing and perspiring
- Plus, having indoor plants, pets, and storing firewood indoors

This moisture, which amounts to 2 to 4 gallons per day for the average family of four, isn't noticed in the warmer months because it's generally not a problem in the warmer months. It doesn't have an opportunity to condense because the attic is warm. But in the winter, it's attracted to the colder attic where it can condense as frost or water droplets, drip onto the attic insulation – which can reduce its insulating capability. Additionally, the moisture can deteriorate the roof deck, corrode the fasteners in the roof, and contribute to mold growth.

Jerry Becker, roofing consultant, Roof Life of Oregon, Tigard, OR, has a lot of experience witnessing and solving wintertime moisture problems. He talked about it in a recent episode of our podcast.

“One of the most important things we do when we go to a potential client's house, is we go inside the attic to see what's going on inside there,” says Becker. “Looking inside the attic helps tell the story what's going on with house. The house actually talks to us

if we listen. So, when we go in there, we are looking at the roof deck to see what condition it is in. You're going to feel it on top when you're walking the roof. It's going to feel very pliable. It doesn't feel rigid and solid like you're used to feeling. Then, from inside the attic, that's when you start to see the delamination, the glue falling apart, the microbial growth soaking up into the wood itself. This is contributing to destroying the roof deck from the inside out. It's destroying the most important part of your house, your roof."

Becker explains it's critical to find and fix any deck problems before the new roof is installed otherwise the new roof will be compromised from the start.

### Is My Roof Leaking?

Another consequence of winter moisture that lingers in the attic is rusty nails. But rusty nails do not automatically mean there's a roof leak.

"We receive a lot of phone calls from homeowners saying, 'Hey, my roof is leaking everywhere,' because they see water droplets dripping from the nails and the nails have turned rusty," says Becker. "I explain to the homeowners, it's not actually a roof leak. It's condensation building up in your attic attacking all of the metal fasteners in your roof. It's deteriorating the way the fasteners hold the roofing material onto the deck itself."

Becker goes on to tell homeowners that if they see rust on the end of the nails from inside the attic, imagine what it looks like up inside the plywood. That's where that water vapor is seeping into it, in time destroying the fastener, and then the homeowner has a weakened roof deck any time there is a storm or strong wind.

It's understandable to Becker why homeowners automatically think they have a roof leak if they see wet spots on their ceiling. "It's not their job to understand the roof and how the roof works, but we would like homeowners to learn about it and to be aware of it," says Becker. "I give props to homeowners who go into their attic and try to determine what's going on inside there. It's our job to properly assess it. 'You actually do not have a roof leak, homeowner. You have an abundance of condensation on your roof deck and it's causing the wet spots on your ceiling.'"

### Before and After Mold

Built-up moisture inside the attic that is not removed in a timely manner through proper attic ventilation can also help cause mold. Becker calls it microbial growth. At the minimum, mold is unsightly. No homeowner wants to see mold. But beyond cosmetics, microbial growth can be potentially harmful.

Six years ago, Becker had a homeowner client with significant mold on the underside of the roof deck inside the attic. Upon arrival to the house he noticed the homeowner had an attached oxygen hose that was with her everywhere she walked throughout the house. "When I went into the attic, there was so much microbial growth, so much condensation, so much mold and mildew up there, that her roof deck was actually shiny," Becker recalls. "You could see the water and it was not raining outside."



Moisture generated by occupants of the house; photo courtesy of Air Vent Inc.

Becker says like a perfume or cologne you wear and become used to, sometimes you become accustomed to the smells inside your house. It takes an "outsider" entering your house to recognize the smell. He also says, because you cannot "feel" the moisture building up inside the attic like you can feel the built-up heat in the attic that can radiate into the living space, moisture troubles can go undetected by homeowners for long periods of time.

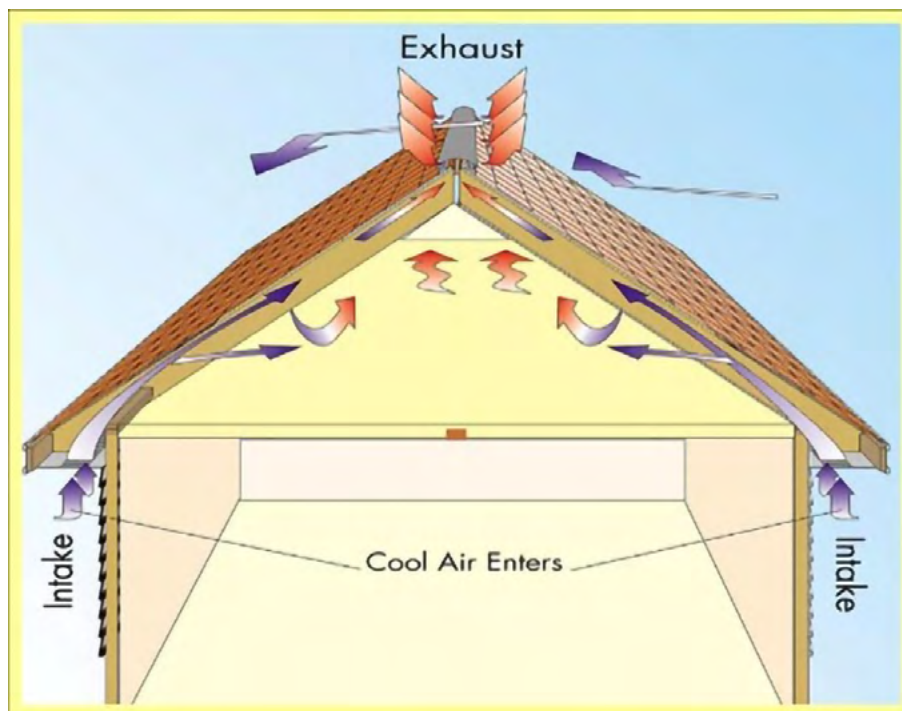
A year after completely replacing the roof deck and installing new shingles and a properly balanced attic ventilation system (it was not properly balanced previously), the homeowner asked Becker to return to the house. "As soon as I entered the house the homeowner asked me if I noticed anything different. I did," says Becker. "I noticed she was no longer using the oxygen hose. She told me she no longer needed it. With the mold gone and the source of the mold fixed she was no longer dependent on the oxygen apparatus. She explained that her doctors never were able to figure out why she needed the oxygen apparatus in the first place. But once the mold issue was resolved her health started to improve. Her attic is noticeably different. It breathes."

### Balanced Airflow is the Key

Winter moisture inside the attic and the resulting problems from excessive, built-up moisture long term, are an attic ventilation issue. The 2 to 4 gallons of water vapor

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we're generating as occupants of the house is hanging around too long in the attic giving it a chance to become a problem. It should be removed in a timely manner through a balanced system of intake and exhaust vents. The intake vents – installed in the soffit, overhang or roof-top near the edge of the roof – allow outside air to enter the attic and help push the moisture out through the exhaust vents – installed at or near the roof's peak (ridge vents, wind turbines, box vents, power fans or gable louvers). This balanced system of attic airflow works year-round if it's been sized according to the attic's square footage and the correct type of vents have been used based on the roof's configuration.



Balanced attic ventilation airflow; photo courtesy of Air Vent Inc.

“When we improve a homeowner’s attic ventilation, and we replace any damaged plywood and get rid of any microbial growth, customers feel the difference,” Becker says. “Their heating bills actually go down because they now have a balanced system of airflow.

“One of biggest mistakes that we see both homeowners and some roofing contractors make is addressing the attic exhaust ventilation, but they forget about the most important aspect of the system, they overlook the intake. They forget to feed the beast,” Becker says. “You can’t have excellent exhaust ventilation without excellent intake ventilation. You have to feed the exhaust ventilation with intake ventilation.”

Sometimes homeowners question the attic ventilation assessment by Becker and his team and are not in agreement that it’s the source of the moisture problems. In those instances, Becker gives the homeowner the necessary information to investigate themselves. “We’re not going to get every client and every project. But if we can get every client to ask the hard questions to other roofing companies, all of the other roofing companies will start following in line and doing it correctly.”

Becker admits he’s a roofing nerd and is passionate about his work. He’s not embarrassed to share his favorite recommendation to every homeowner he visits: “Pay attention to your house. It’ll talk to you.

It’ll let you know it needs something. It’ll let you know if there’s a moisture problem.”

Paul Scelsi is marketing communications manager at Air Vent Inc. and leader of its Attic Ventilation: Ask the Expert™ in-person seminars ([airvent.com](http://airvent.com)). He hosts the podcast, “Airing it out with Air Vent,” and he’s the chairman the Asphalt Roofing Manufacturers Association Ventilation Task Force. He is the author of the book, *Grab and Hold Their Attention: Creating and Delivering Presentations that Move Your Audience to Action*.

