Myth: A House Needs to Breathe

I've heard this statement from a lot of people over the years, many of them home builders. The idea is that when you make a house airtight, you trap the air inside and the level of indoor air pollution just keeps rising. Materials can outgas nasty chemicals. Cooking dumps particles into the air. The dog keeps doing its thing. So, you need to make sure the house has enough random holes in the building enclosure to keep the air fresh, right?

Wrong! A house cannot be too tight. Yes, an airtight house can have problems, but it's not because of the air sealing. Leaky houses often have the same problems or worse. The problem here is the lack of systems thinking.

Here are three problems that the proponents of "breathing houses" think they're able to solve with random leaks:

1. Poor indoor air quality (IAQ)
2. Backdrafting of combustion appliances
3. High humidity leading to mold growth

If a leaky house is the solution to the first of these problems, how exactly does that work? Those random holes are going to bring air into the house from places like the smelly garage, the moldy crawl space, and the dirty attic. "Ah, yes. This house needs to suck in some air through that dead squirrel in the attic."

No! The solution is laid out in Chapter 2. It's a combination of airtightness, source control, filtration, ventilation, and other measures. We understand this now. Random leaks don't bring in fresh air, so we seal up the house and make it as airtight as possible and then intentionally bring in air from a location where we know it will be as fresh as possible.

Problem number 2 above, backdrafting combustion appliances, can be dangerous. When air is coming down the exhaust flue and into the house, the exhaust gases aren't going up the flue pipe. That changes the combustion process, making it more likely to generate carbon monoxide and then dump it into the house. Not good.

My first suggestion for avoiding backdrafting is to avoid combustion appliances. Go all electric, and your water heater will never poison your family with carbon monoxide. If that's not something you want to do, at least get sealed combustion appliances.

The third problem, high humidity, is actually helped by airtightness. In a humid climate, most of the water vapor is outdoors. If your house is too humid, where do you think that moisture is coming from? Seal up the house, and then look for other ways to control humidity like a properly designed, installed, and maintained air-conditioning system, bathroom exhaust fans, and a kitchen range hood. Because of enhanced building codes and the way air conditioners work (Chapters 12 and 13), many homes now also need supplemental dehumidification.

The need for materials that don't trap moisture is true for many houses. Unless you're in a heating-only or cooling-only climate, like Minneapolis or Miami, putting plastic in your walls can trap moisture and grow things. Houses don't need to breathe, but they do need to be able to dry out when they get wet.

Here, then, are three rules that we could substitute for this myth about houses needing to breathe:

- People need to breathe.
- Don't mix combustion air and people air.
- Houses need to be able to dry.