Solving Humidity Problems Is No Sweat

By George Porter

Winter is here once again and we are confronted with the problem of having colder outside weather meeting the warm heated air inside the home, resulting in condensation. In a previous article, we discussed how site preparation can affect condensation and what were some of the things we could do about that.

Site preparation is, however, not the only thing that can affect condensation. Even if it is the only thing we can do about it as installers. Perhaps part of our job as installers is to educate the consumer that all his problems may not lie with someone else. With that in mind, and because it's winter, I thought it would be good to talk about the problem.

First, a little background. Water comes in three stages. There's liquid like the water you drink, there's ice like you put in the water you drink and water can also occur as a gas. It's invisible, you can't smell it, but you can feel it. It's known as humidity. As our friends in the South can tell you, warm air holds a lot more humidity than cold air. The driest place on the face of the earth is the South Pole and the wettest places on the face of the earth are jungles and such along the Equator. Consequently, if you would take some of the air out of the jungle and put it at the South Pole, the water would have to go, because it could not hold it as the temperature changed. As the humidity leaves the air in the form of a gas, it turns into liquid, and if it's cold enough, that liquid will then turn to ice. That's what happened to all the water at the South Pole. Whenever they do happen to get some in the air it winds up on the ground in the form of snow.

It doesn't take these kinds of extremes to produce a similar reaction in a manufactured house. Humidity and condensation are natural occurrences and have nothing to do with the structure of the house, manufactured or otherwise. Air can only hold a limited amount of water vapor depending on its temperature. When air is holding half as much water as it could possibly hold at a certain temperature, it is said to have 50% humidity. When air is holding 100% of all the water it could possibly hold at a certain temperature, it is said to be at 100% humidity. When the moisture in the air tries to exceed 100% humidity, it changes back into a liquid and appears as steam or condensation.

There are two ways to change this relative humidity. ir's ability to hold water is relative to its temperature hence the term relative humidity. You can increase the relative humidity by simply increasing the water in the air or by lowering the temperature. When you exhale on a cold day, the warm moist air in your lungs leaves your mouth and forms a little cloud. Because the cold air your breath is entering will not hold so much water, the excess moisture is transformed into vapor in front of your face. This same moisture can form on any cold surface. If you have a cold glass of water in a warm house, it will begin to sweat and drip as a result of moist air touching the colder layer of air very close to the glass.

All of these will happen inside any home. The sweating and water running down the windows is actually a safety gauge. It's telling you that there is an excessive amount of moisture in the home

and that you must lower the humidity. The same thing that's happening on your windows can be happening inside your walls and roof and every other part of your house. It can cause warp, rot, mildew, paint failure C in general, do severe damage to the home.

There was a time when our industry was not bothered by this problem. Some of the early examples of our industry always seemed to have a little breeze blowing through them, summer or winter. When you had large amounts of outside air infiltrating throughout the home, it was virtually impossible to trap any moisture laden air within the home. Since those early years, however, our industry has done a fantastic job in thoroughly weatherproofing and sealing our housing. Our homes are extremely tight as evidenced by the mandatory air exchange systems found in many houses today. We were the first type of housing that was required to have outside air going into the fireplace so that it wouldn't suffocate the people in the house by burning up all the oxygen.

All of this produces very low heat bills, but it also allows us to develop our own mini environment inside the house and it is that environment that must be controlled. Only the homeowner can do it because it is his lifestyle and habits that will determine the humidity within the home. Listed below are some activities and the amount of water they put in the air in your home if you do not use an exhaust fan or vent the home in any way:

Washing dishes	1 pint
Warm baths and showers	1 pint
Hot and steamy baths and showers	1 pint
Mopping floors	2 pints
Boiling foods	2 pints
Unvented clothes dryer	3 to 5 pints per load
Kerosene heaters	4 pints per gallon of kerosene burned
Human breathing	1 pint per hour per person

Other sources of water could be house plants, aquariums and anything else that allows water to evaporate. If we keep adding water from these sources on a daily basis and never remove it, the home will be destroyed. In fact, the average family of four can easily add a 150 lbs. or more than 18 gallons of water per week to the air in the home. All of this moisture must eventually escape. The safety gauge would be how much water you see condensating on your windows. A better gauge would be a humidity gauge easily purchased at most hardware or department stores. DO NOT USE a portable kerosene heater to warm the home. The expense of the problems caused by the excessive humidity (4-1/2 pints per gallon) far exceed whatever savings, if any, can be obtained over running the heater that came with the home. Put lids on pans when water is boiling in them. Use the exhaust fan in the kitchen when cooking. Always use the exhaust fan when you are taking a shower, or open the bathroom window. Open a few windows in the house every day for a minute or two, even if the air outside is very cold. If you air out your home in this manner, it will not only bring fresh air in the home, but it will also quickly lower the humidity inside the house. If all else fails, the customer will have to purchase and use a dehumidifier. If the installer has placed the 6 mm of polyethylene on the ground beneath the home as recommended by the manufacturer of the home and has properly vented the skirting, he has done everything he can possibly do to help alleviate this problem. The rest has to be left up to the customer. The best

thing we can do as installers is be absolutely sure that the customer is aware of this C hopefully before he gets the problem. Many companies and manufacturers of windows publish pamphlets on condensation. If you live in an area prone to the problem, please be sure that one of these brochures is lying in the house or presented to the customer at settlement. If he says he never had this problem in any other house he ever had, tell him that he may never have had a house built as tightly and installed as precisely as the one he now owns. And the fact that we have these problems is the proof.