

Ask Jon Eakes

# WHAT IS RELATIVE HUMIDITY and HOW DOES IT RELATE TO COMFORT?

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Montreal winters are uncomfortably cold;

while in Saskatoon it is even colder but more comfortable

Montreal summers are uncomfortably hot ;

while in Arizona it is even hotter but more comfortable

Why? It is all about Relative Humidity.

If we come to understand humidity, we can be more comfortable for less money.

## Comfort Tips

Air Conditioner Fan Speed – Dehumidify is the priority

If your air conditioner has the possibility of changing the fan speed: raise the temperature setting to 24 or 26 deg C and use the slowest fan speed possible. This will remove humidity from the air more rapidly, which makes it easier to cool the air, and dry air at 24 or 26 is actually comfortable. This gives more comfort at less cost.

In hot weather, Evaporation is more important than Wet

Wet towels on your forehead or body do not do much to cool you down because if you “wear” them, they get warm very quickly and just give you a muggy feeling. Wet your forehead and arms or even your body and then expose them to the air so that the water evaporates. Evaporation is a process of cooling – which draws heat out of your body. So frequent wetting followed by evaporation is much more cooling than wet towels.

In cold weather, adding humidity can increase comfort

During the heating season, keeping the humidity as high as you can without creating condensation on windows will give more comfort at lower temperatures.

When Water becomes Humidity -- the mechanisms

Water is one of the very basic elements of life. Not only must we drink it, but we need to have it around us in the air all the time or we will dry up like old prunes. The problem is that water in the wrong quantities, in the wrong places, and under the wrong conditions can cause us endless troubles. Air will almost always contain some water vapour. The absolute quantity of water in a given volume of air is called the "mixing ratio." How much water vapour a given volume of air can hold before it spills out as condensation, rain, or snow depends on the temperature of the air. What is the greatest importance to the homeowner is to know when the water vapour is going to spill or how much more water the air can absorb. Air is like a sponge whose size varies: as it gets colder the sponge gets smaller, and may end up squeezing water out. As the air gets warmer the sponge expands and mops up moisture around it. How much water vapour is in a given volume of air, compared to how much it can hold before it will spill over, is called the relative humidity. One hundred per cent relative humidity means the air cannot hold any more water and will rain, snow, or deposit condensation. All of this is illustrated for technical use on a very complicated thing called a Psychrometric Chart which is explained well on Wikipedia.

Air moving over a water problem will dry out the problem. This works faster when the air is warmer (a larger sponge) than when it is colder (a smaller sponge). , and works more rapidly in soaking up

condensation than in soaking up frost. In below-freezing temperatures, air is not a good drying mechanism.

Winter air, although it may have 80 per cent relative humidity and feel quite damp, when warmed up to room temperature wants to suck up any moisture around it. So we have dry house air and dry throats in drafty houses during the winter. Heaters do not really dry out the air (the same quantity of water is still in the air that was there before entering the heater), but they do increase the size of the sponge, so that the same air now wants to hold more moisture.

When warm inside air with 40 per cent relative humidity leaks through cracks in the walls or comes against cold windows, it cools, the "sponge" shrinks and becomes saturated, depositing large quantities of condensation or frost on the cool surfaces -- perhaps a window, or the inside of the wall, or the underside of the roof.

Follow this link for an article on [What is the proper level of humidity for a house.](#)

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