

The Comfort Corner

Building Science, pt. 3: Moisture Flow

In all likelihood, everyone has had some experience with excess moisture in a home. While asthma, allergies and respiratory problems can be traced, directly and indirectly, to excessive moisture, the far bigger bugaboos are rot, decay and, of course, mold.

The most basic fact about mold is that it needs 5 things to grow: spores, oxygen, food, temperatures between 40 and 100 degrees, and a relative humidity of 70% or more.

Unfortunately, the only one of these factors that can be controlled is humidity, unless you or your customers want to live in a house below 40 or above 100 degrees.

Moisture moves from hot to cold, from wet to dry and along the path of least resistance by four means:

1. **Bulk Moisture** is usually rain, snow or groundwater.

Bulk water enters a home when three needs are met - a source of water, a hole in the building envelope and a driving force like gravity or air pressure.

2. **Capillary Action** is the ability of water to travel up through porous material. While bulk water prefers large openings, capillary action prefers smaller pores, such as those found in brick and concrete.



3. **Air Transported Moisture** is water in the air.

4. **Vapor Diffusion** is the ability of water to move through an object. Most vapor barriers should be called vapor retarders, since most materials cannot completely stop diffusion.

Effective moisture management has three components, the Internal, External and Interstitial. External management is a tight building envelope and interstitial management means a design that keeps water out, knows water will get in and can get water out. Internal management starts with an HVAC system that is sized right and installed right. Air Conditioners are designed to both cool and **dehumidify**. For an air conditioner to work properly it must run long enough to take an appropriate amount of humidity out of the air. An oversized AC unit will shut off well before this is accomplished. Dehumidifiers may also be needed, as well as spot ventilation in baths and kitchens.

Helping you reduce risk and increase tolerance is the cornerstone of building science and part of our mission. Next month - Air Quality.