



## WHITE PAPER

# Facts about Humidifiers and Mold

In recent years, the news media has been full of stories describing damaged buildings and health problems due to microbial growth from excess moisture. Insurance companies have begun amending homeowner policies to exclude structural damage caused by mold. Increased awareness among the general public regarding these issues is a positive thing when it draws attention to potentially harmful conditions, but misinformation can cause almost panic situations and may prevent homeowners from taking appropriate steps to ensure that their homes are properly conditioned.

Mold and mildew are the terms commonly used to describe three-dimensional growth colonies of micro-organisms which are part of the “fungi” kingdom. There are thousands of different types of fungi. Virtually any organic material can be a food source for mold. A food source alone however is not enough to sustain mold growth. A certain temperature range and moisture are also necessary. Most fungi happen to thrive in the indoor temperature range that is also considered comfortable for humans. When either the food source or moisture are no longer present for a colony of mold, the organism dries up and emits spores (seeds), which become airborne and seek a more fungi-friendly environment. With the abundance of organic food sources and an attractive temperature range, moisture then, becomes the key factor in determining whether or not mold will grow indoors.

There is a concern among some HVAC professionals that because moisture is necessary for the presence of mold, and because humidifiers produce moisture, humidifiers therefore must be the culprit if mold is present in a building. The type of moisture that molds need to grow, however, is not airborne vapor. Molds require the presence of bulk moisture, also known as “free water”. If water is present in a conditioned space on an organic surface, or on a non-organic surface that contains organic material such as household dust, it is likely that some degree of fungal activity will occur. Unfortunately the places where this activity takes place are not always readily apparent to the occupants of the building. Water can be present in buildings due to a variety of reasons. Breaches in weatherproofing systems are common modes for water to enter buildings. Undetected leaks in plumbing systems are also a contributor. Another source for bulk water could be from condensation of airborne moisture on surfaces such as windows and walls. If the temperature of a surface is below the dewpoint of the ambient air, condensation will occur. This is where the HVAC system comes into play, both in controlling the amount of moisture in the air and by providing adequate ventilation. Very often, condensation on interior walls is a result of inadequate insulation.

Humidifiers are a vital component of an HVAC system because they provide comfort and well being to occupants. They also contribute to energy savings by allowing thermostats to be set lower and help preserve woodwork and furnishings. In order to provide these benefits, humidifiers must be properly installed, properly maintained and properly controlled. The humidification needs of every house are different. Building design, construction practices, and occupant activities all affect the way a house behaves with respect to humidification. Control is essential to ensure that the right amount of

moisture is being added to the space without over-humidifying. The humidification load fluctuates with changes in outdoor temperature because it affects the surface temperature of windows and walls. As outdoor temperature drops, the likelihood of condensation forming on interior surfaces increases. Adjusting the indoor relative humidity set point to compensate for changes in outdoor temperature is therefore necessary. The most effective way to ensure that this adjustment is made is by installing controls that automatically change the relative humidity set point according to the outdoor temperature. Proper maintenance of humidifiers is also critical to trouble-free operation. Performing routine service as recommended by the equipment manufacturer is an easy way to prevent problems. These servicing tasks should include replacing or cleaning evaporative elements and keeping drain lines unobstructed.

Adhering to proper sizing standards, sound installation practices, routine maintenance schedules, and proper controls for HVAC equipment is the key to maintaining proper relative humidity, comfort, and well being of the occupants.

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The Air-Conditioning and Refrigeration Institute (ARI) is the trade association representing manufacturers of more than 90 percent of North American produced central air-conditioning and commercial refrigeration equipment.

To learn more about humidification and mold, visit [www.ari.org](http://www.ari.org).