Humidifiers

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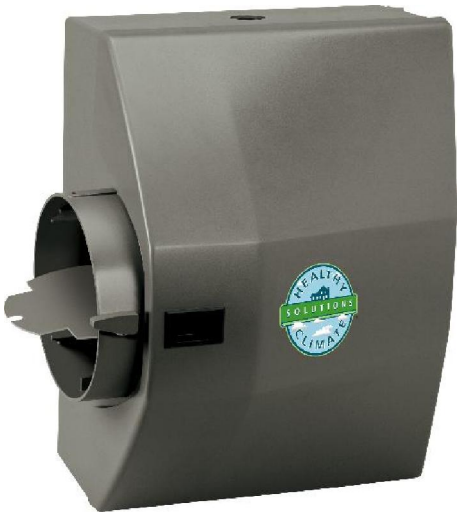
Humidifiers are devices that humidify air so that building occupants are comfortable. Central humidifiers are hard-wired into a house's plumbing and forced-air heating systems.

What is humidity?

Humidity refers to the amount of moisture in the air. "Relative humidity" signifies the amount of moisture in the air relative to the maximum amount of water the air can contain before it becomes saturated. This maximum moisture count is related to air temperature in that the hotter the air is, the more moisture it can hold. For instance, if indoor air temperature drops, relative humidity will increase.

How do central air humidifiers work?

Central air humidifiers are integrated into the forced-air heating system so that they humidify air while it is being heated. The water that is used by the device is pumped automatically into the humidifier from household plumbing, unlike portable humidifiers, which require the user to periodically supply water to the device. Humidifiers are available in various designs, each of which turns liquid water into water vapor, which is then vented into the house at an adjustable rate.



Why humidify air?

Certain airborne pathogens, such as those that cause the flu, circulate easier in dry air than in moist air. Moist air also seems to soothe irritated, inflamed airways. For someone with a cold and thick nasal secretions, a humidifier can help thin out the secretions and make breathing easier.

Indoor air that is too dry can also cause the following problems:

- damage to musical instruments, such as pianos, guitars and violins;
- dry skin;
- peeling wallpaper;
- static electricity, which can damage sensitive electrical equipment, cause hair to stick up, and can be painful or annoying; and
- cracks in wood furniture, floors, cabinets and paint.

Central Humidifier Dangers

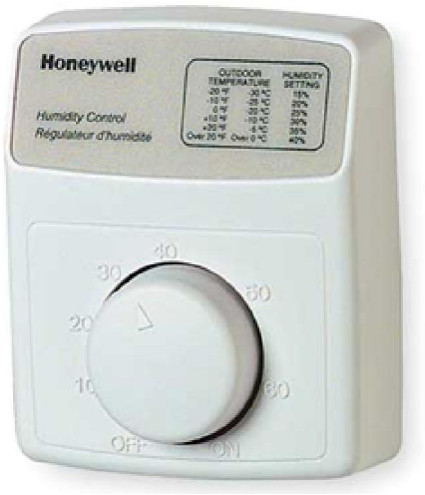
Humidifiers can cause various diseases. The young, elderly and infirm may be particularly at risk to contamination from airborne pollutants such as bacteria and fungi. These can grow in humidifiers and get into the air by way of the vapor where it can be breathed in. Some of the more common diseases and pathogens transmitted by humidifiers are:

- Legionnaires' Disease. Health problems caused by this disease range from flu-like symptoms to serious infections. This problem is generally more prevalent with portable humidifiers because they draw standing water from a tank in which bacteria and fungi can grow;
- thermophilic actinomycetes. These bacteria thrive at temperatures of 113° to 140° F and can cause hypersensitivity pneumonitis, which is an inflammation of the lungs; and
- "humidifier fever," which is a mysterious and short-lived, flu-like illness marked by fever, headache, chills and malaise, but without prominent pulmonary symptoms. It normally subsides within 24 hours without residual effects.

Other problems associated with humidifiers include:

- accumulation of white dust from minerals in the water. These minerals may be released in the mist from the humidifier and settle as fine white dust that may be small enough to enter the lungs. The health effects of this dust depend on the types and amounts of dissolved minerals. It is unclear whether these minerals cause any serious health problems;
- moisture damage due to condensation. Condensed water from over-humidified air will appear on the interior surfaces of windows and other relatively cool surfaces. Excessive moisture on windows can damage windowpanes and walls, but a more serious issue is caused when moisture collects on the inner surfaces of exterior walls. Moisture there can ruin insulation and rot the wall, and cause peeling, cracking or blistering of the paint; and
- accumulation of mold. This organic substance grows readily in moist environments, such as a home moistened by an over-worked humidifier. Mold can be hazardous to people with compromised immune systems.

Designs and Maintenance



- drum-type humidifier: has a rotating spongy surface that absorbs water from a tray. Air from the central heating system blows through the sponge, vaporizing the absorbed water. The drum type requires care and maintenance because mold and impurities can collect in the water tray. According to some manufacturers' instructions, this tray should be rinsed annually, although it usually helps to clean it several times per heating season.
- flow-through or "trickle" humidifier: a higher quality though more expensive unit than the drum-type, which allows fresh water to trickle into an aluminum panel. Air blows through the panel and forces the water to evaporate into the air stream. Excess water exits the panel into a drain tube. This design requires little maintenance because the draining water has a "self-cleaning" effect and, unlike the drum-type humidifier, there is no stagnant water.

Other tips and information:

- If equipped with a damper, it should be closed in the summer and opened in the winter. The damper may appear as a knob that can be set to "summer" or "winter" setting, or it may be a piece of metal that can be inserted to cover the duct opening.
- The humidifier is controlled by a humidistat, which must be adjusted daily. Some new models do this automatically, although most require daily attention from building occupants. The humidistat should contain a chart that can be used to identify the proper setting based on the outdoor temperature. If this adjustment is not performed, condensation will likely collect on cool surfaces and potentially lead to mold or wood rot. Many homeowners do not know that this calibration is necessary.
- The furnace might need to be checked for rust. Some humidifiers are installed inside the plenum of the furnace, which can be damaged by rust if the humidifier leaks.
- Central humidifiers may have a solid core that should be replaced each year. The manufacturer's instructions should be consulted regarding this replacement.

In summary, central humidifiers are used to humidify air to make it more comfortable, but they can cause health problems and building damage if they are not properly maintained. Contact Us with any questions you may have.