

WHAT CAUSES MOLD IN APARTMENTS

24 JULY, 2015 | CREATED USING PDF NEWSPAPER FROM FIVEFILTERS.ORG

What Causes Mold in Apartments

Seldom does a day go by that there isn't a report of apartment mold somewhere in the US resulting in property loss or damage, serious health effects and legal implications. A quick search of Google News for "apartment mold" returns 20,600 results with numerous reports from across the country made within the past week.

While working with hundreds of developers, property managers and design consultants over the past few years, it has become apparent that a singular explanation as to what causes mold in apartments does not exist. There is universal agreement however, that the presence of mold results in lost revenue, remediation costs, bad publicity, health issues and potential legal consequences.

Moreover, the lack of a common understanding relative to what causes mold often permeates the media, government building officials and even the court systems. This article is intended to provide a basic understanding of what causes mold in apartments.

Estimates for moisture and mold-related residential failures in the United States now range in the billions of dollars annually. At the center of the debate is the issue of responsibility between landlords and tenants. By educating both landlords and tenants, we can eliminate excess moisture, maintain healthy apartments and keep mold growth outside apartments where it belongs.

In summary, you need to know the following:

- A mold problem is ALWAYS an excess moisture problem
- Excess moisture can originate from leaks, ventilation and occupant activities such as cooking, cleaning, showering & even breathing
- Leaks (weather or plumbing) are the result of a building failure and must be corrected immediately - responsibility for leaks usually falls on the landlord
- Water is in the air - the amount depends on various factors. The principles of water vapor are typically poorly understood by landlords and tenants.
- Maintaining appropriate levels of moisture (water vapor) inside apartments is the responsibility of both the landlord and the tenant.

In cases involving water leaks, tenants should promptly notify the landlord that water is leaking into the unit. By doing so, the tenant is acting to protect the structural integrity of the dwelling while preventing the growth of mold that will likely result from leaks that are not reported or repaired promptly. More frequently than

physical leaks is the presence of excess moisture in the air (high relative humidity). A common example might be unwanted condensation on windows.

Moisture which has accumulated on window sills may leak into wall cavities causing hidden mold growth on wood and paper backed wallboard. The concept of condensation is important. Condensation occurs when moisture suspended in the air (water vapor) "condenses" into liquid water on a cool surface. The surface temperature at which this occurs is known as the "dew point" temperature. Dew point can be controlled by controlling BOTH room temperature and relative humidity (RH).

Chronic excess moisture in apartments will result in mold growth. In order for mold to grow the following four factors must be present[1]:

- Mold Spores
- Temperature
- Organic Materials (food source)
- Moisture

Mold spores are naturally occurring and present everywhere. Nearly every surface of an apartment and its furnishings are covered with microscopic mold spores which are unavoidably introduced through door openings, human or pet transfers and ventilation. Mold spores lie dormant until moisture activates growth. As long as moisture is available, mold will continue to grow expanding from one surface to another. The proliferation of mold causes damage to property and results in negative health consequences. Organic items (food source) include furniture, clothing and construction materials.

Moisture is the only one of the four factors that can be sufficiently controlled. Temperature control is affected by mechanical limitations, ambient environment and tenant preference. Oversized HVAC systems are common in multifamily housing properties. It is important to note that conventional air conditioning systems operate based on sensible (temperature) input. Water vapor removal by air conditioning systems depends on how long the air conditioner runs and is secondary to the primary function which is temperature control.

A good example of this scenario would be senior housing properties. These apartments are typically smaller than the average family housing unit. The smallest conventional split air conditioner supplies 18,000 BTUs of cooling (or 1.5 tons) which may be more cooling than is required. For many senior apartments this means the tenant is forced to decide between "overcooling" and setting the thermostat to a lower temperature in order to adequately dehumidify. More often than not, the senior occupant will choose not to run the air conditioner resulting in excess moisture and in some cases mold.

Another factor to consider is high performance design. Trapped moisture has become the unintended consequence of tightly constructed, energy-efficient buildings. While tighter building envelopes drive down the sensible cooling load and save energy by reducing air conditioner run time, they also trap excess moisture inside apartments. In a tightly sealed apartment, moisture accumulates from normal occupant lifestyle activities. As stated earlier, conventional air conditioners do not operate based on water vapor content or relative humidity. The typical apartment HVAC system serves only one purpose, to raise or lower temperature. When mold shows up in apartments, it isn't the heat, it's the humidity.

7 Tips to Prevent Mold in Apartments

To prevent excess relative humidity and mold growth:

- Do not use ventilation when outdoor dew point is above 55.[2]
- Make sure the clothes dryer is vented properly.
- Cook with lids.
- Do not dry clothing on indoor clothes lines or racks.
- Reduce water vapor by using effective bathroom, kitchen, and utility room exhaust fans above common sources of moisture. Verify exhaust fans are actually moving air (hold a tissue below vent to check air flow).
- Confirm appropriate indoor relative humidity level using a reliable digital thermometer/hygrometer.
- Keep relative humidity below 60 percent at all times and use a dehumidifier if necessary.[3]

Using a stand-alone dehumidifier is the most certain way to ensure appropriate levels of relative humidity at all times inside apartments. Whole house dehumidifiers are appropriately sized for larger, single-family dwellings. While they will adequately remove excess moisture from apartments, common complaints include excessive noise and heat displacement as well as lack of operational control. In many cases whereby a tenant elects not to operate the air conditioner, they are unlikely to operate a dehumidifier either. Whole house units are also controlled by a wall mounted dehumidistat, similar to thermostat. Additionally, many whole house dehumidifiers are installed in conjunction with the exiting HVAC air handler which requires integration into the mechanical system. Installation of these systems usually require a licensed HVAC technician.

While less costly, portable dehumidifiers present other types of challenges when attempting to control humidity inside apartments. They are inconvenient, may require manual emptying and also rely on tenant cooperation to operate. In many situations it is impractical to expect tenants to operate dehumidifiers. Currently there is only one dehumidifier specifically designed for apartments available in the US, the award-winning IW25-1 dehumidifier by Innovative Dehumidifier Systems.

The IW25-1 places apartment humidity control directly in the hands of landlords. It has a tamper-proof cover that can only be removed using a special tool. The IW25-1 can be quickly installed inside an interior wall between existing studs. Once installed, it operates independently of the HVAC system to quietly and efficiently remove excess moisture from inside apartments.

For landlords and tenants who are searching for a cost-effective

and efficient solution to prevent mold in apartments, the IW25-1 makes a lot of sense.

[1] ASHRAE Position Document on Limiting Indoor Mold and Dampness in Buildings, Approved by ASHRAE Board of Directors - June 27, 2012, <http://www.ashrae.org>

[2] Moisture Science 101, Dan Welkin;
<http://www.acca.org/wp-content/uploads/2014/01/Welkin-Class-notes-Moisture-Science-101.pdf>

[3] A Brief Guide to Mold, Moisture and Your Home, United States Environmental Protection Agency;
<http://www.epa.gov/mold/preventionandcontrol.html>
