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MOLD & MILDEW INFORMATION

Controlling Moisture in Guestrooms Can Substantially Reduce Black Mold and Mildew

The following information pertains to all hospitality properties but is extremely important in high humidity climates.

Mold & Mildew:

- Smells bad
- Looks Bad
- It's Unhealthy

The components that lead to the growth of mold and mildew start when what is outside gets into the room. There will always be some of what is outside inside a guestroom, but it is how much that is the concern. Generally, the "how much" will depend on the construction of the building and how well doors, windows and HVAC (heating, ventilation, air conditioning) units are sealed from the outside elements.

To hoteliers, what is called mold and mildew in guestrooms is the result of spores that get into the room, multiply, and build many (microscopic) colonies that just keep growing and growing until the resulting black and odorous spots in the room are evident to the senses.

Mold and mildew are actually organisms living together in large colonies. To survive, they require the same three things we do:

They need AIR, FOOD & WATER

Since they are living organisms, they perform all of the same life functions we do. What you and your guests see and smell is the organisms' excrement. **Gross!**

What can be done to prevent the proliferation of mold and mildew in guestrooms?

If any or all of the 3 components that mold and mildew need to thrive are eliminated or reduced, it will go a long way to stop the growth or reoccurrence of colony blooming.

So, what can really be done to achieve this goal?

1. We can't eliminate the air, as your guests need it too.
2. We can't eliminate the food, as the building materials (walls, etc.) provide enough food to feed these organisms forever.
3. We **CAN**; however, do something to reduce the moisture in the rooms.

Understandably, moisture control is really the only thing that can be done to reduce the occurrence of mold and mildew outbreaks.

Airborne Moisture and Dew Point

Moisture in guestrooms will increase when the induced outside air collides with furnishings, fixtures, and equipment (FFE) that are at the temperature of the dew point (temperature at which the moisture vapor in the air begins to condense) of the outside air.

Scientists at the University of Florida, Gainesville have defined the psychometric zone most favorable to the growth of mold and mildew as being above 72°F and above 60% relative humidity. Generally, unless it's raining in the room, the relative humidity (RH) will be 95% or less on average. If the RH is say 90% and the room temperature is 66°F, moisture will condense on FFE. By allowing the guest to run the thermostat at 66°F or below, you are allowing a moisture problem to occur.

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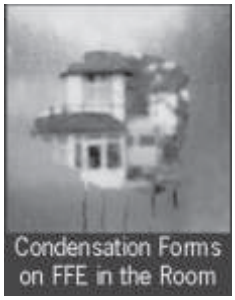
Condensation Forms on FFE in the Room


Moisture is Introduced to the Room Through Openings Such as Balconies

Many guestrooms have thermostats that allow settings as low as 40°F. Guestroom thermostats in high-humidity climates are normally operated (by the guest and staff) at a temperature that promotes excessive moisture; therefore, mold and mildew growth. In hot, humid climates, guests tend to enter a room and set the thermostat as low as it will go, then leave the room only to return later to a freezing cold room; and, a wet one. Moisture may be continuously introduced to the room due to poor construction, or poor seals around PTAC/HP (through-the-wall air conditioner) units, doors and window openings. But, even if the building construction and equipment are in perfect condition, moist warm air will be introduced into the room each time a guest opens a door or window. (This refers to entrances that are not in an air conditioned corridor, etc.)

Building construction can be reviewed to be sure that moisture is not continuously present in guestrooms. This is a list of some of the things to look for that can be corrected:

- Repair any leaks and wet spots on ceilings or around the area where the walls meet the floor.
- Ensure that door and window seals are in good shape; they can become brittle and ineffective over time.
- Seal around air conditioner units.
- Make sure outside air vents are operational and not stuck open.
- Concrete sub floor can allow moisture to be transferred from wet ground below. This may require a vapor barrier installed between the sub floor and the carpet.

Moisture in the Walls

Another common cause of mold and mildew problems in guestrooms stems from that fact that moisture is commonly absorbed into the sheetrock during construction, then trapped behind vinyl wallpaper that has been applied with organic paste. This creates a lush resort for these types of organisms to flourish in private. And, if the temperature in one room is warmer and the other one is very cold, condensation of the moisture between the walls may occur. This will promote the continued reproduction of the organisms. In many cases this is the reason wallpaper has been known to roll off the wall.

Note: Cases have been cited where the wallpaper has completely rolled off the wall onto the guest while sleeping. The cause was determined to be mold and mildew forming on the paste side of the wallpaper, aided by the moisture from the bathroom shower migrating through the bathroom walls when the room temperature was typically below 70°F.

AC Units and Humidity Control

Traditionally, it is the air conditioner (AC) in the room that is expected to cool the room and remove "some" moisture. The moisture reduction, of course, only occurs during the actual cooling process when the thermostat is not satisfied. No moisture reduction occurs when the thermostat is satisfied.

The majority of AC units today are designed more for rapid cooling than de-humidification. This means that the cooling coils are larger; hence the AC does not have to run very long to satisfy the thermostat. One problem with this is that not much de-humidification occurs in this scenario. If the coils were smaller, it would take longer to satisfy the thermostat, but there would be more de-humidification taking place. Even so, in humid climates, to remove the amount of moisture that enters some rooms, the AC would have to run a long time.

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What can you do to reduce moisture in guestrooms?

Since it seems that we cannot keep the (airborne) moisture from entering the rooms, we need to look at what can be done to remove the moisture and/or keep this airborne moisture from condensing and causing wet pockets to form on FFE.

Here are some examples:

1. If the outside temperature was 80°F and the RH was 80% the dew point would be 74°F. If we did not allow the unoccupied room temperature to be below 75°F upon the guest's return to the room, moisture would not condense on FFE.
2. If you had an additional controller that would allow it, while the room was unoccupied, you could run a de-humidifier or you could operate the AC unit in a reverse-re-heat mode to "wring" the moisture out of the room. (This would take a controller like SensorStat® to take charge of the AC while guests are out).

Note: Common Humidistats really do not work well in guestrooms, as they are occupied on a regular basis that limits the time they can run the AC unit without making the room a temperature other than what the guest selected on the thermostat.

Is it possible to use the existing AC unit to remove more moisture from guestrooms? Yes!

Onity has developed and patented a method of assuring that both the reentry temperature in guestrooms is above dew point as well as using the existing AC unit to remove moisture while the room is unoccupied. This method is incorporated in SensorStat® DDC, one of Onity's occupancy sensing based HVAC energy management devices. In addition to humidity control, with SensorStat® DDC, you save on guestroom energy costs as well.

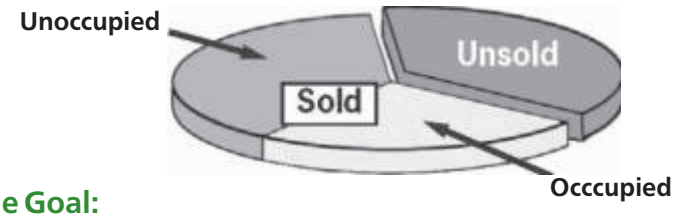
Supporting Studies

The University of Florida has done a number of studies on moisture problems in hotel rooms. The results of one of the studies yielded insight into the cause of moisture damage in hotel guestrooms and was used in the development of an energy saving device (SensorStat® with humidity control) that would use the existing AC unit in guestrooms in a way that would "wring" out the room, so to speak, leaving it drier and able to remove most airborne moisture before it condenses on the FFE.
The studies refer to results that indicate that mold and mildew growth increases most when the guestroom Relative Humidity > 60%, but when both the RH and temperature are controlled properly, it leads to a reduction of mold and mildew growth.

To balance the study findings with the quality care of guests, we cannot simply set tight limits on guestroom temperatures. To ensure guest satisfaction, the only thing we can really do is control the moisture by way of the relative humidity in the room and the temperature of FFE.

What can we do to make the guestroom less of a target for excessive mold and mildew growth?

The typical occupancy rate for a hotel is 65%. Of that 65%, a guest is generally in the room only 40% of the time, usually to sleep. This means that there is a significant amount of time when your AC system could be combating moisture as well as saving energy.



The Goal:

1. Keep the RH in the room below 60%.
2. Keep the temperature of unoccupied guestrooms above the dew point of the outside air.

Bibliography

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*For a copy of the complete studies please send a request to blackmoldinfo@onity.biz.
About Energy Products LLC

EcoLodgix (An Onity/UTC Partner), the leading global provider of SensorStat & innPULSE guest room energy management & lighting control systems, offers innovative technological solutions and services for the Hospitality, Corporate, Education, Government and Multi-Family markets. EcoLodgixis located in Jupiter, Florida, as well as an extensive sales and service network that spans North America. With innovative solutions specially designed to meet clients' changing needs, EcoLodgix continues to provide real progress - technological advancements in facility management and maintenance for unparalleled convenience and time and cost savings.

For more information on how EcoLodgix can help you reduce the threat of mold and mildew in guestrooms, contact us today:
1.855.ECO.ENGR (326.3674)