



SAGE Living by Design LLC

ADDRESSING HUMIDITY, MILDEW AND MOLD

Information from Northwest Clean Air Agency: www.nwcleanair.org

Many landlords and tenants do not understand why mildew and mold problems start and how to safely clean them up when they do. This document is designed to eliminate the confusion with simple guidance followed by detailed examples to help prevent the most common problems we have observed responding to hundreds of complaints. In summary, you need to know that:

- A mold problem is an excess moisture problem
- Excess moisture comes from leaks or condensation
- **Leaks are the landlord's responsibility**
- **Condensation is the tenant's responsibility**

UNWANTED MOISTURE SOURCES

There are 3 main ways that water or excessive moisture gets into living spaces to enable mildew and mold growth:

1. Weather leaks from outside (landlord's responsibility),
2. Plumbing leaks inside (landlord's responsibility),
3. Condensation of moisture from indoor air onto cool surfaces (tenant's responsibility).

In the first two cases with actual water leaks, it still falls on the tenant to promptly notify the landlord, preferably in writing, that water is leaking into the unit. The tenant is doing the landlord a favor, trying to prevent damage to the structure, while at the same time defending his or her own health against exposure to the mold that will eventually result from leaks that are ignored.

THE CONCEPT OF CONDENSATION IS VERY IMPORTANT

Condensation occurs when moisture suspended in the air turns into liquid water on a cool surface. The surface temperature at which this occurs is known as the "dew point" temperature. This is what happens when water beads up on a glass of ice water...that water came from the air. Typically every square inch of your home and your belongings are covered with at least a few microscopic mold spores, unavoidably wafted or tracked in from outside, just sitting there, probably not hurting anybody. But add water and mold spores will grow to form visible spots or "colonies" that will continue to grow and enlarge as long as moisture is available. If indoor airborne moisture (relative humidity) is not controlled and your windows -- especially modern double pane -- are chronically fogged and wet, you will find that this condensation is reaching other cool surfaces as well, encouraging mildew or mold growth, for example, on:

- Shoes and other belongings in closets that share an exterior wall
- Furniture placed near cool exterior walls

PREVENTING CONDENSATION, THE SHORT VERSION

- **Keep your thermostat set between 65 - 70 degrees at all times (even at night).** Warmer air holds more moisture and there is a big difference in the amount of moisture the air will hold at 65 - 70 degrees compared to temperatures lower than 65 degrees. If you are setting your thermostat back each night by 5-10 degrees, then as the air cools in your apartment the moisture it was holding has to go somewhere, and it will primarily travel to outside walls and windows and potentially create moisture issues.

- **Use Vent Fan in combination with heater in the bathroom during showers.** To control (reduce) relative humidity you should leave the bathroom fan and heat on for at least twice as long as your shower. The heat keeps the moisture in the air and the fan exhausts it out of the apartment. As part of this, keep your bathroom door closed when showering so that the moisture in the air does not go all through your apartment. If you continue to experience

high relative humidity, then try running your fan for a longer period of time. Fans cost almost nothing to run, so when you are having trouble with moisture build-up in your apartment, you can run the vent fans for several hours at a time after showering or cooking.

- Make sure the “used” indoor air gets exchanged daily: **Flush the unit aggressively with cold outside air by opening all doors and windows for 5 minutes or so; if windy, maybe 60 seconds will do.** Confirm your relative humidity level using a reliable digital gauge. A good relative humidity gauge (called a thermometer/hygrometer) will cost about \$25. The **ideal relative humidity** for health and comfort is about 40-50%. In the winter months, it may have to be lower than 40% RH to avoid condensation on the windows.
- **Cook with lids and do not dry clothing on indoor clothes-lines or racks.** Check that exhaust fans are actually moving air: somewhere on the surface of the fan air suction should be able to hold up a single piece of toilet paper.
- **Notify management of any plumbing leaks or exterior moisture intrusion,** such as a roof or gutter leak. If you notice your toilet hissing or sweating, it might be running constantly and bringing in cold water, potentially contributing to moisture problems in the bathroom.
- **Thoroughly clean mildew and mold.** Be proactive about addressing any spots of mildew. Clean with a diluted solution of bleach and water. If you are allergic to mildew/mold, have asthma or are pregnant, have someone else clean up the area for you. Let management know if your attempts at cleaning do not resolve the issue or if you are concerned about any areas beyond standard cleaning.
- **Use a dehumidifier if necessary.**

PREVENTING CONDENSATION, THE LONGER VERSION

Condensation may be best explained using a very typical cold weather scenario: Three college students move into an apartment that has modern double pane windows and baseboard or wall-mounted electric heat. Baseboard electric heat is expensive, so the students keep the doors and windows shut tight to save money. They might only heat selected rooms. **In a tightly sealed home, moisture accumulates from typically very moist lifestyles: cooking, showering, even simply breathing will add lots of moisture to the air increasing relative humidity well past the desired 30 to 50 percent level. If there are pets or plants, this will increase respiration and transpiration inside the unit adding more moisture to the air.** The first warning sign of excess mold-causing moisture is fog (condensation) on the room side of double pane windows which can drip down to “pond” on sills (Figures 1 and 2). The response to this warning should be to quickly and thoroughly ventilate the unit. By quick, we mean perhaps five minutes...maybe only half a minute with the help of a windy day: open all doors and windows and try to make a “wind tunnel” out of the unit, rapidly flushing the warm wet air out and allowing the cold outside air to come in. “I paid to heat that warm air!” you might say. True, but the air in your unit only contains about two percent of the heat you bought; 98 percent of the heat you bought is in your stuff, your furniture, and the warmed surfaces of the unit. And that “stuff” will not release its heat during the brief required flush out. Now close your doors and windows and allow the room air to warm up, which it will do quickly because there is not much substance to air...it is easy to heat and cool. When the colder outside air is brought inside and warmed up, its relative humidity is also lowered making this fresh air a powerful drying force in your unit. The moisture on your windows will evaporate into the dry room air; watch the fog retreat from your windows, hopefully never to return.

Let’s try another example: Picture yourself standing in what you know is a too wet apartment that you need to flush with outside air to dry out. But looking outside, it is 40 degrees, raining cats and dogs and it’s foggy (100 percent relative humidity = saturated air = the air is completely full of moisture so you can actually see the excess = fog). Why in the world would you want to bring all that moisture into your apartment if the goal is to dry it out? Good question...here’s the answer. Forty degree fog will become quite dry air (32 percent relative humidity) just by warming it up to 70 degrees. It’s just physics, the laws of nature. Raise the temperature of air and you will lower the relative humidity and dew point, every time, as demonstrated on a ‘psychrometric chart’ (check it out online). Repeat the flush out as necessary to keep the unit’s relative humidity under 50 percent, in general, during the colder months. Why is this moisture so good at finding cold spots on which to condense? In nature, moisture wants to move from more to less (e.g., evaporation) and from warm to cold (leading to condensation). This is why a dehumidifier works: it creates a zone of very low relative humidity and coolness at the machine that acts like a cool and dry magnet, harvesting moisture out of the air, converting it to a liquid that can go down the drain and out of the home.