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*We cannot stop living in our houses...so follow these easy tips to keep your house from getting wet from the inside out.*

# INDOOR AIR QUALITY

## *Factsheet*

### ***Keeping Homes Dry***

Keeping homes and apartments dry to reduce the chance for **mold problems** in the Pacific Northwest can be a challenge. We cannot control the weather, but we can build and operate our buildings in harmony with our environment, and keep them dry inside even in "rain forest" climates.

Homes with excessive moisture are at risk for serious structural problems, expensive renovation of damaged materials, and cosmetic problems such as peeling paint and staining. The occupants can also be at risk from exposure to excessive amounts of mold and other asthma triggers and allergens.

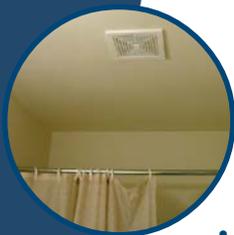
#### **1) The first line of defense is to keep moisture out of homes.**

- Make sure your roof does not leak and that it sheds water away from the foundation and crawlspace.
- Gutters, downspouts and landscaping should direct water away from the home.
- Check toilet, sink and washer plumbing for leaky fittings or hoses. Replace before it may leak.
- Make sure your windows, doors and other penetrations do not leak.

#### **2) The second step is to limit the build-up of moisture generated inside.**

- Our homes get moist from the inside from day-to-day activities of the occupants.
- Our breath contains water vapor and we perspire. The more people — and the longer they spend in the home — the more moisture builds up.
- We cook and do laundry.
  - We wash dishes.
  - We bathe and shower.
  - We add water to our houseplants and aquariums.
  - We mop the floors and shampoo carpets.
- We track water in with our shoes and hang raincoats and towels to dry.

We cannot stop living in our houses . . . so follow these easy tips to keep your house from getting wet from the inside out.



## 1) Do not generate any more moisture than necessary.

- Reduce the number of house plants.
- Cook with lids.
- Put covers on aquariums.
- Do not hang damp laundry indoors.
- Take shorter showers.

## 2) Capture and remove moisture at the source.

- Use exhaust fans in the kitchen and bathroom.
- Make sure exhaust fans are pulling enough air and are vented to the outside.
- Keep bathroom door closed until all the bath moisture is exhausted.



- Make sure clothes dryer vent is unobstructed and has tight connections.

## 3) Like people, houses need to breathe.

- Exchange the moist air inside for fresh air outside.

- Consider that 40 degree

outside air with 100 percent relative humidity will turn into 30 percent relative humidity air as you warm it to 75 degrees inside your home. (So, you can dry out your home by “flushing” outside air even if it is 40 degree fog.)

## 4) Use exhaust fans.

- Exhaust fans rid the home of excess moisture which is replaced with outside air.

## 5) The colder it is outdoors, the less outside air you will need to keep moisture levels under control.

- The warmer it is outside, the more outside air it will take to dry a home. While this is good news for energy use, in some mild and moist climates a **dehumidifier** may be required in addition to ventilation.

## 6) Keep your house and rooms warm.

- Cold surfaces will allow moist air to condense and can quickly lead to moisture, mold and mildew problems.
- “Closing off” rooms to conserve heat may well lead to mold growth in those rooms.

## House Ventilation Strategies

**Older homes** can suffer from moisture problems when the occupants produce lots of moisture but do not actively remove it.

Running exhaust fans more frequently is often the easiest solution. Make sure your home has exhaust fans that actually work, and use them as needed to directly capture and remove moisture and to pull in outside air. Note: A ceiling fan or room fan does not pull in outside air.

While our **newer and tighter homes** save energy, they still need to breathe in order to avoid becoming damp. Newer homes can be less forgiving when we do not control moisture indoors or actively ventilate.



Homes built since 1991 in Washington are required to have a “whole house” ventilation system installed. These systems should have a clock timer that allows the home to be ventilated automatically.

The amount of time these fans should be set to run depends on three things.

- 1) The season.
- 2) The climate.
- 3) The amount of moisture being generated indoors.

The less moisture being generated - - or allowed to migrate around - - inside the home, means less exhaust fan run-time required.

The colder or dryer the climate - - or the dryer the season - - the less run time required, because the outside air will have more drying effect.

On the other hand, the warmer or wetter it is outside - - the more the exhaust fan will need to run.

### Facts on Mold

Mold needs moisture to live and flourish. The four things needed to grow mold are

#### **Mold spores +Food source + Proper temperature +Moisture**

- 1) Mold spores are everywhere in our environment, so they are in our homes all the time.
- 2) Mold needs food - our homes are made out of mold food such as drywall, wallpaper and paste, wood products, and normal everyday debris that we track in from outside.
- 3) Many molds like the same temperatures we like. It is unrealistic to keep our houses too hot or too cold.
- 4) Most molds like it wet. Most molds will not flourish without water or high relative humidity. Moisture is the one factor we can realistically control.

### The solutions

A well-ventilated house with occupants that pay some attention to controlling internal moisture will discourage mold from moving in. We see houses in the "rain forest" with no signs of mold, so we know these basic techniques can work for the rest of us.

### Cost of neglect is high

More and more insurance companies are excluding mold from their coverage - - especially if the mold is a result of a maintenance deficiency or improper operation of the home. Therefore, if window or roof leaks are not fixed right away, your insurance company may refuse to

help with a mold problem. If you allow moisture to build up in your home and do not use exhaust or ventilate with fresh air, the insurance company may refuse to cover mold damage.

A quick and thorough response after a water leak, spill or other event is needed to prevent a mold bloom. Experts say to thoroughly dry wet materials within a few days to be safe. Wet wall cavities often need to be opened up for rapid drying.

### Relative Humidity

To avoid mold and moisture problems, homes should be maintained in the 30 to 50 percent relative humidity range.

Low cost (< \$30) digital relative humidity gauges are available and generally accurate enough to help you control the relative humidity in your home. The cost of these devices is small compared to health care costs and renovation costs.

### Dehumidifiers

The typical dehumidifier used for homes will work for most applications as long as the room is maintained at fairly normal temperatures. These units require maintenance, use energy and produce some heat. The best approach is to avoid using dehumidifiers if possible by identifying and solving the source of the moisture, not relying on moisture removal by dehumidifiers only. Dehumidifiers are especially useful in basements, homes with concrete floors, and homes in mild damp temperate locations.

### More information

<http://www.homeenergy.org>

<http://www.epa.gov>

<http://www.alaw.org>

<http://www.nwair.org>

<http://www.energy.wsu.edu>

<http://www.fsec.ucf.edu/bldg/>

<http://www.cmhc-schl.gc.ca>

<http://www.buildingscience.com>