There is MOLD in My Bathroom!

A study of relative humidity, temperature and the growing conditions of mold.

Abstract

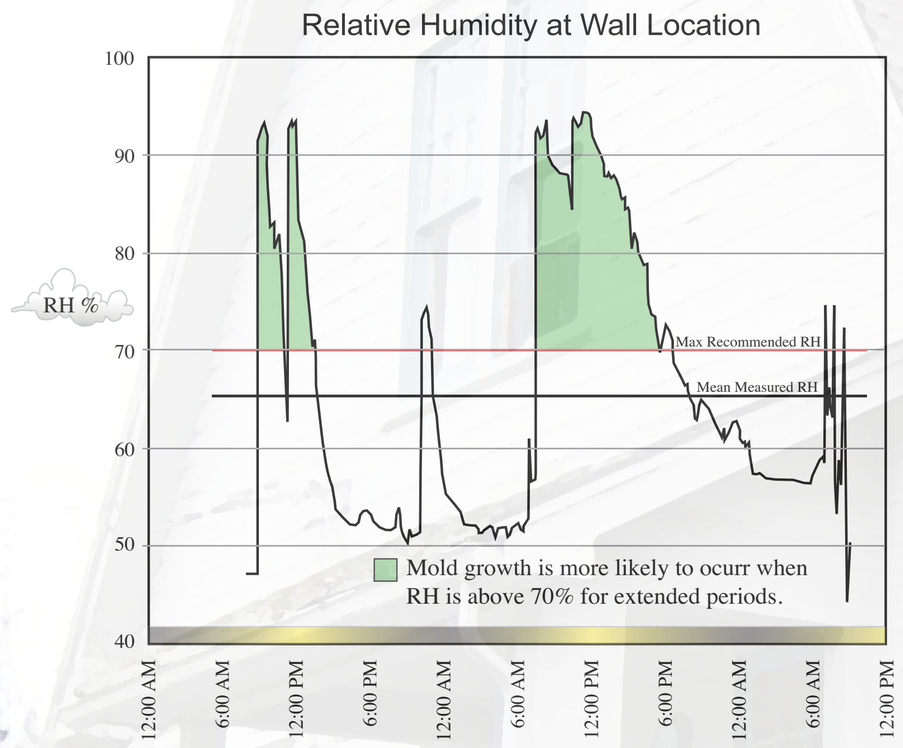
This study focused on the mold problem in the bathroom of the house at 1740 East 25th Ave Eugene OR. It was hypothesized that the relative humidity and temperature conditions do not meet the standards as outlined in The Healthy House by Ray Ranson. To test this, temperature and humidity readings were taken in the bathroom. Data collected shows readings above 70% RH for more than 12 hours per day confirming our hypothesis.

Hypothesis: The thermal environment in Brita's bathroom does not meet temperature and relative humidity standards for residential bathrooms, according to The Healthy House, where relative humidity should not exceed 70% for more than 12 hours per day.

Introduction

The house studied is an older home with a common problem of mold growth in the bathroom. There is one operable window which is left closed in the colder months as well as a fan. It was decided to investigate the relative humidity levels as well as temperature for an extended period of time.

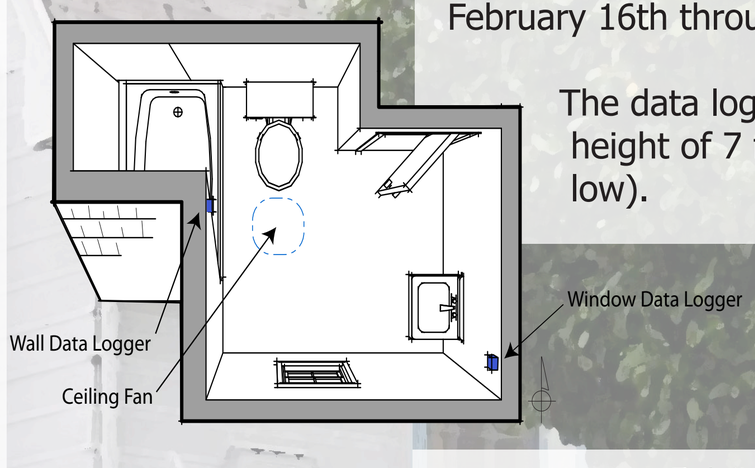
Window Condensation

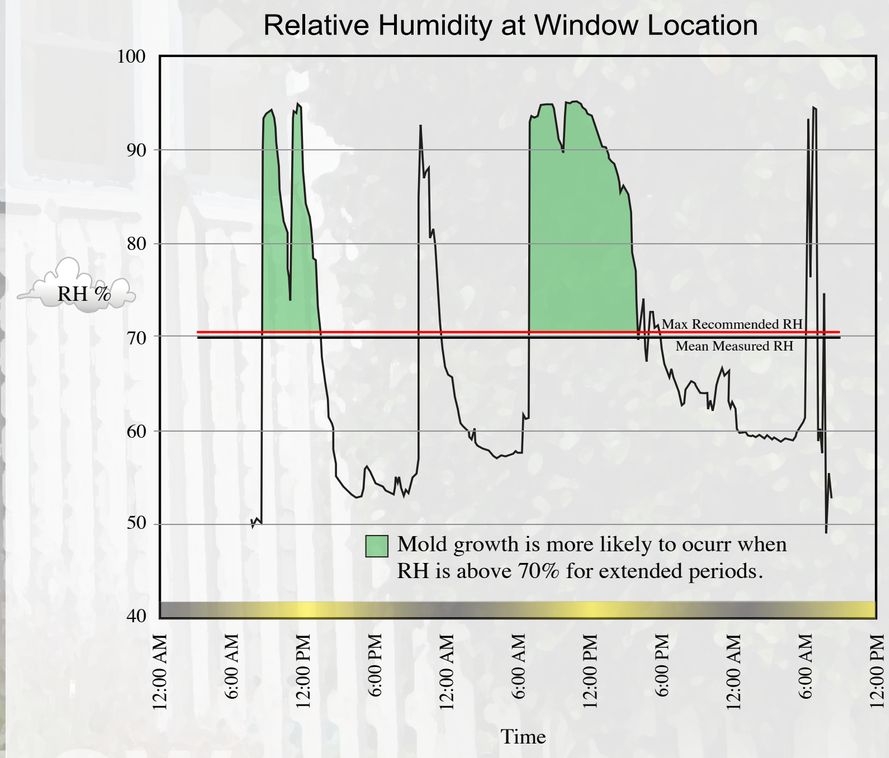


Methodology

Our team used two data loggers to measure temperature and RH in Brita's bathroom. The data was recorded at two minute intervals between 8:00 AM on February 16th through 8:30 AM on February 18th.

The data loggers were placed on the walls at a height of 7 feet in two locations (see plan below).





Conclusion

Based on the data collected, Brita's bathroom did not meet the relative humidity standards for mold. There are other factors that may also contribute to mold growth, including the following:

Condensation

High levels of condensation were found in the bathroom after showers because of the water vapor in the air and the falling temperatures afterward.

Ventilation

It is known, from talking to the occupants, that the window is rarely open in the winter. Replacing the current fan with one that has a larger capacity and can be operated independent of the light, could be helpful in reducing RH after showering.

Insulation

There is thin insulation between the ceiling and the attic and none between the attic and the roof. Increasing the insulation in this bathroom would moderate temperature swings, and thus help the condensation problem.

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Acknowledgments

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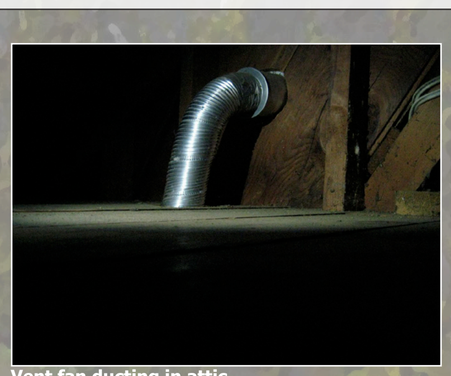
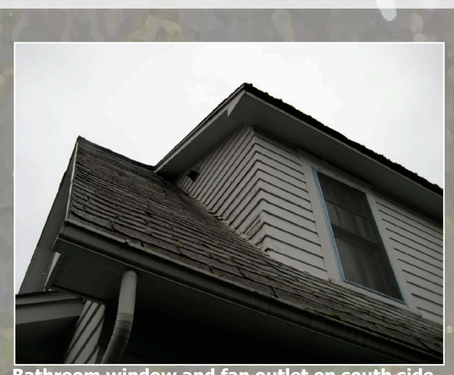
Bathroom window covered in condensation



Vent fan ducting in attic

Ceiling Condensation

Bathroom heater under sink



Bathroom window and fan outlet on south side of house

Heat Flux Transducer being installed above shower