



Vent-Free Gas Products Alliance Section
of the Air-Conditioning, Heating, and Refrigeration Institute

104 Sunshine Way
Townsend, TN 37882
September 13, 2010

Oregon Building Codes Committee
Building Codes Division
1535 Edgewater Street NW
Salem, OR 97304

Re: Code Change Proposal ORSC 11-30, Section G2445.8 Moisture Control

Dear Committee:

I represent the Vent-Free Gas Products Alliance Section of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) as its Technical Chairman and Consulting Engineer.

The Alliance opposes the subject code change proposal, which would require automated humidity control in a dwelling utilizing an unvented room heater. I note that the proponent has provided no technical information supporting his reason.

The impacts of unvented gas heating products on indoor relative humidity have been evaluated extensively by the scientific community in research projects conducted by Risksciences, Wilson Environmental, the University of Illinois, and Gas Research Institute. Their analyses occurred separately in different timeframes, involved both computer modeling and actual in-house testing, and all concluded that unvented room heaters do not cause humidity problems in American homes.

Risksciences performed the most exhaustive analysis. This firm, headed by Gary Whitmyre, a certified toxicologist, is nationally recognized for its expertise in human exposure modeling in residential environments. The research included Dr. Muhilan Pandian and his premier exposure modeling platform developed for the Environmental Protection Agency, and Dr. Michael Aronov and his verified computer model for unvented heater operation. Their work on this project has been peer-reviewed and published in Building and Environment Journal. They performed over 200,000 iterations, including worse case scenarios, to replicate housing conditions in all Department of Energy heating regions and weather extremes. Relative to Oregon, which contains DOE Regions IV, V, and VI, it found that 100% of the modeled houses

would have less than 70% relative humidity necessary as one condition to foster mold growth.

Actual field-testing performed by Wilson Environmental and the University of Illinois in California and Illinois, respectively, showed no issue with unvented heater operation and humidity. In fact, one interesting finding of the Wilson study in measuring relative humidity inside homes--also duplicated by Risksciences' computer modeling--is that oftentimes room temperature increases at a faster rate than the dew point temperature, which results in *lower* overall relative humidity.

You should be mindful of several key points. First, many factors inside a home, including appliance use (dishwasher, clothes washer, clothes dryer), human activities (cooking, showering, breathing), and water infiltration (leaky plumbing, roof leaks, damp basements, overflowing gutters), contribute to its overall relative humidity. Second, EPA recommends a 30-60% relative humidity range for human comfort and health prevention. During the winter, many consumers *add* humidification to their indoor air in order to prevent scratchy throats, coughing, and other respiratory ailments. Third, as a home becomes tighter with fewer air exchanges, an unvented heater will operate for a shorter time period and produce even less water vapor. Forth, the amount of water vapor that air can hold depends upon temperature. As temperature rises, the indoor air's capacity to hold water vapor increases greatly.

Lastly, for 20 years I administered the product liability for the the largest company in the unvented gas heater business. It held a 65%+ market share with millions of units in use. If humidity were a problem, the company would have been subject to considerable litigation and claims, which absolutely was not the case. Be mindful that 20 million units have been installed in American homes over the last 30 years with an exemplary safety and performance record.

I urge the Committee to reject proposal ORSC 11-30, Section G2445.8 Moisture Control. A review of the objective research on this issue clearly shows that the code change is unmerited and unnecessary.

Thank you for your consideration of my comments.

Very truly yours,

Don Denton

Don Denton
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