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## **Comments from Simon Turner LEED AP, President, Healthy Buildings International, Inc. on the Proposed CBSC California Green Building Standards Code**

These comments apply to Part 5.504. IAQ Post-construction Flush Out Language

The California Green Building Standards Code should not mandate flush out, or should at least offer IAQ testing as an alternate, for the following reasons:

1. The following two sentences in the proposed flush out procedure appear to be mutually exclusive:

*... supplying continuous ventilation with all air handling units at their maximum outdoor air rate and all supply fans at their maximum position and rate for at least 14 days*

*...During this time, maintain an internal temperature of at least 60 °F, and relative humidity no higher than 60%*

2. Mechanical engineers will testify that to prevent thermal damage, condensation, mold or other unintended impacts caused by operating the building outside its design envelope the maximum outdoor air flow rate should be the design airflow rate for the system, not the maximum outside air flow rate, which is why both LEED and ASHRAE have rewritten their flush out procedures and included IAQ testing as an alternative to reflect this engineering reality. In other words, the flush out language used in this draft is obsolete.
3. The HVAC equipment and control systems will not have been designed to do this.
4. Misuse of HVAC equipment outside its normal operating parameters will cause potential liability problems for building owners, equipment manufacturers, mechanical engineering firms and commissioning engineers.
5. In some California climates there will be a large energy penalty for cooling to prevent the building from overheating, even if the tonnage is adequate, which it wouldn't be.
6. There is no definition of "the equivalent of 14 days of maximum outdoor air."
7. The 14 day time period of abnormal HVAC operations will overlap the HVAC system commissioning timeframe, disrupting or disabling the ability of the building to be tuned for energy and comfort.
8. If the outside air quality is particularly poor (not unheard of in California) mandating excess outside air could make IAQ worse for 14 days.
9. There is no data to quantify any health or productivity benefit from flush out.

### **IAQ Testing Alternative**

The following programs all offer users an IAQ testing alternative:

- California CHPS ([http://www.chps.net/content/032/CA\\_CHPS\\_Criteria\\_2009.pdf](http://www.chps.net/content/032/CA_CHPS_Criteria_2009.pdf), page 125)
- LEED (LEED NC EQ 3.2)
- ASHRAE (Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings Fourth Public Review - ISC (September 2009). (The Standard Committee Chair is past ASHRAE President Kent W. Peterson, PE, FASHRAE, LEED AP, based in Long Beach).

The expense of IAQ testing is in the same order of magnitude as flush out, or less, depending on the locale and season. However contractors and building owners who complete the IAQ testing at least have some documents for their money that document the indoor air quality status achieved at occupancy. The flush out gives no such assurances of acceptable IAQ.

