

**From:** Andrew Persily <andrew.persily@nist.gov>  
**Subject:** Re: Flushout law for new buildings in California  
**Date:** October 6, 2009 2:42:12 PM EDT  
**To:** "Littleton, Jeff" <jlittleton@ashrae.org>

Yes, this is interesting. I don't know the whole story but I'm confident there is at least one other side to it. I am also almost certain that the ARB rule was developing with the involvement of an ASHRAE member who also sits on 189.1. If you or Doug want to dig more deeply into this, I can connect you with him.

Andy

On Oct 6, 2009, at 12:16 AM, Littleton, Jeff wrote:

Andy,

Thought you might be interested in the note below.

Thanks,  
Jeff

----- Forwarded Message

From: Doug Read <dread@ashrae.org>  
Date: Mon, 5 Oct 2009 12:43:50 -0400  
To: "Turner, Simon" <sturner@hbiamerica.com>  
Cc: <ddavis@ahrinet.org>, <kpenafiel@boma.org>, <rburton@boma.org>, <charlie.mccruden@accra.org>, Steve Ferguson <sferguson@ashrae.org>, Claire Ramspeck <cramspeck@ashrae.org>, Ryan Colker <RColker@ashrae.org>, Jeff Littleton <JLittleton@ashrae.org>, Kent Peterson <kent.peterson@p2seng.com>, <agoldberg@aia.org>, <jhartke@usgbc.org>  
Subject: RE: Flushout law for new buildings in California

Thanks for the update, Simon. We will review this latest development and determine how or if ASHRAE should respond. Best regards, Doug

Jeff Littleton, Executive Vice President  
American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.  
Direct Line: 678-539-1100 Fax: 678-539-2100 eMail: JLittleton@ashrae.org Web: www.ASHRAE.org<http://www.ashrae.org/>

<<http://www.ashrae.org/events/page/1925>><<http://www.ashrae.org/certification/page/1683>>  
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-----Original Message-----

From: Turner, Simon [mailto:sturner@hbiamerica.com]  
Sent: Monday, October 05, 2009 12:35 PM  
To: Read, Doug  
Cc: ddavis@ahrinet.org; kpenafiel@boma.org; rburton@boma.org; charlie.mccruden@accra.org; Ferguson, Steve; Ramspeck, Claire; Colker, Ryan; Littleton, Jeff; kent.peterson@p2seng.com; agoldberg@aia.org; jhartke@usgbc.org  
Subject: RE: Flushout law for new buildings in California

Doug, it seems that the flush out language is back in the 45 day comment draft of the California green building code, and it could go national. Please see the attached press release from the ICC titled "CALIFORNIA GREEN BUILDING STANDARDS CODE SERVES AS KEY RESOURCE FOR NEW INTERNATIONAL CODE".

The flush out language is poorly written and still threatens to waste energy, interrupt commissioning and create significant liability concerns for design and construction projects if HVAC equipment is used for this purpose. Moreover there is no data to quantify any health or productivity benefit from flush out. Please see page 32 of the attached document. It reads:

5.504. IAQ Post-construction. After all interior finishes have been installed, flush out the building by 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.

1. During this time, maintain an internal temperature of at least 60 °F, and relative humidity no higher than 60%. If extenuating circumstances make these temperature and humidity limits unachievable, the flush out may be conducted under conditions as close as possible to these limits, provided that documentation of the extenuating circumstances is provided in writing.
2. Occupancy may start after 4 days, provided flush-out continues for the full 14 days. During occupied times, the thermal comfort conditions of Title 24 must be met.
3. For buildings that rely on natural ventilation, exhaust fans and floor fans must be used to improve air mixing and removal during the 14-day flush out, and windows should remain open.
4. Do not "bake out" the building by increasing the temperature of the space.
5. If continuous ventilation is not possible, flush-out must total the equivalent of 14 days of maximum outdoor air.

Comments on this and any other aspect of the proposed code can be sent to:

California Building Standards Commission  
2525 Natomas Park Drive, Suite 130  
Sacramento, CA 95833-2935  
Fax: (916) 263-0959

Regards

Simon Turner, LEED AP  
President

T: 949-450-1111  
M: 949-683-1000  
sturner@hbiamerica.com

Healthy Buildings International, Inc.  
25381 Commercentre Drive, Suite 150  
Lake Forest, CA 92630  
www.healthybuildings.com

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-----Original Message-----

From: Read, Doug [mailto:DRead@ashrae.org]  
Sent: Friday, August 07, 2009 2:31 PM  
To: Turner, Simon  
Cc: ddavis@ahrinet.org; kpenafiel@boma.org; rburton@boma.org; charlie.mccrudden@acca.org; Ferguson, Steve; Ramspeck, Claire; Colker, Ryan; Littleton, Jeff; kent.peterson@p2seng.com; agoldberg@aia.org; jhartke@usgbc.org  
Subject: RE: Flushout law for new buildings in California

Simon, Nice chatting with you this morning. After our initial communication, it is my understanding that you have spoken with Kent Peterson to get his take on the new code. Thanks again for the update and your concerns about what is happening in California. I am copying several people (my counterparts at several stakeholder organizations) who should be able to provide some feedback on their respective concerns. They are Don Davis (AHRI), Ron Burton and Karen Penafiel (BOMA), and Charlie McCrudden (ACCA), Andrew Goldberg (AIA), Jason Hartke (USGBC), as well as several people from ASHRAE staff. If I think of anyone else, I will certainly copy them. Best regards, Doug

Doug Read, Program Director of Government Affairs American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.  
Direct Line: 202-833-1830 ext 1106 Fax: 202-833-0118 eMail: DRead@ashrae.org Web: www.ASHRAE.org<<http://www.ashrae.org/>>  
1828 L Street, N.W., Ste. 906 Washington, DC 20036

<<http://www.ashrae.org/IBDbroadcast>>  
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<<http://www.ashrae.org/certification/page/1683>>

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From: Turner, Simon [sturner@hbiamerica.com]  
Sent: Friday, August 07, 2009 1:31 PM  
To: Read, Doug  
Subject: Flushout law for new buildings in California

Doug, please see the following language and attachments which could become California law in the 2010 Green Building codes:

REGARDING ADOPTION OF AMENDMENTS TO THE 2010 CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR), PARTS 2, 3, 4, 5 and 6 in TITLE 24, CCR, PART 11, CALIFORNIA GREEN BUILDING STANDARDS CODE

5.504.2 IAQ post-construction. After construction ends, with all interior finishes installed, flush-out the building by supplying continuous ventilation with all air handling units at their maximum outdoor air rate for at least 14 days while maintaining an internal temperature of at least 60°F, and relative humidity no higher than 60%. Occupancy may start after 7 days, provided flush-out continues for the full 14 days. Do not "bake out" the building by increasing the temperature of the space. (If continuous ventilation is not possible, flush-out must total the equivalent of 14 days of maximum outdoor air.).

A few things to consider:

- The HVAC equipment and control systems will not have been designed to do this.
  - This will cause major liability problems for building owners, equipment manufacturers, mechanical engineering firms and commissioning engineers.
  - In some California climates there will be a huge energy penalty for cooling to prevent the building from overheating, even if the tonnage is adequate, which it wouldn't be.
  - 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, but this means the flushout period to deliver the same amount of air could end up being much longer than 14 days, depending on the climate zone.
  - The delay of occupancy will be very expensive and not feasible in some cases.
  - Qualified engineers and IAQ experts HAVE reached consensus on how to provide an IAQ testing alternative as well as how to conduct a safe flushout process.
- The ARB should be read the draft ASHRAE/USGBC/IESNA Standard 189.1, attached, to find out how this should be done. The standard Committee Chair is past ASHRAE President Kent W. Peterson, PE, FASHRAE, LEED AP, based in Long Beach. The ARB should acknowledge their expertise on how to conduct a safe flushout and should they accept the protocol, they should equally acknowledge the validity of the IAQ testing alternative shown therein as well.

Regards

Simon Turner, Member ASHRAE, LEED AP

President

T: 949-450-1111

M: 949-683-1000

sturner@hbiamerica.com<mailto:sturner@hbiamerica.com>

Healthy Buildings International, Inc.

25381 Commercentre Drive, Suite 150

Lake Forest, CA 92630

www.healthybuildings.com<http://www.healthybuildings.com>

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Andrew Persily  
NIST  
100 Bureau Drive MS8633  
Gaithersburg, MD 20899  
andrew.persily@nist.gov  
301 975-6418  
Fax 975-4409  
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