

## Residential Ventilation Issues

by Dara Bowser & Bob Allison

### Is an HRV all you need if a Natural Draft Combustion Appliance is Installed?

The Ontario Building Code States:

#### 9.32.3.1.(1):

For the Purposes of this subsection a non-solid fuel fired **appliance** shall be classified as

- (a) direct vented.....
- (b) mechanically vented induced draft....., or
- (c) natural draft whereby combustion air is supplied from within the building envelope and the products of combustion are conveyed to the outdoor through a chimney or Type B vent.

#### 9.32.3.1.(2):

For the Purposes of this subsection a dwelling unit shall be categorized as:.....

- (c) type III when a mechanically vented induced draft non-solid fuel fire-place or a natural draft **appliance** is present, or....

#### 9.32.3.2.(1)

Every dwelling unit that is supplied with electrical power shall be provided with a mechanical ventilation system complying with

- (a) Part 6, or
- (b) this subsection for a mechanical ventilation system in a Type I, Type II, or Type IV dwelling unit.

In practice these sentences direct the user to "Part 6" or the good engineering practice section of the code for the design of the ventilation system whenever the dwelling unit is "Type III", or contains a natural draft non-solid fuel appliance.

The requirement of Part 6 of the OBC with respect to residential ventilation is that *objectives* of Section 9.32 be met, but not necessarily the letter.

Furthermore, the "good practice" guidelines listed in sentence 6.2.1.1. must be used.

Of the manuals listed in sentence 6.2.1.1. there is only one which fits the design objectives of section 9.32 and that is CSA F326. Essentially, F326 is a performance based version of 9.32 with some slightly different requirements, many of which are more difficult to meet than those of section 9.32.

Rather than become familiar with the ins and outs of the CSA standard, some building officials have accepted the presence of an HRV to be evidence of "Part 6 Design" without further question. In fact many such systems may not meet the requirements of CSA F326 and so do not meet the *design objectives* of Section 9.32, especially with respect to protection from back-spillage.

The presence of a spillage susceptible combustion device means that the building should be maintained at a balanced air pressure with respect to the outside. CSA F326 allows up to a maximum of 5 pa depressurization under specific circumstances, all of which involve operating the ventila-

tion system, the dryer and all large exhaust devices (over 160 cfm).

Some (especially smaller) houses will experience more than 5 pa of depressurization when only the dryer is operated and most houses will experience more than 5 pa negative pressure if there is a large exhaust device installed such as a down-draft cooktop. Such houses are at risk for combustion back-spillage due to excessive negative pressure.

When Part 6 design is being used, the depressurization requirements of CSA F326 must be met in order for the system to be considered "Equivalent" to a section 9.32 type system. It is

It is important to understand the meaning of *natural draft*. A simple method of recognizing natural draft is that it is connected to a chimney. The chimney can be masonry, "B-vent", "A vent", "L vent" or "C vent". For the purposes of the OBC, *natural draft* may also be taken to mean anything that is not elsewhere defined in sentence 9.32.3.1.(2).

not sufficient to accept the installation of an HRV as sufficient protection against depressurization in these houses.

Fundamentally, an HRV is a balanced ventilation device, that is, it only brings in as much air as it removes. In a situation where more air must be brought into the house (such as to replace the air exhausted by a dryer or other large exhaust device) an HRV cannot do the job. CSA F326 (the Part 6 Good practice reference for equivalence to section 9.32) requires that either a calculation or a test be carried out whenever a spillage-susceptible combustion appliance is installed.

**The Bottom Line:**

- a) It is not a good idea to ask for an HRV without being sure that the OBC actually requires one. (e.g. Sentences 9.32.3.6.(3) and 9.32.3.7.(3))
- b) Have a good understanding of what is a *natural draft* (spillage susceptible) appliance and what is not.
- c) Ensure that installations, tests and designs are verified by a qualified person.
- d) Encourage applicants to prepare their ventilation design in advance and to seek out experienced and qualified individuals to assist them.

*Note:* In our last article, we received comments from a reader concerning the requirements for

thermostatic anti-scald valves in the Unified Canadian Guideline for **Integrated Combo Systems (UCG)**. The UCG contains requirements for thermostatic anti-scald valves, that is to say *they are only required whenever the hot water tank temperature exceeds 140°F*. Some local energy-utilities may however, require an anti-scald valve in all situations where they are supplying the hot-water tank.

*\*Dara Bowser is an HRAI Ventilation Instructor, an associate member of the CSA Technical Committee on Residential Mechanical Ventilation. Dara has been involved in residential HVAC design as a consultant, manufacturer, and trainer for the past 15 years. dara@bowsertech.com*

*\*Bob Allison is the Deputy Chief Building Official of the Regional Municipality of Haldimand-Norfolk and has 23 year's experience as a building official. Bob takes a keen interest in ventilation and has assisted in the development of the 2-day OBOA Ventilation Workshop for Building Officials.*

NOTE: Although this column has appeared under the title "HRAI Commentary" in the past readers should note that HRAI no longer endorses the content. The opinions expressed in this column are those of the writers and do not reflect the views of HRAI, OBOA or any other agency, corporation or individual.

**BOARD MEETING  
SCHEDULE**

*June 18th & 19th, 1998*  
*August 20th & 21st, 1998*  
*Sat. October 3rd, 1998 at noon*

**COMMITTEE APPOINTMENTS 1997-1998**

Ron Kolbe .....	Journal
Lynn Balfour .....	Education
Doug Morrish .....	Training
Peter Barbour .....	Chapter Liaison
Reg McCurdy .....	Certification/Maintenance
Tony Chow .....	Nominations & Rules of Behaviour/AD HOC
Willy Wong .....	Engineers, Architects & Building Officials & Awards
Colin Bird .....	Public Relations
Peter Au .....	Code Review, Technical & Legislation
Scott Jibb .....	Services
Tracey Preston .....	Annual Meeting & Training Sessions & Bylaw