

# CLEARING THE AIR

*Residential Ventilation Issues by Dara Bowser & Bob Allison*

## "Tales from the Duct"

Continuing in the tradition of last issue's "Stale Air Stories" we add the following "Tales".

### **How can a ventilation system be turned "off" while continuing to operate?**

Sentence 9.32.3.4.(2) requires that the principal exhaust fan be equipped with a manual switch. In addition, CSA-F326 sentence 5.11 requires that all ventilation systems be capable of being turned off by the occupants. On the other hand, some HRV controls are set-up so that the HRV itself cannot be turned off except by pulling the plug on the unit. These units sometimes have a "re-circulate/ventilate" function on the wall control. Because the unit does not actually do any ventilation when it is in "re-circulate" it can be considered effectively to be "off" and so conforms with the OBC and CSA-F326.

### **Is the Outlet Size of the Fan the same as the Manufacturer's Recommended duct size?**

The outlet size of a fan often has little to do with the correct size of the duct for that fan, other than it is a good assumption that the duct size is never to be less than the fan outlet size.

We know of no case where a manufacturer sets a recommended *maximum* size of a duct for a particular fan, so if a table in Section 9.32 or a Part 6 duct design sets a larger duct size than the fan outlet, the larger size is the one to use.

### **Can a Range Hood be Used to Provide Part of the Total Ventilation Capacity?**

Traditional interpretation of the OBC section 9.32 leads to the conclusion that range hoods cannot be used to provide either the Principal Ventilation Capacity (PVC) or any part of the Total Ventilation Capacity (TVC). It is true that a range hood cannot be used to provide the PVC. This is because sentence 9.32.3.4.(8) requires such an intake, when located in a kitchen be located within 12" of the ceiling. But this does not mean that such a fan could not be used as a supplemental fan to provide the balance of the required ventilation capacity to make up the TVC. The only restriction on this use is the maximum sone rating set out in sentence 9.32.3.9.(3) (3.5 Sones for a fan located in kitchen). Until recently, there were no range hoods which had a sone rating of 3.5 sones or less. This occurred mostly because the range hoods were tested and rated on *high speed*.

Close inspection of the new HVI ratings catalogue (see Clearing the Air August 2001) shows that some range hoods are now rated on *low speed*. These range hoods will have both a

cfm and sone ratings for both low and high speeds. For example, the Broan QS1 is rated at 110 cfm and 1.5 sones on low speed but is also rated at 200 cfm and 4.0 sones on high speed. Such a fan could be used to provide up to 110 cfm of the required TVC.

### **Will Exhaust Fans in Garages become Mandatory?**

According to recent CMHC research the "gas proofing" between attached garages and the living space of a home is largely mythical. In a research study of 25 homes, it was found that the walls and ceilings separating the garage from the house were no more air-tight than the outside walls and ceilings of the houses (CMHC Research Highlight #01-122, [www.cmhc-schl.gc.ca](http://www.cmhc-schl.gc.ca)). Most of the houses had significant air-leakage paths between the garage and the house meaning that pollutants from the garage (gasoline fumes, CO etc) can easily make their way from the garage to the house. The fact that this happens has recently been recognised in the Ontario Building Code by the new requirement for CO detectors for houses with attached garages (Clearing the Air December 2001).

The current speculation in building science circles is that the most effective approach to preventing pollutant entry from the garage to the house is a continuously operating exhaust fan in the garage which will maintain a continuous negative pressure in the garage with respect to the house.

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