

[http://hearth.com/econtent/index.php/articles/unvented\\_vs\\_vented\\_gas\\_appliances](http://hearth.com/econtent/index.php/articles/unvented_vs_vented_gas_appliances)

Source URL. Note I have broken up one large paragraph to make it more readable. Nothing has been altered.

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## ARTICLES - - UNVENTED VS VENTED GAS APPLIANCES

Webmasters Note: Consumer Reports Nov, 1998 issue did a small story on their testing of Vent-Free appliances. Based on their findings, they conclude "our tests confirm that these heaters contribute significantly to indoor air pollution. If you are planning to buy a gas fireplace, a vented model should be your first choice". They also give recommendations if you do buy a vent free, such as keeping a window open TOP AND BOTTOM when you are using the appliance. All in all, not a very complete test, however it represents one of the first independent opinions on these controversial products.

Another article on these controversial fireplaces is presented below. The Vent Free Industry also has a web site which discusses their views: <http://www.ventfree.org/>

### AN INDUSTRY VIEWPOINT UNVENTED VS VENTED GAS APPLIANCES

Canada should not change its regulations preventing unvented gas appliances. Reprinted with permission from Mechanical Buyer and Specifier magazine.

By Lance O'Hearn

I wonder how many cavemen (cavepersons?) died from smoke inhalation before the tribe elders banned the practice of in-cave fires without adequate ventilation?

Anyone following the debates raging in the United States regarding 'vent-free', 'ventless', or 'unvented' fireplaces has to wonder how long the people on the pro-side of this debate have been inhaling the fumes from their own unvented fireplace. Whatever name you choose to call these appliances by, I call them "wit-free", "witless" and "unwitting". In fact, I can not believe there are grounds for a reasonable debate on this matter at all.

Here in Canada, we currently sit smug in the knowledge that we prohibit such products. But do not be lulled into a false sense of security. The push is on, in some small but powerful circles to lobby the IGAC/Interprovincial Gas Advisory Council to consider the acceptance of unvented hearth products, as AGA/American Gas Assn and GAMA/Gas Appliance Mfrs Assn have done in the U.S. Hell! The proponents argue, these things are 99.9% efficient, inexpensive to produce and cost next to nothing to install, since there is no venting required!

Proponents of ventless appliances will further point out that these products are equipped with oxygen depletion sensors (ODS). They are designed to extinguish the pilot if the oxygen levels in the room fall from their normal levels of 20.9%, at sea level to 18%, ensuring that a ventless system can not consume all of the oxygen in a room and suffocate the occupants.

Another argument put forward by this growth segment of the hearth products industry in the U.S., is that there are already other unvented products in homes such as gas ranges. They apparently disregard the fact they are usually under a range hood, operate at much lower inputs and are designed to burn with a non-adjustable, clean, blue flame. The comparison is like comparing the emissions of a 1975 diesel dump truck to a 1996 mini-van. Remember the kerosene heaters?

How many people have forgotten the disastrous rush for unvented kerosene heaters a few decades ago and the numbers of fire and carbon monoxide related fatalities or injuries which were attributed to them? How can any thinking human being install an unvented fuel burning appliance in their homes and not be the least bit concerned about the harmful by-products of combustion which they surely breathe each and every time they operate that appliance?

Unfortunately, the so-called definitive study of these systems by AGAR/American Gas Association Research has not as yet been published. However, not surprising, there are countless 'independent' reports published by the unvented proponents side, extolling the virtues and safety of unvented appliances. Carbon monoxide?...What carbon monoxide? Sulphur dioxide?...What sulphur dioxide? Nitrogen oxides...What nitrogen oxides? These unbiased reports would carry much more water if they were not commissioned and paid for by the newly formed GAMA Vent-Free Gas Products Div., an association of unvented appliance manufacturers boasting 19 member manufacturers.

Even without the benefit of AGAR's pending report, there are serious and even dangerous misrepresentations being made about these products.

AFUE drops with fresh air # 1.

In order to claim 99.9% efficiency, the consumer would have to ensure that no fresh air was being introduced to the room the unvented appliance was operating in. That is something that even the staunch supporters of these products do not suggest is wise for obvious health concerns.

The calculation must vary according to the gas input rate of the appliance, by one estimation based on 39,000 Btuh, (the maximum input allowed by standards). When the proper amount of fresh air is ducted into the room to feed the appropriate amount of primary and secondary air necessary for complete combustion, the annual fuel utilization efficiency (AFUE) of the unit drops, in some cases even lower than a conventional direct vent fireplace.

Wide range of activation # 2.

Oxygen depletion sensors have been around in Europe for many years, but they are fallible. I have personally tested several hearth products equipped with the ODS systems in a 1,000 cubic foot, closed room, environmentally controlled chamber with an oxygen analyzer continuously monitoring the test room. I found that they will function (to shut-off the pilot at anywhere from 19% down to 16% which is quite a range and leaves grave questions in my mind as to their calibrated tolerances.

A device that is intended to protect life and limb should not be acceptable with apparent tolerances of plus or minus 20%. This is especially true when we are discussing 20% of the oxygen content normally found in healthy ambient air. That reduction in oxygen is usually accomplished within 30 to 45 minutes, again, depending on the gas input rate.

The ODS system is a very inexpensive and simple mechanical device. Certainly not something I would stake my life on, or the life of a too-trusting consuming public. To simply state that they are dependable and will shut-off the appliance at 18% oxygen is playing fast and loose with the public's trust in technology.

Poor installation practices # 3.

A properly set up appliance can be made to operate extremely cleanly, producing only a few parts per million of carbon monoxide. However, I have seen and heard of literally hundreds of cases: involving poor installation practices; mis-installation of the logs; over-firing the burner by increasing the manifold pressure; tampering with the primary air shutter on the burner to make the flame high or more yellow to suit the home owner. Few, if any, of these installing contractors carry combustion analyzers, to check affects of such adjustments.

Now, are we supposed to trust the installing contractors to instruct and ensure that the consumer introduces a specific amount of fresh air to the room whenever they operate their unvented fireplace? How long after the installer has left the home will the consumer, or even the new owner who has purchased the home, decide that the fresh air supply is too uncomfortable in the coldest months of the year and unwittingly plug them up? Fire logs a health concern

It would be an oversight not to include recent health concerns raised regarding the use of ceramic fibre logs. To my knowledge, there have been no studies proving that these products will break down and cause lung fibrosis or lung cancer. However, the manufacturers of these products have formed an organization in the U.S. called the Refractory Ceramic Fibre Coalition (RCFC). In response to concerns raised, they commissioned an epidemiological study, conducted by the University of Cincinnati.

The results of their own sponsored, but independent study, recommended that these logs, when broken should be wetted down, bagged and removed from the home. Their data provided "reason to be cautious" and recommended that these logs should be "treated with respect."

Since there are little if any references to the handling of logs directed to service technicians, installers or homeowners in the instruction manuals which accompany the appliance, their recommendations may be mute points.

If however, there is a remote chance of aging or somewhat damaged logs producing minuscule airborne fibres, I would personally feel much better about them going up my chimney in a vented appliance than into my living room from an unvented product.

Since hearth products, in general, have become an important industry in under 10 years, ceramic fibre logs have been around even less time. And now unvented hearth products with ceramic fibre logs are only a few years old-isn't it a bit too soon to apply a 'safe' sticker to them? Push for approval to rise

As more and more major manufacturers leap into this apparently new source of profitability, a few of whom have manufacturing and distribution operations in Canada, the push will get stronger for our acceptance of this non-technology. If they are successful, in convincing the IGAC, my advice to manufacturers, to their distributors and to the retailers is...increase your product liability insurance!

It is difficult, if not impossible, to make all consumers follow routine maintenance programs. We know this from the number of home owners who do not even think to change the filter on their furnaces every year. How many years will it be before the primary air shutters on these unvented appliances are clogged with dust balls, carpet lint and cat hair, generating massive amounts of carbon monoxide directly into the living area!

The simple case for vented gas logs and appliances is that even with the kinds of abuse mentioned above, there is the fall-back safety of a chimney constantly drawing away any harmful by-products of combustion. The appliance could therefore be generating deadly levels of carbon monoxide for years without causing any bodily harm.

Dealers in the U.S. admit these products are an easy sell, when they ask the trusting consumer the wrong questions: i.e., "What would you rather buy? This vented gas log set for \$500, which is 99.9% efficient, or this direct vent zero clearance fireplace for \$2,200, which is only 80% efficient? (Quote partially taken from retailer David Copping in the October issue of *Hearth & Home*.)

If these dealers were being absolutely truthful with their customers, the question should come out: "For \$500, you can have this unvented gas log that will throw off heat, water vapour (adding to the humidity levels in the home), traces of carbon monoxide, sulphur dioxide and nitrous oxides, and may, if not maintained, operated or installed correctly, kill you and your family in your sleep. Or, you can have this direct vent fireplace that uses outside air in a sealed combustion system, and only delivers heat into your home, allowing you and your family to sleep in safety for \$2,200."

I guess it's all in how you ask the question.

Perhaps one of the better quotes I have read in this debate came from one of the many opponents to unvented, Jim Hermann of The Earth Stove, who said: "You don't need a scientist, you need a psychiatrist."

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