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## Answers to Comments Concerning Vent-Free Safety

In recent months some articles have appeared in various publications and blog sites that have raised significant issues regarding vent-free gas space heating products and their safety relative to indoor air quality in consumers' homes. The following is offered as objective, verifiable information and insights regarding these very popular products used by millions of consumers to add comfort, attractive space heat, and warmth during power outages to their homes.

### WHAT ARE UNVENTED OR VENT-FREE GAS PRODUCTS?

Vent-free gas heating products are available in many designs for varied applications, personal tastes, and price points (or retail costs). When installed they are fixed (not portable) installations fueled by either natural or propane gas, determined by the primary heating fuel of the home. They are available in many heat outputs (6,000-40,000 Btu/hr) and are used as supplemental heat in conjunction with the primary heat source of the home, i.e., the central heating system/furnace. Consumers now have the choice of manual, thermostatic and remote controls that are available for most designs.

Vent-free gas heating product designs include slim/rectangular heaters that hang on the wall or are attached to the floor and are available in infrared or convection burner systems. These heaters were the first "new generation" vent-free gas products introduced in 1980. During the last twelve years, vent-free technology has been adapted to a variety of hearth products including gas logs that are installed in existing masonry or manufactured fireplaces or vent-free fireboxes; fireplace systems that are installed against or recessed into a wall and trimmed out with a mantel; stoves available in "retro" cast iron designs that have porcelain or painted finish, or are in a more modern sheet metal configuration; and finally inserts that recess into existing fireplaces and are trimmed out with a metal surround that extends over the fireplace opening.

### ARE THERE SAFETY REQUIREMENTS?

Every vent-free gas product marketed in the U.S. today, regardless of the size, shape, appearance, heat output, or price, has been approved by a recognized listing agency. This involves testing to a rigorous safety standard, in this case ANSI Z21.11.2. But what does that mean to the average consumer? The American National Standards Institute (ANSI) oversees a process for the development and constant upgrades of safety standards for virtually every class of home appliance available in the marketplace. Every manufacturer must submit their designs for testing to the applicable standard by an independent laboratory.

UL is often the agency testing electrical products whereas gas appliances are generally tested by CSA or ITS. Whether we're talking about a furnace, water heater, toaster, barbeque grill...or vent-free gas product, the ANSI safety standards process applies and is the first line of safety defense for the consumer. The ANSI standard for vent-free gas products is a document of 119 pages, and includes 33 separate tests that each product must successfully pass before approval to be marketed.

### WHAT IS THE SAFETY RECORD?

Once appliances are in the U.S. marketplace, the U.S. Consumer Product Safety Commission (CPSC) is the primary

safety “watchdog”, accumulating product safety data from numerous sources, and investigating and reporting the safety record of various product categories. What does CPSC data reveal about vent-free gas appliances? The U.S. Consumer Product Safety Commission (CPSC) has stated that it is not aware of any documented incident in the CPSC In-Depth Investigation (IDI) database of fatal CO poisoning associated with an ODS-equipped vent-free gas heating product. These appliances have earned an outstanding safety record.

In 1980, the ANSI standard for these products was revised to require each unit to be equipped with an oxygen detection safety sensor (ODS). The ODS is remarkably equivalent in function/reliability to what a circuit breaker is to electrical current. The ODS automatically shuts off the unit in the unlikely situation that carbon monoxide is elevating and there is oxygen depleting in the vicinity of the unit (regardless of the CO source). The ODS is tamper resistant! If there is any attempt to override, modify, or tamper with the unit, the ODS will shut off the gas supply and disarm the ignition system and the appliance cannot be operated.

## WHAT ABOUT INDOOR AIR QUALITY?

Among informed sources, the concern for CO poisoning has essentially been “off the table” for many years for vent-free gas products, but even well intentioned critics have legitimately asked whether there are other possible harmful effects associated with use and exposure to emissions from vent-free gas products. To address this question, in 1996 the Vent-Free Gas Products Alliance, members of GAMA, an Association of Appliance and Equipment Manufacturers, commissioned an independent research project to be conducted by the American Gas Association Research Division (AGAR). The objective was to measure the primary by-products of gas combustion from vent-free gas products against the most relevant indoor air quality standards and/or guidelines.

The contributors to indoor air quality that were tested were oxygen, carbon monoxide, carbon dioxide, nitrogen dioxide, and water vapor (humidity). The researchers took into consideration the climate in the five Department of Energy heating regions in the U.S., various types of housing construction, and varied volumes of space to be heated. After running hundreds of thousands of computer based scenarios, the results were confirmed by the American Gas Association test house which was modified for all factors.

The researchers concluded that “vent-free gas heating products performed well within nationally recognized guidelines for indoor air quality. This research proves that vent-free gas heating products meet applicable emissions requirements even when used over extended time periods, among sensitive populations, and with units whose maximum heat output exceeds the requirements of the space.” Only in region V, (primarily the northern U.S. tier) if the appliance is used in a confined space (a room not able to communicate air exchange with other parts of the residence) there should be a limitation on the Btu/hr input of the heater. This landmark research has been extensively peer reviewed and has served as the basis for acceptance of vent-free gas products by national code groups and state regulatory agencies.

## WHAT ABOUT EXCESS HUMIDITY?

During the last five years increasing attention has been drawn to the general environmental issue of sustained high humidity/moisture from many sources and the potential negative outcome of mold growth. Some parties began asking whether vent-free gas heating products generate enough water vapor to raise indoor relative humidity levels high enough to foster mold growth. Again the industry commissioned independent research to answer this question. In December 2002 the rigorous and comprehensive study was completed by risksciences, LLC, an independent scientific consulting firm nationally recognized for its expertise in human exposure modeling in residential environments.

The research study concluded that, "for the vast majority of homes in the U.S. (99%), vent-free gas heating products DO NOT generate enough water vapor to raise indoor humidity levels high enough to foster mold growth". Furthermore, the findings indicated that greater emphasis should be placed on other factors that can cause humidity levels to exceed mold formation thresholds such as aging homes, outdated construction, poorly sealed or leaky windows, wall insulation, insufficient ventilation and maintenance of air conditioning systems. However, if a home is showing any signs of excess moisture, a vent-free gas heating product should not be installed until the excess moisture problems are eliminated. We are all aware that many homeowners use humidifiers during winter months and in most all cases the limited humidity produced by the vent-free gas product adds comfort to the otherwise "healthy home".

#### WHAT ELSE SHOULD THE HOMEOWNER CONSIDER?

Consumers should consult a full-service retailer when choosing the right vent-free gas product for their particular needs and have the appliance professionally installed and serviced. Because vent-free gas products are a heating appliance, it is very important that distance to combustibles is carefully observed as related to surrounding furniture, drapes, adjacent walls, human activity, etc. As with all appliances, routine cleaning and maintenance according to manufacturer's instructions is advised. When cleaning a vent-free hearth product, it is critical that the logs be returned to the precise position relative to the burners as required by the manufacturer to avoid the possibility of sooting.

Vent-free gas products provide warmth to a chilly area of the home, enable the family to focus heat in gathering areas while reducing the central heating cost, can convert a wood burning fireplace to a convenient attractive heating site, or can update a home by adding a fully dressed out space heating fireplace. In the event of power outage, there will always be heat available from the non-electrically dependent vent-free gas appliance.

For a copy of the Consumer Guide or for more information visit the Vent-Free Gas Appliance website at [www.ventfree.org](http://www.ventfree.org)