Combustion safety: What tests will be done and why?

The certified Home Performance Contractor will look at three major issues:
1) the carbon monoxide levels of the gas and oil fired equipment;
2) backdrafting of all vented appliances; and
3) safety hazards, such as gas leaks and cracked heat exchangers.

The **two major reasons** for conducting combustion tests on your house are for your **health** (potential carbon monoxide exposure & poisoning) and your **safety** (fire prevention) for you and your family.

Carbon Monoxide

High levels of carbon monoxide are a sign that your combustion appliances are not operating efficiently, and they are dangerous for you and your family. According to the Centers for Disease Control and Prevention, carbon monoxide poisoning needlessly takes **more than 500 lives** every year. The contractor will test your kitchen and other areas in your home, as well as each combustion appliance for dangerous levels of carbon monoxide.

Backdraft/Venting Tests

The contractor will make sure the combustion appliance is exhausting properly: in case there was anything dangerous in the exhaust, it will leave the building. Backdrafting and poorly drafting appliances are commonly caused by poorly balanced ductwork, leaky return ductwork, exhaust fans (bath fans, kitchen hood, dryer, central vacuum system, whole-house fan), fireplaces, and other combustion appliances. It takes very little to cause venting problems.


Inspecting HVAC equipment

To test for backdrafting and to determine the amount of venting of each combustion appliance, the Home Performance Contractor will turn on all the vents and exhaust fans in the house (dryer, bath fans, exhaust hood etc.). The objective is to try to create the worst case operating conditions that make the appliance most likely to back draft. If combustion appliances are drafting and operating properly under these conditions and do not pose a safety concern, they will vent properly and safely during all other conditions as well.

Safety Hazard Examinations

Gas leaks pose a potential immediate threat of fire or explosion. Leaks are detected by an electronic gas leak detector.

Flames unexpectedly coming out the front of the appliance ("roll-out") indicate serious combustion problems. The Home Performance Contractor will check your appliance for black or rusted areas in front of the burners, burnt wires, and carbon deposits.

The contractor will also examine appliances for a breach in the heat exchanger. Checking for cracks is done by observing the flames for interference when the blower is operating and by direct inspection of the heat exchanger.

For more information on combustion safety and indoor air quality, please visit:

- www.epa.gov/iaq/homes/hip-combustion.html
- www.cpsc.gov/cpscpub/pubs/452.html
- www.cdc.gov/co/faqs.htm
- www.homeenergy.org/archive/hem.dis.anl.gov/eehem/95/950308.html