

TECHNICAL BULLETIN

BULLETIN 66

COMBUSTION AIR CONTAMINANTS	
DANGER	Combustion air contaminants will cause water heaters and their controls to malfunction
EFFECTS	The effects of room air contamination will cause thermocouples, electronic controls, flue baffles, burner assemblies and other components to degrade by means of external corrosion
HOW TO CHECK IT	<p>The room or environment that the heater is located in must not contain anything that can produce air borne contaminants.</p> <p>Per the National Fuel Gas Code (ANSI 223.1/NFPA-54):</p> <p>5.1.6 Protection of Gas Equipment from Fumes or Gases Other Than Products of Combustion.</p> <p>Where corrosive or flammable process fumes or gases are present, means for their safe disposal shall be provided. Such fumes or gases include carbon monoxide, hydrogen sulfide, ammonia, chlorine and halogenated hydrocarbons.</p> <p>Gas appliances installed in beauty shops, barber shops, or other facilities where chemicals that generate corrosive or flammable products such as aerosol sprays are routinely used shall be located in an equipment room separate or partitioned off from other areas with provisions for combustion and dilution air from the outdoors.</p> <p><i>Exception: This requirement shall not apply to direct vent equipment that is constructed and installed so all air for combustion is obtained from the outside atmosphere and all flue gases are discharged to the outside atmosphere.</i></p> <p>Corrosive or flammable process fumes or gases can be disposed safely only by a separate exhaust system and an adequate supply of fresh makeup air. Providing a system of isolation for the gas-fired appliance can be necessary to ensure that uncontaminated air is available for its combustion process.</p> <p>For many years, hydrocarbons treated with halogen were used extensively in aerosol sprays cans containing various household and commercial products. These products are still in use, though their widespread use has been curtailed. However, chlorine and fluorine compounds are still present in many products (i.e. water softener salts, laundry bleaches, detergents, adhesives, paints, varnishes, paint strippers, waxes and plastics). When burned, these compounds form acids that corrode the heat exchanger and vent system. The only way to avoid the subsequent problem of excessive corrosion of the heat exchanger surface and vent system is to isolate the heating or water-heating appliance so that it only uses outside air for combustion, ventilation and draft hood dilution. Direct vent equipment does not need to meet this requirement because it is designed to obtain all air for combustion from the outside atmosphere and discharge flue gases into it as well, provided that the combustion air is not located in a contaminated area (i.e. swimming pool, dryer vent, etc.)</p>
THE FIX	Air for the heating process must be free of corrosive contaminants and to do this any water heater (non direct vent) must be installed in an area that has no chemical exposure. Also note that even with a direct vent heater in an contaminated environment can cause any controls or sensor to fail prematurely due to external corrosion