PYROLISYS

Please read this if a development of dangerous conditions has been observed in your chimney system.

This may be simply due the chimney's age or as in most cases as a result of exposure to chimney fires.Chimney fires are not uncommon especially with outdated non EPA-certified appliances. Their low efficiency (usually around 35%) and incomplete combustion promote heavy creosote build-up on the inner walls of the flue. The creosote accumulation is even higher with poor fuel such as pine, fir, unseasoned wood or cardboard. The more buildup there is the more easily the creosote ignites during a "hot fire" session. When the creosote in your chimney ignites it creates a sudden spike of temperature in the flue **up to 2100F** from a few seconds to a few minutes. Such high temperatures can **over-expand and distort** the inner walls of the chimney leaving them far from their original form. These distortions in form of ***Bulges, Dents and Warpage*** can compromise the thermal integrity of the chimney and fail to protect the combustibles surrounding the chimney from additional heat during further use of the system or yet another chimney fire in the future which can lead to "breach" or ***Pyrolysis.***

Pyrolysis is defined as "chemical decomposition of the carbon compound in the wood caused by heat." It is the process by which a combustible material exposed to temperatures of approximately 212F or more for a prolonged period of time (and that's not really very hot!) will dry out, break down and combust spontaneously. It **doesn't** need the presence

of direct flame or spark to ignite, either. It simply needs enough **heat and oxygen.** Pyrolysis is the cause of over **85 percent** of the solid fuel-related fires. Chimney fires generate excessive heat that speeds up the pyrolysis process. Pyrolisys may take years or decades to bring the wood ready to combust therefore it may be misleading to think that since the system has not filed in many years it is safe.

Special note: with ***solid-pack, double wall insulated chimney pipe*** (aka metalbestos brand) there is an even higher risk of **Pyrolysis.** These old double wall pipes used to be loose-filled, which means that the the space between the inner and outer wall of the pipe was filled with loose silica (white powder). When the chimney suffers bulges, the two chimney walls are not so tightly together anymore and the bulges make space for the silica to "settle" into the bulge cavity. This "settling" means that there is now silica missing from some area in the pipe creating a **hot spot** (an area where the silica doesn't stop the heat transfer to the outside of the pipe) and with several bulges there is going to be several hotspots. Hot spots are very dangerous because they can really speed up the pyrolysis and expose the surrounding combustibles to heat much higher than 212F. So even if the flashpoint of the wood drops to 400F, having the chimney exposed to 500F will make it combust.

It is highly recommended that the chimney system be replaced for safety along with the outdated appliance which, if left in place, could accelerate the deterioration of a new system.