

Pyrolysis Causes Fires

By Jay Hensley

Chemical breakdown of combustibles too close to a heat source is a major cause of structural fires in North America.

Understanding the pyrolysis process is the first step towards keeping your house or place of business from burning down this winter, or next. Pyrolysis causes fire after fire, tragedy after tragedy, year after year. Yet how many people even know the meaning of the word?

Pyrolysis is defined as "chemical decomposition caused by heat." It is the process by which a combustible material exposed to temperatures of approximately 212°F or more for a prolonged period of time (and that's not really very hot!) will dry out, break down and burn. It doesn't need the presence of direct flame to ignite, either. It simply needs enough heat and oxygen.

Fire investigator and former chimney sweep Genevieve Bures in Rocky River, Ohio says pyrolysis is the cause of over 85 percent of the solid fuel-related fires she investigates.

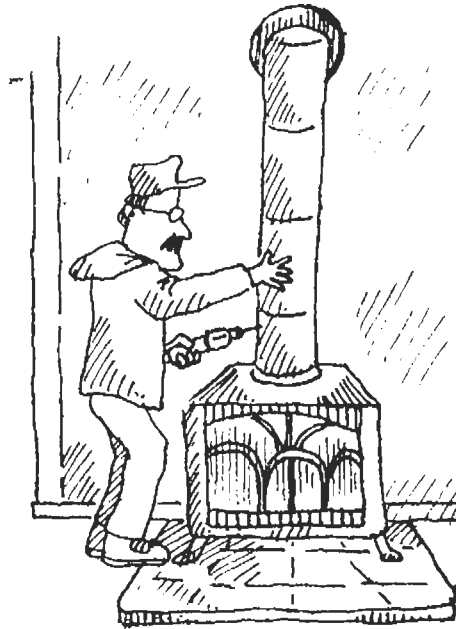
Sifting through ashes and studying burned-out or fire-damaged structures, Bures finds that only about 10 out of every 100 of these fires are caused by improper maintenance of the appliance, chimney, connector pipe, etc. Around 5 percent of the fires result from improper or careless operation of the appliance or heating system.

The overwhelming majority of these fires, however, are traced to the pyrolysis made virtually inevitable by the improper installation of fireplaces, solid-fuel stoves, fireplace inserts and furnaces.

Inadequate Clearances

Not leaving enough air space between a woodburning stove or stovepipe and unprotected walls, structural components or furnishings is what makes an installation dangerous.

It may look like plenty of clearance to the uninitiated observer, but it's less than the manufacturer specifies. And it's less than the



Installation manuals specify minimum clearances. Set stove on an approved floor protector of the correct dimensions. Use only listed wall/ceiling pass-through units. Install the stove into a properly-sized flue liner in a sound masonry chimney, or use a pre-fabricated metal chimney designed for this purpose. An interior chimney is the best choice.

MINIMUM clearances recommended by the National Fire Protection Association in its NFPA 211 standard, the "bible" of most professional chimney sweeps who install and service solid-fuel heating systems.

You ignore these minimum clearances at your peril, and at your children's peril. It is the little kids, and the elderly, who are the ones most at risk in house fires.

Time, the Enemy

Because your heating system "has worked just fine" for years is of little comfort. Time is working against you! Pyrolysis

accomplishes its destruction in a matter of years or months. In a test conducted by the NFPA, a stack of wood fiberboards (1/8-inch thickness) was exposed to a heat source of only 228°F. The wood self-ignited in only 96 hours!

Ordinarily, a piece of 2" x 4" construction lumber has an ignition temperature of approximately 500°F. Exposed to moderate heat for a prolonged period, however, this ignition temperature is reduced and the wood is capable of self-igniting spontaneously.

Like the NFPA 211 standard, both local and regional building codes designate minimum installation requirements. To use less than the minimum is to invite disaster.

Rx for safer chimneys

Minimum clearances are also determined for chimneys, ductwork and other heating system components.

Where a chimney does not have the proper clearances to the structure of the house, combustibles on the other side of even a sound flue wall are subjected to pyrolysis and can eventually catch fire. Chimney fires generate excessive heat that speeds up the pyrolysis process. This is why a professional chimney sweep might shake his or her head after inspecting your chimney and say, "It's just not good enough! We must line it from top to bottom to make your heating system safer." Pyrolysis is also caused by steam pipes too close to combustibles; overlamped light fixtures, overloaded branch circuit wiring inside walls, flimsy extension cords overheated by use with electric space heaters, electric-outlet strips with too many things plugged in.

Could pyrolysis be happening in your home? Seek it out; head it off, now... Do not forget that TIME, the enemy, is working against you.