Chimney and Fireplace Safety

Heating fires account for 36% of residential home fires in rural areas every year. Often these fires are due to creosote buildup in chimneys and stovepipes. All home heating systems require regular maintenance to function safely and efficiently.

This guide will walk you through best practices on fireplace and chimney safety to keep your home fires safely burning.

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FIREPLACE SAFETY

Can fireplaces start a house fire?

Yes, fireplaces are capable of starting a house fire! Many people don't realize the possible dangers fireplaces pose. These dangers can be caused by such things as lack of maintenance or incorrect installation. According to a 2008 study by the National Fire Protection Agency, 24,300 fireplace fires in the US caused $246,000,000 in damage. Of those, only 23% were caused by creosote buildup in the chimneys which means most of the fires in the 2008 study started from other causes.

Fireplace types vary and include wood burning fireplaces, gas burning fireplaces, and pellet stoves. Most fireplaces installed today have metal inserts that attach to a metal chimney. The metal remains behind the nice brick or stone facade and the outside chimney chase. Older fireplaces have a clay liner.

Chimneys vary by the type of fireplace. Gas fireplaces use different venting than wood burning units. Wood fireplaces burn much hotter than gas units, reaching 2,000 degrees. This level of heat can ignite other combustible material located near the fireplace.

HOW DO FIREPLACES FAIL?

The best way is to prepare to respond to an emergency before it happens. Few people can think clearly and logically in a crisis, so it is important to do so in advance, when you have time to be thorough.

Creosote Buildup

Creosote is a black, tar-like material that collects in the chimney flue. This buildup is highly combustible and can be ignited, causing a chimney fire. This condition can be prevented by having your chimney professionally and regularly cleaned.

Chimney Failure

Clay flue liners are susceptible to cracks. When cracks occur, hot gases can escape into the fireplace chase or into the home, sometimes causing carbon monoxide to enter, as well. These gases also may cause nearby framing members to ignite. Gas entry and ignition can be prevented by having your fireplace inspected and cleaned by a certified inspector. The Consumer Product Safety Commission website provides excellent education on chimney failures.

Improper Maintenance

In addition to cleaning the unit, proper fireplace maintenance is also mandatory. Hot gases must be able to travel up and out. Gaps in a system allow hot gases to get into the chase or the home which can cause carbon monoxide entry or fire. If a fireplace insert is available, the metal box is meant to fit up against the brick or stone fascia and hearth. The connection point should also contain refractory cement which prevents heat from getting into the space between the insert and the chase. The same cement material is used for wood burning fireplaces with gas igniters. Over time, this cement can crack and may even fall out. Cracking and gapping issues would be discovered in regular inspections.

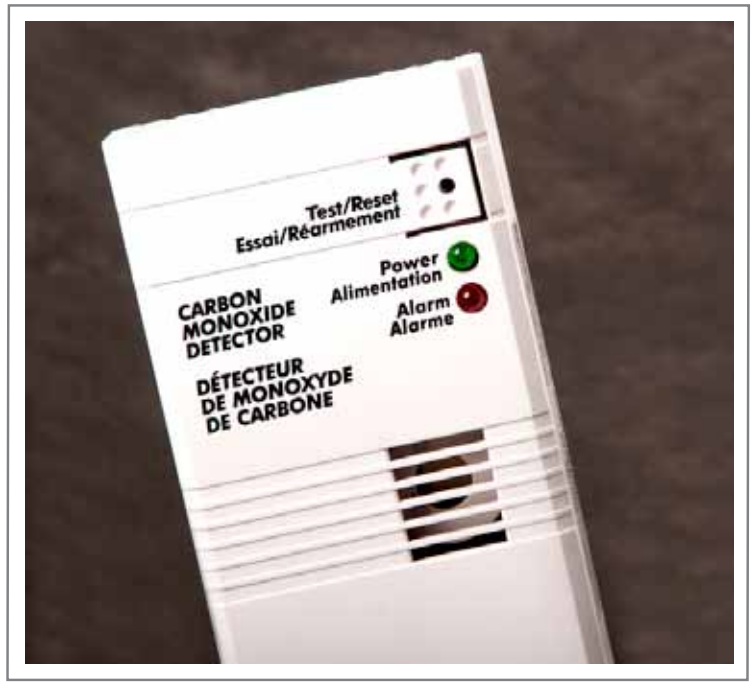
Improper Installation

Many substantial fires (and fires to brand new homes) are caused because of incorrect installation, incorrect clearances, improper venting, incorrect rough in of the surround chase, and insulation. The National Fire Protection Association, the manufacturer of the fireplace, and the venting manufacturer all have certain guidelines for proper installation and all of them must be followed. For instance, improper installation can occur if the chimney chase is left open in the attic and the insulators blow in cellulose insulation. The insulation then travels down and the chimney chase traps the heat around the fireplace insert. The trapped heat near the insert causes the wood and other combustible material to start a fire.

Negative Pressure and Carbon Monoxide

Many people aren't aware of the dangers caused by negative pressure and carbon monoxide. Unfortunately, they can be life threatening.

Many homeowners seem to want to keep their homes as airtight as possible; they believe doing so will reduce their heating bills. But oxygen is needed by more than just the people living in the home. Cooking devices, fireplaces, water heaters, and furnaces, just to name a few, also need oxygen. When a home is airtight, all of these devices fight for oxygen. Adding to this issue are bathroom fans that remove 60 square feet of air per minute from the home. Many homes have more than one bathroom fan, and the strongest fans take out the air, pulling air even from the weaker fans and other devices. If a stronger bathroom fan begins to pull oxygen from the fireplace, carbon monoxide can also be pulled into the living area. If the fireplace is pulling the oxygen, carbon monoxide can be pulled from the water heater. This "pulling" is negative pressure and it's dangerous because carbon monoxide is odorless, colorless, and deadly.



Negative pressure can be fixed by installing an air exchanger to equalize the pressure. Contact a qualified heating contractor to review pressure issues in your home and to give you more information about preventing a potentially-deadly situation.

So have your fireplace checked each year and be sure to have it cleaned each year if you burn sappy wood. We want you to stay safe this winter by keeping fires where they should be: In the fireplace!

CHIMNEY SAFETY ALERT

According to the US Consumer Product Safety Commission (CPSC), 27,000 residential fires and 20 deaths were caused by fires that started in fireplaces, chimneys, and chimney connectors in 2007. These are the latest statistics available as of August 2010.

CPSC research indicates that most wood heating fires involve the chimney and not the appliance itself. The majority of these fires are contained within the chimney and cause no damage to the house. The Commission is concerned, however, not only about the chimney fires that did ignite other parts of the house, but also about the potential future hazard from the continued use of chimneys whose structural integrity has been compromised by a chimney fire. This is especially true in light of the fact that many contained chimney fires are not reported to the fire services; in fact, consumers may not even be aware that a chimney fire has occurred.

Therefore, the Consumer Product Safety Commission is issuing a special safety alert concerning chimneys used with wood burning stoves, fireplaces, and fireplace inserts. The Commission urgently warns consumers to be aware of the potential fire hazards associated with these chimneys.

Now that the midwest has entered the heating season, the Commission strongly urges you, if you have a stove or fireplace, to check the chimney for any damage that may have occurred in the past heating season. If it is difficult to examine the chimney, a local chimney repairman, chimney "sweep," or dealer can help. Have any damage repaired NOW.

Most fires involving either masonry or prefabricated metal chimneys occur because of improper installation, use, or maintenance. The Commission staff has identified the following common causes of fires:

- Improper chimney installation too close to wood framing.
- Installation of thermal insulation too close to the chimney.
- Improperly passing the stovepipe or chimney through a ceiling or wall, causing ignition of wood framing.
- Structural damage to the chimney caused by the ignition of creosote (a black tar-like substance that builds up inside the chimney in normal use).

Structural damage to metal prefabricated chimneys that results in wood framing being exposed to excessive temperatures or leakage of potentially toxic gases to the interior of the home can take the following forms:

- Corrosion or rusting of the inner liners of metal chimneys.
- Buckling, separation of the seam, or collapsing of the inner liner of metal chimneys. (This can result from too hot a fire, especially in high-efficiency stoves and in fireplace inserts, or from a creosote fire.)

Structural damage also occurs in masonry chimneys, often associated with deterioration or improper installation of the chimney. The tile inner liner and the surrounding brick or block structure may crack and separate, perhaps as a result of the ignition of creosote that has built up in the chimney. Many old chimneys do not have a tile liner. If your chimney does not have a liner, the addition of a properly installed liner is advisable. Also, a clay liner should be sealed with refractory cement.

Even when the heating appliance is properly installed, people with either metal or masonry chimney systems should frequently check the chimney for creosote deposits, soot build-up, or physical damage. This involves only a simple visual examination, but it should be done as often as twice a month during heavy use. If you see heavy creosote buildup, suspect a problem, or have had a chimney fire, a qualified chimney repairman or chimney "sweep" should perform a complete safety inspection. They can arrange for any necessary repairs or creosote removal, which must be done before the heating appliance is used again.

There are products now available which, according to recent tests conducted by independent laboratories, show promise for reducing the production of creosote and harmful pollutant emissions. Advance wood stove designs appear to provide more complete combustion of the fuel. Catalytic combustors appear to achieve similar results, and are available with new stoves or as separate components which can be installed between the flue gas exit and the chimney connector of existing stoves.

The Commission advises owners of all chimneys to:

- Be sure that the chimney and stovepipe were installed correctly in accordance with the manufacturer's recommendations and local codes. If there is any doubt, a building inspector or fire official can determine whether the system is properly installed.
- Minimize creosote formation by using proper stove size and avoiding using low damper settings for extended periods of time.
- Have the chimney checked and cleaned routinely by a chimney "sweep" at least once a year. Inspect it frequently, as often as twice a month if necessary, and clean when a creosote buildup is noted.
- Always operate your appliance within the manufacturer's recommended temperature limits. Too low a temperature increases creosote buildup, and too high a temperature may eventually cause damage to the chimney and result in a fire.
- Frequently look for signs of structural failure.

If you have had a fire or other safety problem with your chimney, or would like additional information, call the Commission's toll-free Hotline 800-638-CPSC.

The U.S. Consumer Product Safety Commission protects the public from the unreasonable risk of injury or death from 15,000 types of consumer products under the agency's jurisdiction. To report a dangerous product or a product-related injury, you can go to CPSC's forms page and use the first on-line form on that page. Or, you can call CPSC's hotline at (800) 638-2772 or CPSC's teletypewriter at (800) 638-8270, or send the information to info@cpsc.gov. Consumers can obtain this publication and additional publication information from the Publications section of CPSC's web site or by sending your publication request to publications@cpsc.gov. If you would like to receive CPSC's recall notices, subscribing to the email list will send all press releases to you the day they are issued.

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