

Chimneys They're Da Bomb

Is there a bomb in your house?

Guess how the Great Fire of London started in 1666? Guess how the Great Chicago Fire started blazing in 1871?

Please. No finger pointing at the cow. The reporter who started that rumor admitted later that he fabricated the story.

(We wonder why big fires generally are referred to as "Great," when they appear to have been exactly the opposite.)

But we digress. Seriously, there may well be a ticking time bomb in your house...



Chim chimney, Chim chimney, Chim chim cher-ee

There's a reason that chimney sweeping made Bert famous. (No, not *that* Bert – the Bert from *Mary Poppins!*). Because keeping a chimney clean is deadly important.

You may think that a fire in a fireplace goes up, up, up but instead it clings, clings, clings to your chimney and builds up residue on the flue, the chimney's interior shaft designed to vent smoke and fumes to the exterior of the building. Such residue, known as *creosote*, a thick, oily brown and flammable tar that coats the flue when the fireplace is used, is responsible for the most intense and destructive fires that occur in homes. Over time, a chimney flue can become a powder keg, literally awaiting the next fire as a catastrophic detonator.



More than one-third of Americans use fireplaces, wood stoves and other fuel-fired appliances as primary heat sources in their homes. But many people are unaware of fire risks when heating with wood and solid fuels.

According to the US Fire Administration (USFA), an entity of the Department of Homeland Security's Federal Emergency Management Agency (FEMA), heating fires account for 36% of residential home fires in rural areas every year. Such fires often are due to creosote build-up in chimneys and stovepipes. The USFA recommends that all home heating systems require regular maintenance to function safely and efficiently.

How Often Should A Chimney Be Cleaned?

We know what you're thinking – it all depends on how much you use the chimney. Right? Wrong!

“Chimneys, fireplaces, and vents shall be inspected at least *once a year* for soundness, freedom from deposits, and correct clearances. Cleaning, maintenance, and repairs shall be done if necessary,” according to the National Fire Protection Association Standard 211.

The standard accounts for the fact that even if you don't use your chimney very much, animals may build nests in the flue or there may be deterioration that could make the chimney unsafe to use.

The Chimney Safety Institute of America recommends that open masonry fireplaces should be cleaned at levels of 1/4" soot buildup, and sooner if there is *any* glaze visible in the system.

Factory-built fireplaces should be cleaned when any “appreciable buildup” occurs – this is considered to be enough fuel buildup to cause a chimney fire capable of damaging the chimney or spreading to the home.

If your chimney also needs cleaning, you will probably spend between \$100 and \$300, but keep in mind that the cost of major chimney repairs, resulting from neglect, can cost thousands of dollars or more.



When I Build a Fire in My Fireplace Upstairs, Why Is there Smoke in the Fireplace Downstairs?

This phenomenon, better known as “backdrafting,” is a symptom of overall pressure problems in the house that can cause smoke to be drawn down through the chimney and into the living space as opposed to being expelled to the exterior when the fireplace is in use.

This issue has become quite a common problem in modern, air-tight houses where weather-proofing has sealed up the usual air infiltration routes. The fireplace in use exhausts household air until a negative pressure situation exists. If the house is fairly tight, the simplest route for makeup air to enter the structure is often the unused fireplace chimney. As air is drawn down this unused flue, it picks up smoke that is exiting nearby from the fireplace in use and delivers the smoke to the living area.

The best solution is to provide makeup air to the house so the negative pressure problem no longer exists, thus eliminating not only the smoke problem, but also the potential for carbon monoxide to be drawn back down the furnace chimney. A secondary solution is to install a top mount damper on the fireplace that is used the least.

Should I Have My Gas Chimney Checked?

By this point, we hope you don't need to venture a wild guess to figure this out – of course you should check a gas chimney! Although gas is generally a clean burning fuel, the chimney can become non-functional from bird nests or other debris blocking the flue. Modern furnaces are often vented into

chimney flues and can also cause many problems with the average flues intended to vent the older generation of furnaces.

Why Are Chimney Liners Needed?

For safety – a flue lining in a masonry chimney is "a clay, ceramic, or metal conduit installed inside of a chimney, intended to contain the combustion products, direct them to the outside atmosphere, and protect the chimney walls from heat and corrosion." Although building codes vary by state or locality, the installation of flue lining has been recommended since the early part of this century, and indeed most fire codes now *mandate* liners.

By itself, creosote is a corrosive agent. When paired with expansion and contraction related to extreme changes in temperature caused by hot fires on the inside of the flue and cold temperatures on the exterior, cracks and fissures occur in the brick and mortar structure. These cracks and fissures can be a conduit for an invisible and deadly gas, know as carbon monoxide, to migrate into the building's living space.



In the 1940's and again in the 1980's, masonry chimneys were tested by the National Bureau of Standards for durability due to concerns about their performance and safety. Tests revealed that unlined chimneys were so unsafe that researchers characterized building a chimney without a liner as "little less than criminal." (Chimney Safety Institute of America)

Do Most Fires Start Inside the Chimney?

It may seem counterintuitive but the answer is "no." Some fires do ignite inside the chimney but many fires also start *outside* the chimney. Rotted wood in the attic, created from roof leaks or poor ventilation, may have an ignition temperature equal to or lower than a *piece of paper*. If rotten wood is touching the outside of the chimney, the fire can actually start outside the chimney and quickly spread throughout the home.

Is Unseasoned Wood Safer?

This also may seem counterintuitive but the answer is "no." Many people think that unseasoned wood takes longer to dry and produces a solid, crackling fire. However, the extra smoke and lower temperatures associated with unseasoned wood also means greater and faster creosote build-up.

What the Devil Does Fire Have to Do with Water?

Here's our last counterintuitive fact – *water* causes more damage to masonry chimneys than fire. Chimneys typically have one or more large openings at the top that collect rain water and funnel it directly to the chimney interior.

Chimney caps, also called rain covers, are the most inexpensive preventive measure that a homeowner can employ to prevent water penetration and damage to the chimney. A strong, well-designed cap not only keeps water out, but also prevents birds and animals from nesting in the chimney.

Keep the Fire Glowing and Keep Safe, All at the Same Time

Chimneys are like most other parts of the house – practice common sense and chances are, the chimney will last a lifetime.

- *Never* leave a fire unattended and keep a close eye (or two) on children and pets.
- When finished enjoying the fire, make sure it is *fully extinguished* before leaving the room.
- Install smoke and carbon-monoxide detectors around the house.
- For homeowners who have the ability to get on the roof and look down the chimney flue, be very careful – look for signs of damage, cracks in tile liners, rust on metal liners, or cracked masonry/missing mortar.
- There's no substitute for an inspection from a certified chimney professional; chimney specialists can deploy special micro-cameras that examine all parts of the chimney flue.

If you or your clients have any questions about chimneys or any inspection type, US Inspect is pleased and available to guide and assist you.

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