

Wood stoves remain a common source of primary and supplemental heat in many residential, agricultural, and commercial properties. When properly managed, they can be a reliable and efficient heating option. However, they also require care and attention that differs from conventional heating systems.

This guide provides property owners with practical considerations to support safer wood stove use and help reduce the potential for loss.

Understanding the Risk

A wood stove installation includes more than the stove itself. The stove is connected to a stove pipe, which carries smoke and combustion gases from the appliance to the chimney. The chimney contains the flue, which is the passage that exhausts the smoke and combustion gases to the outdoors. Together, the stove, stove pipe, chimney, and flue form the system used to burn fuel, transfer heat to the surrounding area, and vent combustion products from the building.

When a wood stove is improperly selected, installed, operated, or maintained, it can increase the potential for fire, smoke damage, and carbon monoxide exposure. Common contributors to loss include excessive heat transfer to nearby combustible materials, deterioration or damage to the stove pipe, chimney, or flue liner, creosote accumulation within the venting system, burning unsuitable fuel, and improper ash removal or storage.

Risk Mitigation Practices

Wood stove safety relies on proper selection, correct installation, responsible operation, and regular cleaning and maintenance. By focusing on these areas, property owners can better recognize and manage conditions that may contribute to loss.

Selection

Before installing or using a wood stove, property owners should confirm that the appliance is appropriate for the building, occupancy, intended use, and installation location.

Key considerations include:

- Selecting a wood stove that is certified for use in Canada by a recognized testing or certification organization, such as the Canadian Standards Association (CSA), Underwriting Laboratories of Canada (ULC/cUL), or Warnock Hersey.
- Confirming what permits, inspections, or approvals are required by the local authority having jurisdiction.
- Notifying the insurer before a wood stove is installed to verify how this could affect the policy.

Installation

A wood stove needs to be installed in a way that keeps heat away from combustible materials and allows smoke and combustion gases to leave the building safely. Wood stove installations should be performed by a qualified professional certified by Wood Energy Technology Transfer (WETT) Inc. in accordance with manufacturer guidelines and the requirements of CSA Standard B365 – *Installation code for solid-fuel-burning appliances and equipment*, in addition to any local building and fire code requirements.

Key installation requirements include (but are not limited to) the following:

- Maintaining the clearances shown on the appliance manufacturer's label between the wood stove and combustible materials or providing non-combustible heat shields where clearance requirements cannot be met.
- Ensuring that heat shields, where used, extend at least 18 inches beyond either side of the appliance and at least 20 inches above the top of the unit.
- Installing continuous, durable, non-combustible floor protection beneath and around the appliance that extends at least 18 inches from any side with a loading door and eight inches on all other sides.
- Maintaining at least 18 inches of clearance between single-wall stove pipe and combustible materials; clearances for double-wall stove pipe should be based on its certification and manufacturer's instructions.

- Keeping the stove pipe as short and straight as practical, with each joint fastened by at least three screws and crimped ends facing toward the appliance.
- Limiting stove pipe direction changes to no more than 180 degrees in total, such as a maximum of two 90-degree elbows.
- Ensuring stove pipe does not pass through a floor, ceiling, attic, closet, concealed space, or other area unless an approved chimney system is provided.
- Confirming the stovepipe connects to either a masonry chimney provided with an approved flue liner, or a cUL-approved, factory-built chimney certified for solid fuel use.
- Confirming the chimney maintains required clearance from combustible materials and extends at least three feet above the roof penetration and at least two feet higher than any roofline or obstruction within 10 feet.

FAQ: Why should WETT-certified installers be used?

Installing wood stove systems requires specialized knowledge. A WETT-certified professional is trained in solid-fuel-burning systems, including the appliances themselves, as well as stove pipes, chimneys, clearances, floor and wall protection, combustion air, and related safety requirements. This expertise can help identify issues before these appliances are placed into service, thus reducing the potential fire, smoke, and carbon monoxide hazards. This same expertise can also provide value during subsequent inspections, cleaning, and maintenance activities to help ensure the system continues to operate safely.

Operation

Proper operation helps control heat, maintain draft, reduce smoke, and limit creosote accumulation. Wood stoves should be operated in accordance with the manufacturer's instructions and only when the appliance, stove pipe, chimney, and surrounding area are in suitable condition.

Proper operating practices include (but are not limited to) the following:

- Burning only clean and dry wood (preferably hardwood) that is suitable for the appliance.
- Avoiding the use of wet, green, treated, painted, or waste materials as a fuel source.
- Never using flammable or combustible liquids to start, accelerate, or restart a fire.
- Maintaining a hot, steady fire to support proper draft and avoid smoky or smoldering burn conditions.
- Not overloading the stove or operating it beyond its intended capacity or temperature limits.
- Keeping the loading door closed except when starting, loading, or tending the fire.
- Using air controls, dampers, or other appliance features only as described by the manufacturer.
- Keeping firewood, paper, and other combustibles at least three feet from the stove and stove pipe.
- Removing ashes only after they have cooled and placing them in a non-combustible container with a tight-fitting lid.
- Storing ash containers outside, at least 10 feet from buildings, vehicles, equipment, and combustible materials.
- Having an adequately charged portable fire extinguisher readily accessible near the wood stove but positioned where it can be reached safely.



Inspection, cleaning, and maintenance

Regular inspection and maintenance help confirm that the wood stove, stove pipe, chimney, and related components remain in suitable condition. Any damage, deterioration, or abnormal operating condition should be addressed before continued use.

Key inspection and maintenance practices include (but are not limited to) the following:

- Having the wood stove, stove pipe, chimney, flue liner, and related components inspected by a WETT-certified technician on an annual basis.
- Having the stove pipe and chimney cleaned by a WETT-certified chimney sweep on an annual basis, or more often where use is heavy or creosote buildup exceeds 1/8 of an inch in thickness.
- Checking the stove pipe and chimney for corrosion, loose joints, damage, obstructions, or deterioration.
- Maintaining appliance components such as door gaskets, glass, firebrick, baffles, dampers, and air controls.
- Keeping inspection, cleaning, maintenance, and repair documentation for future reference.

Did you know?

The dangers of creosote accumulation

Creosote is a highly combustible residue that can form inside the stove pipe and chimney when wood smoke cools and condenses. It is more likely to accumulate when wood is not properly seasoned, fires are allowed to smoulder, or the system does not draft properly. If creosote is not removed through regular cleaning, it can restrict airflow, contribute to smoke problems, and significantly increase the potential for a serious chimney fire.

In Summary

Fires involving wood stoves are often linked to conditions that can be identified and corrected before a fire or damage occurs. Proper selection, installation, operation, inspection, cleaning, and maintenance all play an important role in reducing this exposure. Property owners should rely on qualified professionals for installation, inspection, cleaning, and maintenance activities, while also ensuring that any identified concerns are promptly addressed to protect their homes and businesses.

References

CSA B365 | Installation Code for Solid-Fuel-Burning Appliances and Equipment

NFPA 211 | Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances

NFPA Fire Protection Handbook | Heating Systems and Appliances

Canadian Safety Council | Wood stove and wood-burning fireplace safety
canadasafetycouncil.org/woodstove-and-wood-burning-fireplace-safety

Wood Energy Technology Transfer Inc | Frequently asked questions
wettinc.ca/page/frequently-asked-questions

Wood Energy Technology Transfer Inc | About WETT inspections
wettinc.ca/page/about-wett-inspections

