

# Burn it Smart!

www.burnitsmart.org – and Healthy



## Understanding Health and Heating with Wood

Many Canadians use wood to heat their homes or to simply enjoy a wood fire, but burning wood can also release pollutants into the air we breathe when poor burning techniques are used. Wood smoke contains harmful pollutants that can trigger coughs, headaches and eye and throat irritation. They also contribute to increased incidences of emergency room visits, hospitalizations and days lost from school and work – even in otherwise healthy people.

The “Burn it Smart!” campaign addresses the health and environmental effects of inefficient burning by challenging Canadians to change their wood-burning habits in order to reduce pollution from wood heating.

Wood-smoke emissions can be reduced, indoors and out, by learning to burn more efficiently and improving your wood-burning practices. Replacing your existing wood burner with a new-technology appliance that meets the U.S. Environmental Protection Agency (EPA) and Canadian Standards Association (CSA) emissions standards can help to further reduce the emissions of pollutants by up to 90 percent. These advanced appliances burn the smoke inside the stove, resulting in less air pollution with the added benefits of more heat to your home and a safer system.

Environment Canada and Health Canada have identified many hazardous chemical substances in wood smoke, including, but not limited to, the following:

- PM10 (inhalable particulate matter less than 10 microns in diameter) – PM10, which consists of a mixture of microscopic particles of varied size and composition, has been declared a toxic substance under the *Canadian Environmental Protection Act*. These particles originate from both natural and human-related sources and activities. They can be inhaled deep into the lungs, leading to serious respiratory problems. Several recent community health studies indicate that significant problems are associated with exposure to respirable particulate matter. These include premature death, hospital admissions from respiratory causes and increased respiratory symptoms. Children, the elderly and people with cardiovascular disease or lung diseases such as emphysema and asthma are especially vulnerable.
- Carbon monoxide (CO) – CO can reduce the blood’s ability to supply necessary oxygen to the body’s tissues, which can cause stress to the heart. When inhaled at higher levels, CO may cause fatigue, headaches, dizziness, nausea, confusion and disorientation and, at very high levels, lead to unconsciousness and death. Fire Prevention Canada advises that CO detectors be installed in every home that has a combustion appliance or an attached garage. CO detectors must be maintained regularly, just as you would a smoke detector.

*Enjoy the fire, not the smoke*

*continued* 



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- 🍷 Oxides of nitrogen (NO<sub>x</sub>) – NO<sub>x</sub> can lower the resistance to lung infections. In particular, nitrogen dioxide can cause shortness of breath and irritate the upper airways, especially in people with lung diseases such as emphysema and asthma.
- 🍷 Hydrocarbons (HC) – HC can damage the lungs.
- 🍷 Volatile organic compounds (VOCs) – VOCs can cause respiratory irritation and illness. Some VOCs emitted by wood-burning appliances, such as benzene, are known to be carcinogenic.
- 🍷 Formaldehyde – Formaldehyde can cause coughing, headaches and eye irritation and can act as a trigger for people with asthma.
- 🍷 Polycyclic aromatic hydrocarbons (PAHs) – Prolonged exposure to PAHs is believed to pose a cancer risk.
- 🍷 Dioxins and furans – Some dioxins and furans are carcinogenic.
- 🍷 Acrolein – Acrolein can cause eye and respiratory tract irritation.
- 🍷 Split wood into pieces that are 10–15 cm (4–6 in) in diameter. Fires burn better with more surface area exposed to the flame.
- 🍷 Never burn garbage, plastics, cardboard or Styrofoam. Burning garbage releases poisons.
- 🍷 Never burn wood that has been taken from salt water. Chlorine combines with the smoke to produce dioxins and furans, which are dangerous carcinogens.
- 🍷 Burning treated or painted wood, particle-board or plywood represents a health hazard. Wood treated with varnishes and sealants, wood from orchards sprayed with pesticides and pressure-treated wood may contain toxic chemicals. Burning treated wood may release these toxic chemicals into the environment in the smoke or in the ash that is disposed of later.
- 🍷 Store wood outside, off the ground and covered. Bring it into your home as needed. The excess moisture found in green wood increases the relative humidity of the indoor air, which can lead to mould and mildew growth. Both can cause severe allergic reactions and asthma attacks.

## Reducing Pollution and Improving Efficiency

The “Burn it Smart!” campaign recommends the following ways to improve the efficiency of your appliance and reduce the amount of pollution created by residential wood combustion:

- 🍷 Burn small, hot fires – they produce much less smoke than ones that are left to smoulder.
- 🍷 Burn seasoned wood – burning “green” or wet wood produces significantly more smoke. Firewood should be seasoned for at least six months.
- 🍷 Use a high-efficiency wood stove, fireplace or insert that is certified as low emission by the EPA, a standard accepted in Canada. These wood-burning appliances burn most of the smoke right in the firebox and can cut emissions by up to 90 percent.
- 🍷 Reduce your heating needs by making your house more energy efficient.
- 🍷 Regardless of the type of wood-burning appliance, it should be installed by professionals and inspected and cleaned at least once a year by a technician certified under the Wood Energy Technical Training (WETT) Program or, in Quebec, the Association des professionnels du chauffage (APC). These certified installers and chimney sweeps have gone through a rigorous training program that is recognized by the industry and by government.



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