

Wood Stoves & Your Health

Understanding the Health Effects of Heating With Wood

Many people heat their homes with a woodstove or fireplace. A wood fire is cozy and warm, but you should be aware of the health risks associated with burning wood.

Burning wood releases harmful pollutants into the air we breathe, especially when poor burning techniques and inefficient wood-burning appliances are used.

Pollutants are emitted both indoors and outdoors...and can seep into your neighbours' homes through cracks, windows, and ventilation systems.

Wood smoke pollution affects all parts of BC. Hardest-hit are valley communities where temperature inversions prevent wood smoke from being dispersed, and keep the smoke right where we live and breathe. (An inversion occurs when warm upper air acts like a lid to hold surface air and smoke near the ground).



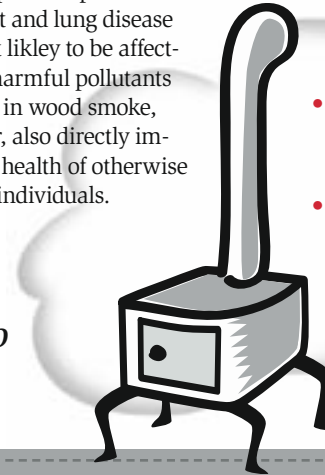
Wood smoke & associated health effects

The health effects of wood-smoke exposure include an increased risk of lower respiratory tract illness such as coughing, wheezing, shortness of breath, and chest tightness. For people with asthma, wood smoke is associated with an exacerbation (or flaring up) of asthma. Other health effects include a decrease in lung function, or decreased

breathing ability, as well as an increase in emergency room visits.

Young children, the elderly, and people with pre-existing heart and lung disease are most likely to be affected; the harmful pollutants released in wood smoke, however, also directly impact the health of otherwise healthy individuals.

Burning wood releases harmful pollutants into the air we breathe.



If you do burn wood, burn it right!

While wood smoke pollutes the air we breathe, there are ways to reduce emissions both indoors and out. Here's what you can do to improve the safety and efficiency of your wood fires and wood-burning appliances...

Preparing Your Wood

- Burn dry, seasoned hardwood. Burning "green" or wet wood produces significantly more smoke. **Firewood should be seasoned for at least six months.** Burning seasoned wood also saves money by reducing your wood consumption by 25 percent.
- Split wood into pieces that are 10-15cm (4-6in) in diameter. Fires burn better with more wood surface area exposed to the flame.
- Store wood outside, off the ground and covered. Bring it into your home in small amounts as needed. Green wood stored indoors can increase humidity and lead to mould growth, which may trigger allergic reactions and asthma attacks.

Hazardous chemicals in wood smoke

Environment Canada and Health Canada have identified the following hazardous chemical substances in wood smoke:

- **Particulate matter**, a mixture of microscopic particles of varied size and composition, has been declared a toxic substance under the Canadian Environmental Protection Act. Inhaling these particles can lead to respiratory problems, and result in mortality for those with pre-existing heart and lung disease.
- **Carbon monoxide (CO)** is a colourless, odourless, poisonous gas that can reduce the blood's ability to supply oxygen to the body's tissues. Inhaling high levels of CO may cause fatigue, headaches, dizziness, nausea, confusion and disorientation. Inhaling very high levels of CO leads to unconsciousness and death.
- **Nitrogen oxides** can lower your 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.
- **Formaldehyde** can cause coughing, headaches and eye irritation and act as a trigger for people with asthma.
- **Hydrocarbons** can damage the lungs.
- **Dioxins and furans:** some have been found carcinogenic.
- **Acrolein** can cause eye and respiratory tract irritation.
- **Polycyclic aromatic hydrocarbons (VOC)** can cause respiratory irritation and illness. Some VOCs emitted by wood-burning appliances, such as benzene, are known to be carcinogenic.
- **Polycyclic aromatic hydrocarbons** are believed to pose a cancer risk with prolonged exposure.

Burn it right! continued...

Burning Your Wood

- Use small pieces of wood kindling and newspaper to start your fire. Add larger pieces of wood as required.
- Burn small, hot fires – they produce much less smoke than ones that are left to smoulder.
- Open the stove or fireplace damper to increase air circulation and improve burning. When you see smoke, it's a sign of oxygen starvation and incomplete burning.
- Do not dampen or hold your fire overnight. This creates excessive emissions and promotes the formation of creosote.

Never Burn...

- 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.
- Never burn pressure-treated or painted wood, particle-board or plywood. Wood treated with varnishes and sealants, or sprayed with pesticides, contain toxic chemicals.

Maintaining Your Wood Stove & Your Home

- Have your wood-burning appliance inspected and cleaned at least once a year by a technician certified under WETBC (Wood Energy Technicians of BC).
- Keep your stove pipe and chimney clean. Empty ashes from your wood stove and fireplaces frequently.
- Install a Carbon Monoxide detector in your home and attached garage to monitor CO levels.
- Reduce your heating needs by making your house more energy efficient.



Buying a Wood Stove?

- Consider a high-efficiency wood stove, fireplace or insert that is certified as CSA B-415 or US EPA certified, and have it professionally installed. High-efficiency wood-burning appliances can cut emissions by up to 90 percent and burn up to a third less wood while delivering the same amount of heat.

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