



## WOOD SMOKE

### The Issue

Wood smoke contains a number of pollutants that can be harmful to your health. If you use a wood stove or fireplace in your home, there are steps you can take to minimize the risk of health effects for your family and neighbors.

### Background

Wood stoves are becoming more common in Canada. Some people use wood as a primary source of heat, and others have wood stoves as a back-up in case of emergencies, such as power failures. Wood heating is popular in some areas for cultural reasons. It can be beneficial because wood is a renewable fuel.

However, the smoke from wood stoves and fireplaces pollutes the air outdoors. Smoke from outside can seep into buildings, including nearby homes, affecting indoor air quality. The air inside your home can also be affected when you open the stove to add fuel, or if your wood stove leaks.

### The Pollutants in Wood Smoke

The main pollutants in wood smoke that cause health concerns are:

- **Particulate Matter:** This is the term for solid or liquid particles found in the air. They can be very small and can travel deep into your lungs, causing respiratory and heart problems.
- **Carbon Monoxide:** This is a colorless, odorless gas that is poisonous at high levels. It can interfere with the delivery

of oxygen in the blood to the rest of your body.

- **Volatile Organic Compounds:** These are a wide range of compounds that usually have no color, taste or smell. Some cause direct health effects, while others contribute to smog.
- **Polycyclic Aromatic Hydrocarbons:** These compounds are a health concern because of their potential to cause cancer.

In communities where wood heating is common, wood smoke can be responsible for as much as 25% of the airborne Particulate Matter, 15% of the Volatile Organic Compounds and 10% of the Carbon Monoxide in the atmosphere. Wood smoke also contains other toxic compounds, including nitrogen oxides and chlorinated dioxins. These can contribute to environmental hazards, such as smog and acid rain.

### Health Effects Associated with Wood Smoke

Exposure to the pollutants in wood smoke can cause eye, nose and throat irritation, headaches, nausea and dizziness. Wood smoke can also make asthma worse, and has been associated with an increase in respiratory problems. In large populations where wood smoke is a significant contributor to outdoor air pollution, studies have linked wood smoke to severe health risks, including increased hospital admissions and even premature death.



In addition, studies of laboratory animals suggest that prolonged exposure to wood smoke may weaken the immune system.

Breathing wood smoke is not healthy for anyone. However, the health risks are greater for people with existing heart and lung problems. Children are also at greater risk because their respiratory systems are still developing, and because they inhale more air due to their higher rates of activity.

## Minimizing Your Risk

The most effective thing you can do to reduce the risk of health effects from wood smoke is to switch to a different heat source, such as natural gas or oil. If you do heat with wood, you can minimize your risk by installing an "advanced combustion" wood stove or fireplace insert that reduces toxic emissions. When buying one of these appliances, look for a sticker from the Canadian Standards Association (CSA) or the United States Environmental Protection Agency (EPA). The sticker certifies that the appliance emits up to 95% fewer particulates and is up to 20% more fuel efficient than conventional models.

In addition, you can reduce the amount of wood you burn and lessen the impact of wood smoke by following these steps:

- Use dry, clean wood that is properly seasoned. It should be cut, split and stacked in a covered area for about six months (including the summer months) before burning.
- Allow more ventilation when starting a fire, and close the

dampers when the wood is well charred. This technique produces more heat, so you use less wood.

- Use smaller pieces of wood. They burn more efficiently so they are a better source of heat.

Also, try to avoid burning wood on days when the air pollution level is high, and never burn wood that has been painted or chemically treated. On a related note, you should not bring wet or moldy wood into your home, as this may expose your family to molds and spores that can harm their health. People with respiratory conditions are thought to be especially sensitive to mold.

## Health Canada's Role

Health Canada assesses scientific evidence about the health effects of wood smoke and makes this information available to Canadians. Health Canada is also working with other government departments to determine the best ways to minimize risks associated with wood smoke. In addition, Health Canada is a contributor to the Burn it Smart! campaign sponsored by Natural Resources Canada.

## Need More Info?

For more information on the health effects of wood smoke and air pollution in general, contact:

Air Health Effects Division  
Safe Environments Programme,  
Health Canada  
400 Cooper Street  
Ottawa, ON K1A 0K9  
Telephone: (613) 957-1876

Or visit Health Canada's Health and Air Quality Web site at:  
[http://www.hc-sc.gc.ca/hecs-sesc/air\\_quality/index.htm](http://www.hc-sc.gc.ca/hecs-sesc/air_quality/index.htm)

For reliable advice about safe and healthy ways to heat your home with a wood stove or fireplace, contact:

Burn it Smart!,  
Natural Resources Canada  
Sir William Logan Building  
11th Floor,  
580 Booth Street  
Ottawa, ON K1A 0E4  
<http://www.burnitsmart.org/english/index.html>

The Environment Canada Web site features an article about wood smoke at: [http://www.ec.gc.ca/science/sandejan99/article1\\_e.html](http://www.ec.gc.ca/science/sandejan99/article1_e.html)

For information about the efficiency of various models of wood stoves and fireplaces, visit the United States Environmental Protection Agency Web site at: <http://www.epa.gov/Compliance/resources/publications/monitoring/programs/woodstoves/certifiedwood.pdf>

For additional articles on other issues go to the It's Your Health Web site at:  
[www.healthcanada.ca/iyh](http://www.healthcanada.ca/iyh)  
You can also call (613) 957-2991