ABOUT RESIDENTIAL WOOD SMOKE

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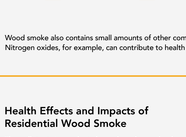
Residential wood smoke comes from the burning of biomass fuels for the heating of space and water and/or for ambiance. Biomass fuels includes cordwood, wood chips, sawdust, fire logs, wood, paper, other biomass pellets and briquettes, kernel corn and other grains.

Sources of emissions can include wood stoves, fireplaces, pellet stoves, central outdoor or wood-fired boilers, backyard fires, grill pits, campfires, or anything that is intended to burn biomass. Your exposure to residential wood smoke can be from your own burning, or that of your neighbors and others in the area.



Environmental Impacts of Residential Wood Burning

Wood burning is a significant source of air pollution in Canada. The main pollutants in wood smoke are:

- Particulate Matter (PM)
- Carbon Monoxide (CO)
- Volatile Organic Compounds (VOCs)
- Polycyclic Aromatic Hydrocarbons (PAHs)

Wood smoke also contains small amounts of other compounds, including nitrogen oxides and chlorinated dioxins. Nitrogen oxides, for example, can contribute to health and environmental hazards like smog and acid rain.

Health Effects and Impacts of Residential Wood Smoke

The pollutants in residential wood smoke can lead to adverse health effects on individuals and as a result has negative impacts for populations.

Some health effects that have been associated with exposure to pollutants produced by residential wood smoke include:

- Eye, nose, throat, and lung irritation
- Decreased lung function
- Wheezing, coughing, shortness of breath
- Aggravation of existing heart and lung conditions, like asthma

Exposure to air pollution in Canada contributes to respiratory symptoms, illness, hospital visits and premature death. This population health burden across society (including reduced quality of life and lowered productivity) is associated with socioeconomic costs for people in Canada.

Fast Facts: Particulate Matter

- Residential wood smoke is an important source of outdoor fine particulate matter in Canada. In 2020 residential wood smoke produced more particulate matter emissions than the transportation sector and off-road equipment sectors combined, as well as other sectors like the ore/mineral, oil/gas, and manufacturing industries.
- Fine particulate matter ($PM_{2.5}$) from residential wood-burning appliances can account for approximately 40-65% of wintertime $PM_{2.5}$ in Canada. This varies by geographic region and time of year.
- Particulate matter (PM) is harmful to your health. Fine particulate matter ($PM_{2.5}$) poses a risk because it can travel deeply into your lungs.
- Outdoor $PM_{2.5}$ is associated with roughly 10,000 premature deaths a year in Canada.
- Outdoor $PM_{2.5}$ is also associated with 1.72 million asthma symptom days and 24.8 acute respiratory-symptom days per year.

People at risk

Exposure to pollutants found in residential wood smoke can lead to adverse health effects, especially among those with pre-existing health conditions, children, pregnant people, seniors, or those with increased exposure (closer proximity to sources or spending lots of time outside).

Reduce Your Exposure to Residential Wood Smoke

Reduce or eliminate wood burning where possible:

Choose alternative heat sources in your area (if available).

Help kick open burning to the curb by including grass clippings, leaves, and branches in your compost or municipal yard waste pick-up (where available).

Dispose of building materials and garbage in accordance with local government regulations. Look for a local disposal facility, and do not burn or illegally dispose of these materials.

If you use a wood stove or fireplace in your home, follow these tips to help reduce the health and environmental impacts of wood smoke:

Choose a low-emission stove
install an "advance combustion" wood stove or fireplace insert to reduce emissions.

Look for appliances that are CSA or US EPA certified
certified appliances generate fewer harmful particles and are more fuel efficient than non-certified models.

Use your dampers
Allow more air (ventilation) when starting a fire and close the dampers when the wood is well charred. This also produces more heat, so you use less wood.

Clean your chimney
clean your chimney and flues regularly, follow the manufacturer's instructions.

Maintain your stove
- make sure that your wood stove is well maintained and working properly.
- have it inspected according to manufacturer's instructions.

Burn wisely
Maintain stable hot combustion conditions, as smoldering leads to higher levels of wood smoke PM emissions.

What to Burn

The condition of the wood you burn and the way you store it also matters.

- ✔ Burn **smaller pieces** of wood
  - Small pieces are more efficient and a better source of heat
- ✔ Use **dry, seasoned wood** that can breathe when stored
  - Cut, split, and stack wood loosely in a dry area for at least 6 months before burning it

Never Burn

The following items/materials should never be burned as these have significant negative impacts on air quality and your health:

- ✖ **Non-biomass** construction waste such as dry wall or plastic
- ✖ Household **garbage**, compost or cardboard
- ✖ **Wet, rotted, diseased or moldy** wood
- ✖ Wood that has been **painted** or chemically treated
- ✖ Ocean **driftwood**, **plywood**, particle board or any wood with glue on or in it

Other steps you can take:

- Install and maintain at least one carbon monoxide alarm in your home.
- If you have existing health conditions, talk with your healthcare provider about ways to manage or reduce exposure to smoke and air pollution.
  - If you are a healthcare provider, be prepared to speak with your patients about ways to reduce exposure to residential wood smoke as well as how to treat symptoms arising from exposure.
- Monitor the Air Quality Health Index (AQHI) for your local area, and any regional advisories, to find out what level of activity is safe for that day. It may help to adjust your activities by a few hours or days to limit your exposure to existing air pollution.
  - If you do not depend on wood for heating, avoid burning wood on days when the air quality is poor. The AQHI index for your region can provide you with this information.
- Ensure that you know whether your municipality or region has bylaws that regulate wood burning, or if you are required to register wood or biomass burning appliances.
- Some municipalities have wood stove exchange programs that can help with the switch to alternative heating options. Wood stove exchange programs in Canada include:
  - Metro Vancouver's Wood Stove Exchange
  - Nova Scotia's Efficiency Wood Stove Installation Program
  - Prince Edward Island's Efficiency PEI Program
  - Yukon's Good Energy Rebate Program
  - Government of Northwest Territories' Energy Efficiency Incentive Program
  - Ontario Home Energy Conservation Incentive Program
  - Ontario's four wood heat pilot programs in northern, rural and Indigenous communities (expired)
  - Government of Newfoundland and Labrador's Residential Wood Pellet Appliance Rebate (expired)

Still have burning questions?

For more information you email the Health Canada Air Inbox:

air@hc-sc.gc.ca

For more resources visit:

RESIDENTIALWOODSMOKE.CA
and
canada.ca/en/health-canada/services/air-quality/indoor-air-contaminants/avoid-wood-smoke.html