

# **Model Municipal By-law For Regulating Woodburning Appliances**

## INTRODUCTION

In 2000, the Canadian Council of Ministers of the Environment developed a Canada-wide Standard for particulate matter less than or equal to 2.5 microns (also known as fine particulates or PM<sub>2.5</sub>) as a result of the pollutant's adverse effect on human health.

Wood burning generates smoke, which contains fine particulates. These fine particulates can remain in the air for days and have the potential to penetrate deep into the lungs if inhaled. The effects of fine particulates vary, from irritation of the eyes and respiratory tract to more serious disorders, including asthma, bronchitis, reduced lung function and early mortality. Children, the elderly, and people with lung disease tend to be the most vulnerable. Wood smoke also contains a number of organic carbon compounds, such as volatiles organic compounds and polycyclic aromatic hydrocarbons, which are also potentially harmful to human health.

In certain areas, most notably where there is a dense concentration of wood burners and/or topographical or adverse weather conditions, a high concentration of fine particulates can result and may indicate that wood burning is not conducive to that area. In some cases, those conditions are only temporary; in other situations they are chronic and may require a controlled or more regulated approach to wood burning.

Through contemplating their own responses to the following questions, municipalities may find that they are experiencing a wood burning problem:

- Is residential or commercial wood heating used in the community?
- Do we live in a valley? Do we experience temperature inversions or poor dispersive conditions (atmospheric stagnation)?
- What does the local Air Quality Index say?
- Is the local public health department concerned about possible health impact from wood smoke?
- Are citizens complaining about wood smoke?

Through a comprehensive education program, the municipality should make citizens aware that residential wood heating may cause local air pollution problems and affect their health, and inform them about practices and/or cleaner burning appliances that help reduce the impact of wood burning on local air quality.

When warranted, implementation of a by-law on its own or as a complement to a regulation (national or provincial) will increase awareness, reduce emissions and accelerate the rate of change-out in areas where air quality problems, whether chronic or episodic, are experienced due to residential wood burning.

This document presents a model municipal by-law aimed at controlling wood burning to help municipal authorities reduce wood smoke in their jurisdictions. The model municipal by-law provides requirements and/or options to address:

1. Fuels;
2. Installation of Woodburning Appliances;
3. Non-certified Appliance Removal;
4. No Burn Days;
5. Nuisance;
6. Opacity and
7. Outdoor Solid Fuel combustion Appliances.

A companion document to this model by-law entitled “*Model Municipal By-law For Regulating Woodburning Appliances: Supporting Document*,” provides supporting information so that a municipality may, in consultation with its legal advisors, select and amend suitable sections from the model by-law according to its needs.

This model by-law does not include sections on inspections and orders, offences and penalties and effective date because municipalities are better able to handle them.

**A MODEL BY-LAW PERTAINING  
TO THE REDUCTION OF AIR POLLUTION BY REGULATING THE USE  
OR REPLACEMENT OF WOODBURNING APPLIANCES**

BE IT ORDAINED BY the [City, Municipality] of [ ]:

WHEREAS, in June 2000, the Canadian Council of Ministers of Environment (CCME), except Quebec, adopted the Canada-wide Standards for Particulate Matter (PM<sub>2.5</sub>) and Ozone;

WHEREAS, governments have committed themselves to significantly reduce PM<sub>2.5</sub> and ground-level ozone by 2010 to comply with these standards;

WHEREAS, research indicates that wood smoke is a significant contributor to PM<sub>2.5</sub> levels, which pose significant health risks;

WHEREAS, the [City, Municipality] of [ ] desires to lessen the risk to life and property from air pollution from woodburning appliances;

The [ ] [Code, By-law] shall be amended by adding the following:

**APPLICABILITY**

This by-law shall apply within the limits of the [City, Municipality] of [ ] as specified herein.

All woodburning appliances, including furnaces and boilers with outputs up to 2 MW, installed in new residential units or woodburning appliances being added to or replacing woodburning appliances in existing residential units shall comply with this by-law.

All woodburning appliances, including furnaces and boilers with outputs up to 2 MW, installed in new commercial buildings or woodburning appliances being added to or replacing woodburning appliances in existing commercial buildings shall comply with this ordinance. Commercial buildings shall include, but not be limited to, hotels and restaurants.

## DEFINITIONS

1. “Air Quality Advisory Period” means a twenty-four hour period, beginning at (time of day), when the PM<sub>2.5</sub> levels are forecast by the (Appropriate authority) to be (number) µg/m<sup>3</sup> and above.
2. “Burn rate” means the weight of the dry fuel charge (excluding the weight of any moisture) divided by the burn cycle time.
3. “Canadian CSA standard” means the “*Performance Testing of Solid-Fuel-Burning Heating Appliances CAN/CSA-B415.1*” standard published by the Canadian Standards Association, as amended from time to time.
4. “Certified woodburning appliance” means a solid-fuel burning appliance that bears a certification mark certifying conformity with the Canadian CSA standard or US EPA standard.
5. “Factory-built fireplace” means a combustion chamber and a chimney consisting entirely of factory-made parts designed for unit assembly without requiring field construction.
6. “Fireplace insert” means an appliance intended for insertion into a fireplace cavity.
7. “Garbage” means all solid, semi-solid and liquid wastes generated from residential, commercial and industrial sources, including trash, refuse, rubbish, industrial wastes, asphalt products, manure, vegetable or animal solids and semi-solid wastes and other discarded solid and semi-solid wastes but excluding untreated sawdust and untreated wood wastes.
8. “Nuisance” means the emission into the atmosphere of smoke by any means, which disturbs the comfort or convenience of persons in the vicinity.
9. “Opacity” means the degree to which emissions from a solid-fuel burning appliance reduces the transmission of light and obscures the view of an object in the background. It is expressed as a percentage representing the extent to which an object viewed through the smoke is obscured.
10. “Outdoor solid-fuel combustion appliance” means an outdoor woodburning appliance or a solid fuel burning appliance, which is used for the space heating of buildings, the heating of water or other such purpose and which is located in a separate building or on the exterior of the building which it serves.
11. “Paint” means all exterior and interior house and trim paints, enamels, varnishes, lacquers, stains, primers, sealers, undercoatings, roof coatings, wood preservatives, shellacs, and other paints or paint-like products.
12. “Paint solvent” means all original solvents sold or used to thin paints or to clean up painting equipment.
13. “PM<sub>2.5</sub>” means airborne particles less than 2.5 microns in diameter, the breathing of which can be harmful to the human respiratory system.
14. “Red Air Quality Advisory Period” means a 24-hour period, beginning at (time of day), when the PM<sub>2.5</sub> levels are forecast by the (Appropriate authority) to be (number) µg/m<sup>3</sup> and above.
15. “Removal” means remove from the premises or rendered inoperable.

16. "Site-built decorative fireplace" means a site-built open recess for holding a fire at the base of a chimney used for aesthetic purposes.
17. "Smoke" means the gases, particulate matter and all other products of combustion emitted into the atmosphere when a substance or material is burned including, without limitation, dust, gas, sparks, ash, soot, cinders, fumes or other effluvia.
18. "Sole woodburning heat user" means those premises that use woodburning appliances as their only source of heating and are not equipped with any other source of heating facility.
19. "Solid fuel" means wood or any other non-gaseous or non-liquid fuel.
20. "Treated wood" means wood of any species that has been chemically impregnated, painted or similarly modified to improve resistance to insects or weathering.
21. "Waste petroleum product" means any petroleum product other than gaseous fuels that has been refined from crude oil and has been used and, as a result of use, has been contaminated with physical or chemical impurities.
22. "Woodburning appliance" means a wood heater, including factory built fireplaces and fireplace inserts, or any similar appliance burning any solid fuel used for space-heating purposes.
23. "Unseasoned wood" means wood that has not been seasoned (dried) for at least six months.
24. "US EPA standard" means the "*New Source Performance Standards, Title 40, Part 60, Sub-part AAA of the Code of Federal Regulations (USA)*," published by the United States Environmental Protection Agency, as amended from time to time.
25. "Yellow Air Advisory Period" means a 24-hour period, beginning at (time of day), when the PM<sub>2.5</sub> levels are forecast by the (Appropriate authority) to be (number) µg/m<sup>3</sup> and above but less than (number) µg/m<sup>3</sup>.

## REQUIREMENTS

### 1. Fuels

1.1. No person shall use the following material as fuel in a woodburning appliance:

- 1.1.1. Wet or unseasoned wood
- 1.1.2. Garbage
- 1.1.3. Treated wood
- 1.1.4. Plastic products
- 1.1.5. Rubber products
- 1.1.6. Waste petroleum products
- 1.1.7. Paints
- 1.1.8. Paint solvents
- 1.1.9. Coal
- 1.1.10. Glossy or coloured papers
- 1.1.11. Particle board
- 1.1.12. Salt water driftwood

### 2. Installation of Woodburning Appliances

#### Option a) All Installations

2.1. No person shall install a woodburning appliance that is not:

##### Option a.1) Certified Appliances with Exceptions

- 2.1.1. A solid fuel burning appliance that bears a certification mark certifying conformity with the Canadian CSA standard or US EPA standard; or
- 2.1.2. a site-built masonry fireplace, a site-built masonry heater, a site-built decorative fireplace, a fireplace with a minimum burn rate above 5.0 kg/h or a cookstove.

##### Option a.2) Certified Appliances Only

- 2.1.1. A solid fuel burning appliance that bears a certification mark certifying conformity with the Canadian CSA standard or US EPA standard.

#### Option b) New Construction {to be consistent with *No Burn Days* section}

##### Option b.1) Alternate Form of Space Heating

2.2. For all new construction, the structure shall contain an alternate form of space heating, including natural gas, propane, electric, oil, solar or kerosene, sufficient to meet necessary space heating requirements so that during episodes of high pollution levels, the occupant will be able to heat the home other than with a woodburning appliance.

##### Option b.2) Alternate Form of Space Heating with Exceptions

2.2. Central unit systems able to demonstrate very low emissions (e.g. < 20 % of the CSA B415.1 limit) are exempted.

### **Option c) Total Ban**

- 2.3. No person shall install a woodburning appliance in any residential or commercial construction.
- 2.4. In addition to the requirement of this by-law, the owner shall obtain a valid Building Permit for the installation of any woodburning appliance.

## **3. Non-certified Appliance Removal**

### **Option a) Removal Program**

- 3.1. The [City, Municipality] is hereby authorized to establish a removal program for non-certified woodburning appliances that may incorporate incentives for energy conservation and air quality improvement including, but not limited to, household insulation, insulating products, non-certified wood stove replacement and substitution of heating methods and appliances, including certified woodburning appliances.
- 3.2. Any non-certified woodburning appliance removed under this section shall be rendered permanently inoperable.

### **Option b) Time Limit**

- 3.3. All non-certified woodburning appliances within the [City, Municipality] of [ ] shall be removed from all properties by [date] or rendered permanently inoperable by [date].
- 3.4. It shall be a violation of this section for any person on or after [date] to possess or operate a woodburning appliance within the [City, Municipality] of [ ] unless it is certified or it has been rendered permanently inoperable.

### **Option c) Prior Sale or Transfer of Real Property**

- 3.5. Prior to the completion or consummation of a sale or transfer of any real property on or after [date], all existing non-certified woodburning appliances shall be replaced, removed, or rendered permanently inoperable.

## **4. No Burn Days**

### **Option a) Voluntary Curtailment**

#### **Option a.1) Curtailment of Non-certified Woodburning Appliances**

- 4.1.1. The [local authority] may issue a declaration of an “Air Quality Advisory Period” through local communications media requesting residents to voluntarily curtail the use of non-certified woodburning appliances whenever conditions within the region are projected to cause ambient air quality concentrations of respirable particulate matter (PM<sub>2.5</sub>) that exceed (number) µg/m<sup>3</sup>.

#### **Option a.2) Staged Curtailment for all Woodburning Appliances**

{ Colour code analogy to the street light system: green, no restriction; yellow, partial restriction; red, total restriction }

- 4.1.1 The [local authority] may issue a declaration of a “Yellow Air Quality Advisory Period” through local communications media requesting residents to voluntarily curtail the use of non-certified woodburning appliances whenever conditions within the region are projected to cause ambient air quality concentrations of respirable particulate matter (PM<sub>2.5</sub>) to be (number) µg/m<sup>3</sup> and above but less than (number) µg/m<sup>3</sup>.
- 4.1.2 The [local authority] may issue a declaration of a “Red Air Quality Advisory Period” through local communications media requesting residents to voluntarily curtail the use of all woodburning appliances whenever conditions within the region are projected to cause ambient air quality concentrations of respirable particulate matter (PM<sub>2.5</sub>) to be (number) µg/m<sup>3</sup> and above.

## **Option b) Mandatory Curtailment**

### **Option b.1) Curtailment of Non-certified Woodburning Appliances**

- 4.1.1. The [local authority] shall issue a declaration of an “Air Quality Advisory Period” through local communications media requiring residents to mandatorily curtail the use of non-certified woodburning appliances whenever conditions within the region are projected to cause ambient air quality concentrations of respirable particulate matter (PM<sub>2.5</sub>) to be (number) µg/m<sup>3</sup> or above. A violation shall be presumed, for which a citation shall be issued, if visible smoke is being discharged through a flue or chimney after a time period of three hours has elapsed after the start of the Air Quality Advisory Period.
- 4.1.2. Notwithstanding subsection 4.2.1 hereof, the operation of a certified woodburning appliance shall be permitted during a high pollution period as long as no visible emissions of smoke are discharged through a flue or chimney after a time period of three hours has elapsed after the start of the Air Quality Advisory Period.
- 4.1.3. The provisions of subsection 4.1.2 shall not apply to emissions of smoke during the starting or refuelling of a fire for a period not to exceed thirty minutes in any four-hour period.
- 4.1.4. Despite subsection 4.1.1, a person may use a woodburning appliance during an “Air Quality Advisory Period” provided that person is a sole woodburning heat user.

### **Option b.2) Staged Curtailment for all Woodburning Appliances**

{ Colour code analogy to the street light system: green, no restriction; yellow, partial restriction; red, total restriction }

- 4.1.5. The [local authority] shall issue a declaration of a “Yellow Air Quality Advisory Period” through local communications media to require residents to mandatorily curtail the use of non-certified woodburning appliances whenever conditions within the region are projected to cause ambient air quality concentrations of respirable particulate matter (PM<sub>2.5</sub>) to be (number) µg/m<sup>3</sup> and above but less than (number) µg/m<sup>3</sup>. A violation shall be presumed, for which a citation shall be issued, if visible smoke is being discharged through a flue or chimney after a time period of three hours has elapsed after the start of the Yellow Air Quality Advisory Period.
- 4.1.6. The [local authority] shall issue a declaration of a “Red Air Quality Advisory Period” through local communications media to mandatory curtail the use of all woodburning appliances whenever conditions within the region are projected to cause ambient air quality

concentrations of respirable particulate matter (PM<sub>2.5</sub>) to be (number) µg/m<sup>3</sup> and above. A violation shall be presumed, for which a citation shall be issued, if visible smoke is being discharged through a flue or chimney after a time period of three hours has elapsed after the start of the Red Air Quality Advisory Period.

- 4.1.7. Despite subsections 4.1.5 and 4.1.6, a person may use a woodburning appliance during an Air Quality Advisory Period provided that person is a sole woodburning heat user.

## **5. Nuisance**

- 5.1. Woodburning appliance fires shall be maintained so as not to cause a nuisance for more than two minutes in succession except during the starting or refuelling of the appliance for a period not to exceed thirty minutes in any four-hour period.

## **6. Opacity**

- 6.1. Within the [Municipality, City] limits, no person owning or operating a woodburning appliance shall at any time cause, allow or discharge emissions from such appliance which are of an opacity greater than twenty (20) percent.
- 6.2. The provisions of this section shall not apply to emissions during the starting or refuelling of the appliance for a period not to exceed thirty minutes in any four-hour period.
- 6.3. For the purposes of this section, opacity percentages shall be determined by a certified observer using the standard visual method (Ringelmann Chart) or operation of equipment approved by the [Municipality, City] that is known to produce equivalent or better accuracy.

## **7. Outdoor Solid Fuel combustion Appliances**

{This section may be used to regulate the installation of outdoor boilers. If a municipality wishes to limit the installation to certified appliances, it may refer to section 2 option a.2) and option c) to ban the installation of outdoor boilers}

- 7.1. Outdoor solid fuel combustion appliances shall be permitted on a lot which has a minimum lot area of [number] hectares and the unit shall be located/installed as follows:
  - 7.1.1. at a minimum of [number] meters from all property lines;
  - 7.1.2. at a minimum of [number] meters from any building on the property;
  - 7.1.3. such that the perimeter ground area around the unit to a distance of [number] meters minimum from the unit shall be of a non-combustible surface ( i.e. gravel, sand, concrete pad);
  - 7.1.4. the unit's chimney cap shall be fitted/equipped with a rain cap/spark arrester;
  - 7.1.5. in accordance with a site location/installation plan as approved by the Chief Building Official or designate;
  - 7.1.6. fuel shall be stored a minimum of [number] meters from the appliance.
- 7.2. Notwithstanding the provisions of subsection 7.1, outdoor solid fuel combustion appliances are not permitted on any lot which i :
  - 7.2.1. located within a registered plan of subdivision;
  - 7.2.2. located within Residential Zones in the zoning by-laws.

- 7.3. Where such installations are otherwise permitted in this By-law, there shall be no more than one (1) unit permitted per property within the municipality except:
- 7.3.1. more than one (1) outdoor solid fuel combustion appliance is permitted on a lot where it serves a permitted accessory dwelling or an agricultural building on lands that are used primarily for agricultural purposes.
- 7.4. The installation of outdoor solid fuel combustion appliances shall comply with the [Jurisdiction] Building Code, the [Jurisdiction] Fire Code, the manufacturer's installation instructions and all other applicable law.
- 7.5. No outdoor solid fuel combustion appliances shall be used for the incineration of material listed in subsection 1.1.
- 7.6. The installation of such unit shall require a permit to be issued by the Chief Building Official or designate to ensure compliance with this By-law. The form of permit shall be in accordance with Schedule "[ ]" attached to and forming part of this By-law. The permit fee shall be \$[amount].