

# Solid Fuel Burning Domestic Appliance Regulation Intentions Paper

## 1. Introduction

The Ministry of Environment and the Ministry of Healthy Living and Sport intend to review and revise the Solid Fuel Burning Domestic Appliance Regulation in keeping with actions set out in the B.C. Air Action Plan.<sup>1</sup> The overall objective of the review and proposed revisions is to reduce impacts on human health and ecosystems by reducing air pollution from domestic wood heating.

The purpose of this intentions paper is to seek responses and comments from stakeholders and the public on the proposed revisions to the regulation. The paper provides: a summary of ministry and government goals; background information regarding solid fuel burning appliances, air quality, and the regulation of solid fuel appliances; proposed revisions to the regulation; and information on assuring compliance. The paper also describes how to provide comment on the proposed revisions.

The Solid Fuel Burning Domestic Appliance Regulation (SFBDAR) was enacted under the *Environmental Management Act* (EMA)<sup>2</sup> for the purpose of reducing air pollution from domestic wood heating. The regulation sets particulate matter (PM) emission standards applicable to specified new solid fuel burning domestic appliances (such as wood and pellet stoves) sold in B.C. The regulation has not been revised since it was enacted in 1994.

The regulation review process consists of five steps:

1. **Scoping** – including a review of lessons learned through implementation of the SFBDAR, advances in wood and pellet combustion since the regulation was enacted in 1994; and regulatory measures addressing domestic wood heating in other jurisdictions.
2. **Intentions Paper** – for public consultation, outlining the ministries' proposed revisions for the regulation and consultation questions.

<sup>1</sup> See: [www.bcairsmart.ca](http://www.bcairsmart.ca)

<sup>2</sup> To view the text of the regulation and the *Environmental Management Act*, follow the "statutes and regulations" link under: [www.bclaws.ca](http://www.bclaws.ca). A summary description and links can also be found under the B.C. "air quality legislation" webpage: [www.bcairquality.ca/regulatory/air-legislation-summary.html](http://www.bcairquality.ca/regulatory/air-legislation-summary.html).

3. **Consultation** – with affected stakeholders and the general public, using the intentions paper and response forms posted on the ministries' websites, and other means as required.
4. **Drafting** – preparation of legal language for consideration by the Minister of Environment and Lieutenant Governor-in-Council.
5. **Implementation** – informing ministry staff and external stakeholders, and developing guidance where needed.

The intentions paper, the response form for providing comments to the ministries, and links to related legislation are posted on the Ministry of Environment website: [www.env.gov.bc.ca/epd/codes](http://www.env.gov.bc.ca/epd/codes).

## Phased approach to revisions

The ministries intend to revise the regulation in two phases. Revisions based on the intentions set out in this paper will be initiated in 2010, following review and consideration of consultation comments. Revisions undertaken during this phase will address elements where the ministries have both existing legislative authority to act and sufficient information to revise regulatory provisions.

Phase 2 revisions are expected to proceed approximately two years after the completion of Phase 1 revisions and will address regulatory elements where: the ministries currently lack legislative authority to act; need to work in cooperation with other ministries involving associated statutes and regulations; need to gather further information before considering revision; and/or topics where there is a benefit to waiting for regulatory development in other jurisdictions (particularly the US) rather than acting unilaterally.

## 2. Ministry and Government Goals

The Ministry of Environment and the Ministry of Healthy Living and Sport share responsibility for air quality management in B.C. The Ministry of Healthy Living and Sport advises on standards, objectives, and regulations to protect human health while the Ministry of Environment regulates air pollutant emissions from a variety of sources using approvals, permits, regulations, guidelines and codes of prac-

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tice. In addition the two ministries support community based airshed planning – a multi-stakeholder process for identifying and meeting community supported air quality goals through local action.

The B.C. Air Action Plan was released in 2008 and contains 28 specific “actions” to improve air quality across the province by promoting clean transportation, clean industry and clean communities. Two measures in the plan are targeted at reducing wood smoke from domestic heating, a key source of particulate air pollution in many B.C. communities.

**Action #25** addresses the Solid Fuel Burning Domestic Appliance Regulation. The current regulation requires all new appliances to meet the latest standards established by the U.S. Environmental Protection Agency or the Canadian equivalent. The Air Action Plan commits to “*expanding the regulation’s scope to apply to a wider range of wood burning devices.*”

**Action #24** aims to “*get rid of smoky old wood stoves*” through the Provincial Woodstove Exchange Program, an education and incentive program to replace old uncertified wood-burning appliances with cleaner new certified wood and pellet-burning appliances, or gas or electric alternatives. The long term goal of the program is the exchange of at least 50,000 old wood stoves for newer more fuel-efficient models or other clean heat sources. This represents about half of the old woodstoves in the province and would reduce emissions of fine particulate matter by more than 3,000 tonnes per year.

## 3. Background Information

### 3.1 Domestic Wood Heating in B.C.

Wood burning has long been used in B.C. either as a stand-alone source of heat or as a supplement to heating with electricity, natural gas or other fuels. Wood (including pellets and other wood derivatives) provides about 10% of the energy used for space heating in the province.<sup>3</sup>

<sup>3</sup> See the Natural Resources Canada (NRCAN) Office of Energy Efficiency (OEE) *Comprehensive Energy Use Database*:

The proportion of households heating at least partly with wood is greatest in rural areas of B.C. Outside of the lower Fraser Valley, approximately one-quarter of households burn at least some wood in an appliance other than a fireplace. Wood burning appliance use is particularly heavy in the Bulkley Valley Lakes District and the Cariboo Region.

B.C. residents who heat with wood cite “cost savings” and “readily available fuel supply” as major reasons for heating with wood<sup>4</sup>. These reasons are particularly true in rural B.C. where many residents have ready access to low cost supplies of wood fuel.

### 3.2 Domestic Wood Heating Industry in B.C.

There are four manufacturers of wood and pellet stoves presently operating in B.C. In 2008 they collectively produced about 75,000 appliances. Although the B.C. market is significant to these manufacturers, the majority of appliances manufactured in the province are exported. Collectively, B.C. companies supply about 16% of the North American market for pellet stoves and 30% of the market for steel stoves and inserts. The wood stove manufacturers in B.C. directly employ 500-600 people. In addition to manufacturing of appliances, the distribution, retailing, installation and maintenance of solid fuel appliances in B.C., also accounts for significant employment.

There is also a significant industry providing cordwood and pellet fuel for use in appliances. Cordwood production and sale is generally a small scale business, often utilizing waste wood from the timber industry. Pellet production is more centralised, requiring larger facilities and greater capital investment than cordwood production. Wood pellets are manufactured primarily from waste wood. Currently the majority of pellets produced in B.C. are exported, though the domestic market for pellets is expanding. A proportion of wood used for pellet and

[oee.nrcan.gc.ca/corporate/statistics/neud/dpa/comprehensive\\_tables/index.cfm?attr=0](http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/comprehensive_tables/index.cfm?attr=0).

<sup>4</sup> Xue, Hui. Residential wood burning in British Columbia: public behaviour and opinion. Ministry of Environment, 2006. ([www.bcairquality.ca/reports/woodstove\\_emissions\\_0706.html](http://www.bcairquality.ca/reports/woodstove_emissions_0706.html)).

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cordwood production would otherwise be burnt in open pile burns.

### 3.3 Domestic Wood Heating and Air Quality

The smoke generated by domestic wood heating can have significant impacts on air quality, with associated health and environmental concerns. Many B.C. communities are located in valleys that are subject to inversions and periods of stagnant air that can trap smoke emissions from wood-burning appliances and other sources close to the ground. These inversions are most frequent in winter when emissions from wood heating are also greatest.

The main air quality concern related to domestic wood heating is exposure to airborne particulate matter (PM)<sup>5</sup> at concentrations that could lead to adverse human health and ecosystem effects. The most significant health risks are associated with the finest particles, in particular “respirable” particles less than 2.5 micrometres ( $\mu\text{m}$ ) in diameter, termed  $\text{PM}_{2.5}$ . Other domestic wood smoke impacts include impairment of visibility by smoke; odorous smoke emissions, and emissions of toxic air pollutants such as polycyclic aromatic hydrocarbons (PAHs).

Wood burning accounts for 97% of  $\text{PM}_{2.5}$  emissions associated with space heating in B.C. although it only accounts for 10% of space heating energy needs in the province.<sup>6</sup> Smoke from domestic wood heating is responsible for approximately 15% of total provincial  $\text{PM}_{2.5}$  emissions (Figure 1) – the third largest  $\text{PM}_{2.5}$  source in B.C.<sup>6</sup> Domestic wood heating also causes significant emissions of volatile organic compounds (VOC) – 6% of provincial total.

Emissions from wood heating may lead to human exposure to PM even greater than suggested by their fraction in the inventory. Domestic wood smoke is

emitted at rooftop level within neighbourhoods, and wood smoke emissions are often greatest on cool winter evenings when atmospheric mixing is very poor. In contrast industrial emissions are typically emitted fairly evenly throughout the year through elevated stacks, and may also be located outside of residential areas. A recent study in Vancouver found that domestic wood smoke was 3-5 times more likely to be inhaled than PM from other sources.<sup>7</sup>

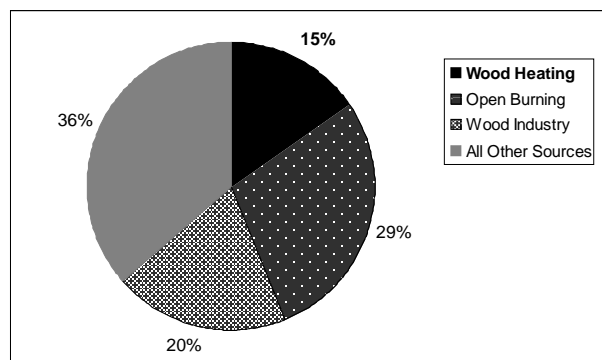


Figure 1 – Percentage of  $\text{PM}_{2.5}$  emissions from different sources in B.C.<sup>8</sup>

Wood smoke is a significant contributor to total  $\text{PM}_{2.5}$  concentrations in a number of communities in B.C. For example: in Golden the “wood smoke” and “winter heating” fractions of PM collectively account for 60% of measured  $\text{PM}_{2.5}$ <sup>9</sup>; an airshed modelling study in Quesnel determined that the “residential sector” (including wood stoves and backyard burning) contributes up to 62% of  $\text{PM}_{2.5}$ <sup>10</sup>, depending on location; in Williams Lake wood heating was the largest  $\text{PM}_{2.5}$  contributor at 7 out of 15 sites in-

<sup>5</sup> Particulate Matter (PM) refers to a combination of microscopic solid and liquid particles that are suspended in the air we breathe. For more information on PM in B.C. see: [www.bcairquality.ca/101/index.html](http://www.bcairquality.ca/101/index.html), the *State of the Air Report 2009*; [www.bc.lung.ca/airquality/stateoftheair-report.html](http://www.bc.lung.ca/airquality/stateoftheair-report.html); and *Every Breath You Take... 2003 Provincial Health Officer's Report* [www.hls.gov.bc.ca/pho/pdf/phoannual2003.pdf](http://www.hls.gov.bc.ca/pho/pdf/phoannual2003.pdf).

<sup>6</sup> Wakelin, Tony. “2000 British Columbia Emissions Inventory of Criteria Air Contaminants: Methods and Calculations” (June 2005). ([www.bcairquality.ca/reports/pdfs/2000\\_inven\\_rep.pdf](http://www.bcairquality.ca/reports/pdfs/2000_inven_rep.pdf)).

<sup>7</sup> Ries, Francis. “Wood Smoke Intake Fraction for Metro Vancouver”, 2008 B.C. Lung Air Quality & Health Workshop, Vancouver, B.C.

([www.cher.ubc.ca/UBCBAQS/Presentations/BCLung2008/Ries\\_BC\\_%20Lung08.pdf](http://www.cher.ubc.ca/UBCBAQS/Presentations/BCLung2008/Ries_BC_%20Lung08.pdf))

<sup>8</sup> Source: 2005 B.C. Criteria Air Contaminant Emissions Inventory. “Other sources” includes emissions from transportation (on and off-road), the pulp and paper industry, marine transportation, and other industrial and area sources. No sector, other than the three identified on the chart, contributes more than 7% of B.C.’s total  $\text{PM}_{2.5}$  emissions.

<sup>9</sup> See: [www.bcairquality.ca/reports/golden\\_pmf.html](http://www.bcairquality.ca/reports/golden_pmf.html)

<sup>10</sup> See: [www.bcairquality.ca/reports/Source\\_Apportionment.html](http://www.bcairquality.ca/reports/Source_Apportionment.html)

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vestigated<sup>11</sup>; and in Prince George wood heating constitutes 18-26% of total PM<sub>2.5</sub>.<sup>12</sup>

## 3.4 Provincial wood stove exchange program

To address the existing stock of old and high polluting domestic wood heating appliances in B.C. the provincial government has established a wood stove exchange program. This commitment, affirmed in the B.C. Air Action Plan, includes education and incentives to encourage people to replace old wood stoves and inserts with newer cleaner burning wood appliances, or with gas or electric heaters. The long term goal of the woodstove exchange program is to change out 50,000 woodstoves. Since 2007, approximately 3,000 stoves have been exchanged. The program is offered in cooperation with partners at the municipal and regional level and with the hearth products industry. It is focused on areas of B.C. where wood smoke has been recognized as a contributor to poor air quality. Information on the program is available at the BC Air Quality [website](#).

## 3.5 Climate change and domestic wood heating

Domestic wood heating, if it displaces the use of fossil fuel for heating, has the potential to offset greenhouse gas (GHG) emissions. While wood is a carbon based fuel, the carbon dioxide (CO<sub>2</sub>) released from wood combustion is not considered to be a net addition to global GHG as it is offset by CO<sub>2</sub> taken up by re-growing forests. However, the negative health effects of air pollutants from domestic wood heating can outweigh this modest GHG benefit. For this reason, the use of wood for home heating has not been promoted as a climate mitigation strategy in B.C. Instead the B.C. Bioenergy Strategy<sup>13</sup> promotes burning wood in centralized energy facilities that may generate electricity or provide heat for district heating or industrial uses. Pollutant emissions from these centralized facilities can be controlled to a much lower level than pollu-

tant emissions from a large number of individual wood stoves burning an equivalent amount of fuel.

For wood heat to be a truly climate neutral source of energy it must not only be harvested sustainably, it must also be cleanly combusted to carbon dioxide (CO<sub>2</sub>) and water with insignificant products of incomplete combustion generated. Wood burned in current home heating appliances generates carbon monoxide (CO), methane (CH<sub>4</sub>), VOCs and PM – all of which contribute to global warming to some extent,<sup>14</sup> (in addition to their key role as health-damaging air pollutants). Thus, cleaning up wood combustion by tightening emission requirements provides not only a major health benefit but also a secondary GHG benefit.

## 4. Current Regulation of Domestic Wood Heating in B.C.

### 4.1 Solid Fuel Burning Domestic Appliance Regulation

The Solid Fuel Burning Domestic Appliance Regulation (SFB DAR) is the primary provincial legislation governing emissions from domestic wood heating in B.C. The regulation:

- ◆ Requires new wood stoves sold in B.C. to be certified to meet emission standards set by the US Environmental Protection Agency<sup>15</sup> (EPA), or certified to meet equivalent standards set by the Canadian Standards Association (CSA).<sup>16</sup>
- ◆ Sets out standards for testing and labelling of woodstoves.
- ◆ Sets out specifications for pelletized fuel sold in the domestic market.

With the adoption of SFB DAR in 1994, B.C. became the first province in Canada to regulate wood

<sup>11</sup> See: [www.bcairquality.ca/reports/fine\\_part\\_source\\_apport.html](http://www.bcairquality.ca/reports/fine_part_source_apport.html)

<sup>12</sup> See: [www.pgairquality.com/files/pdf/PG\\_PM25SourceApportionment\\_FinalReport.pdf](http://www.pgairquality.com/files/pdf/PG_PM25SourceApportionment_FinalReport.pdf)

<sup>13</sup> See: [www.energyplan.gov.bc.ca/bioenergy/](http://www.energyplan.gov.bc.ca/bioenergy/)

<sup>14</sup> See page 205 of the IPCC Fourth Assessment Report: [www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf)

<sup>15</sup> “EPA certified” means meeting the requirements of Title 40, Part 60, Subpart AAA of the Code of Federal Regulations: Standards of Performance for New Residential Wood Heaters as updated from time to time.

<sup>16</sup> “CSA certified” means meeting the requirements of CSA B415.1-00: Performance Testing of Solid-Fuel-Burning Heating Appliances as updated from time to time.



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stove emissions. Even today, only three other Canadian provinces have comparable regulations.

The SFB DAR has been largely successful in its aim of ensuring that the majority of new wood appliances sold in B.C. meet US and/or Canadian emission standards. However in the fifteen years since the regulation was implemented, several shortcomings with the regulation have become apparent:

- ◆ The regulation exempts several categories of wood heating appliances, such as outdoor wood boilers (hydronic heaters), central heating furnaces and wood-fired cook stoves from meeting emission standards. Outdoor wood boilers can emit PM at 10 to 20 times the rate of EPA certified wood stoves.<sup>17</sup> Emissions from outdoor wood boilers have led to many complaints to government agencies, usually from neighbours who are affected by the emissions.
- ◆ The wood stove emission levels referenced in the regulation no longer represent best available technology for reducing PM emissions. New wood and pellet stoves are now available that can reduce PM emissions to 50-90% below the current certified levels.
- ◆ The regulation does not contain any mechanism for addressing excessive emissions resulting from improper use of wood burning appliances – it only addresses emissions from new appliances.
- ◆ The regulation does not prevent re-sale or installation of old high polluting appliances.

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<sup>17</sup> NESCAUM. “Assessment of Outdoor Wood-fired Boilers” (March 2006). Available at: [www.nescaum.org/documents/assessment-of-outdoor-wood-fired-boilers](http://www.nescaum.org/documents/assessment-of-outdoor-wood-fired-boilers).

## **4.2 Municipal bylaws**

Municipalities in B.C. have the power to enact by-laws controlling some aspects of wood burning.<sup>18</sup> Provisions in municipal bylaws may include:

- ◆ A curtailment provision that restricts the use of wood heating appliances during air quality advisories.
- ◆ A sunset provision that requires old stoves to be removed or replaced by a certain date.
- ◆ Requirements on the type of fuels that are burned.
- ◆ Restrictions on appliance types, such as a ban on outdoor wood boilers.

At least one municipality in B.C. – Golden – has also taken the step of banning wood burning appliances in new construction. Municipalities can prioritize areas of action that are viewed as most important and most acceptable to the citizens in that community. On the other hand, over-reliance on municipal action to control smoke from domestic wood heating may mean that not all British Columbians receive the same protection from air pollution.

## **4.3 Related provincial regulations**

In addition to the Solid Fuel Burning Domestic Appliance Regulation, provincial regulations have been enacted addressing other sources of wood smoke, including open burning of wood waste (the [Open Burning Smoke Control Regulation](#)), wood residue burners and incinerators (the [Wood Residue Burner and Incinerator Regulation](#)), and agricultural boilers ([Agricultural Waste Control Regulation](#)).<sup>19</sup> Backyard burning is not within the scope of the Open Burning Smoke Control Regulation, however the Ministry of Environment has drafted a model municipal bylaw for regulating backyard burning to support local efforts to control smoke from this source.<sup>20</sup>

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<sup>18</sup> A model bylaw for regulating wood burning appliances is available at: [www.ec.gc.ca/cleanair-airpur/975A1778-B583-4E2A-9369-81800C3AC8C2/Model\\_By-law.pdf](http://www.ec.gc.ca/cleanair-airpur/975A1778-B583-4E2A-9369-81800C3AC8C2/Model_By-law.pdf). See also, an inventory of clean air bylaws in B.C. current to 2007 at: [www.bcairquality.ca/reports/air\\_quality\\_bylaws\\_bc.html](http://www.bcairquality.ca/reports/air_quality_bylaws_bc.html).

<sup>19</sup> These regulations can be found by following the “statutes and regulations” link under: [www.bclaws.ca](http://www.bclaws.ca).

<sup>20</sup> See: [www.bcairquality.ca/reports/model-bylaw-backyard-burning.html](http://www.bcairquality.ca/reports/model-bylaw-backyard-burning.html).

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## **5. Proposed Revisions to the Regulation**

The review team established for the revision process includes representatives from the Ministries of Environment and Healthy Living and Sport. The team oversaw a jurisdictional review on the regulation of emissions from domestic wood heating that looked at Quebec, Washington, Oregon, Colorado, Maine, Vermont, New York, Connecticut, as well as a number of regional and municipal jurisdictions in the US and Canada. The team also gathered information on non-regulatory means of reducing domestic wood smoke, emission levels from modern solid fuel appliances, and recent developments in the solid fuel appliance industry. As well, the team met with representatives of other government agencies and the wood burning appliance industry to gather information.

### **5.1 Objectives guiding proposed revisions**

The overall objective of the review and proposed revisions is to reduce impacts on human health and ecosystems by reducing air pollution from domestic wood heating. This will be achieved by ensuring that new wood appliances sold in B.C. are as clean-burning as possible and that existing wood appliances are operated as cleanly as possible.

The ministries used the following set of objectives to assess potential changes and guide revision of the regulation:

- ◆ The primary goal of the regulation is to reduce or minimize impacts to human health from domestic wood smoke.
- ◆ Apply in B.C. what has been effective in other jurisdictions.
- ◆ Where possible harmonize with other jurisdictions to minimize additional testing, compliance and record-keeping costs to industry.
- ◆ Weigh costs and benefits of regulatory provisions. Seek provisions that do not impose undue costs on government, industry, or individuals who heat with wood.
- ◆ Take into account and where possible integrate with non-regulatory options for reduction of wood smoke.

- ◆ Take into account regulatory capacity and actions of municipal and regional partners.
- ◆ The revised regulation should allow and encourage technological development of cleaner wood-burning appliances.
- ◆ Regulatory provisions should be as clear and simple as possible and should be designed to encourage and enable compliance with the regulation.
- ◆ The revised regulation should leave wood heating as a viable option for many British Columbians.

### **5.2 Widening the scope of the regulation**

Currently the provisions of the regulation that require stoves sold or manufactured in B.C. to be EPA or CSA certified (see section 4.1 above) only apply to certain classes of biomass burning appliances. This creates “exempt” appliances which do not have to meet any PM emission standards in order to be sold in B.C.

The ministries intend to revise the regulation so that “appliance” will be defined in an inclusive manner – including conventional wood and pellet stoves, wood and pellet boilers and furnaces, cook stoves, wood fireplaces and masonry heaters. The BC emission standard will then apply to all biomass fired solid fuel appliances except: (1) defined classes of appliances specifically excluded from meeting the standard; and (2) defined classes of appliances for which a separate emissions standard is provided.

### **5.3 Lower PM emission standards for new solid fuel burning appliances**

Wood heating technology, as well as our understanding of wood smoke impacts on human health, has advanced significantly since initial development of emission standards by the US EPA in 1988. The cleanest stoves and inserts available today are able to achieve emission levels 70-90% below these standards.

The ministries intend to adopt PM emission standards equivalent to the levels currently required in Washington State (see Table 1 below). These emission levels will be defined as the B.C emissions standard. Beginning in 2011, only appliances meet-

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ing the B.C. emissions standard will be allowed to be offered for sale in B.C. – with the exception of classes of appliances specifically exempted from meeting the emissions standard and classes of appliances for which a separate emissions standard is established.

The proposed standard will result in a lowering of the maximum permissible average emissions rate by 40% below current standards and will ensure that only the lowest emitting new appliances will be offered for sale in B.C.

As with the current provision, an appliance could be certified under the EPA standard, the CSA standard, or both. Regardless of which certification is used, to be legally offered for sale in B.C. an appliance will have to achieve the emissions rate specified in Table 1, or the emissions rate required to obtain certification, whichever is lower. Since the EPA is currently revising their emission standards for solid fuel appliances,<sup>21</sup> this wording will ensure that if the EPA lowers their emissions rate, that number will be applicable in BC if it is equal or below the BC standard.

**Table 1: Current and proposed PM emission standards<sup>22</sup>**

	Non-catalytic appliances	Catalytic appliances
Current PM Emission Standard	7.5 grams/hour	4.1 grams/hour
Proposed B.C. PM Emission Standard	4.5 grams/hour	2.5 grams/hour

These emission standards will not apply to site-built masonry fireplaces, site built masonry heaters and factory-built fireplaces with a minimum burn rate above 5.0 kg/h – as the CSA testing procedures do not apply to these classes of appliances.

Requiring lower emissions from new appliances is consistent with the regulation of pollution from other sectors (such as automobiles and industrial

sources). New sources are required to achieve emission levels consistent with the application of best achievable technology, and the required emissions levels become lower over time as pollution prevention technology is improved. Since many appliances are already available that meet the proposed PM emission levels, lowering the PM emission standard is not expected to significantly reduce the availability of wood appliances in B.C. In Washington State where the above emission limits have applied since 1995, there are nearly 500 wood appliance models and nearly 200 pellet appliance models certified for sale.<sup>23</sup>

## **5.4 PM emission standards for indoor central heating appliances**

Currently, solid fuel burning indoor central heating appliances – such as forced air furnaces and boilers – do not have to meet any emission standards to be sold in B.C. However, the revised CSA B415.1 standard includes an emission rate applicable to indoor solid fuel burning central heaters. To be certified by the CSA, the average emissions rate for this class of appliance must not exceed 0.4 grams per megajoule of output.

The ministries intend to revise the regulation to include a definition of an indoor central heating appliance, and beginning in 2012 only appliances certified to meet the CSA standard will be legal to offer for sale in B.C. If the US EPA has adopted a similar or more stringent emissions limit for indoor central heating appliances by 2012, appliances of this type could also be certified to that standard. The phase in date of 2012 is proposed to allow sufficient time for indoor central heating appliances to be certified.

## **5.5 Requirements for outdoor central heating appliances**

The installation and use of outdoor wood boilers in residential areas of B.C. has generated a substantial volume of complaints to provincial and municipal government agencies from neighbours exposed to excessive quantities of smoke.

<sup>21</sup> See: [www.omni-test.com/publications/nsps.pdf](http://www.omni-test.com/publications/nsps.pdf)

<sup>22</sup> Expressed as the average emissions calculated across the test cycle.

<sup>23</sup> See list of appliances meeting Washington standards at:

[www.ecy.wa.gov/programs/air/indoor\\_woodsmoke/wood\\_smoke\\_page.htm](http://www.ecy.wa.gov/programs/air/indoor_woodsmoke/wood_smoke_page.htm)

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Solid fuel burning outdoor central heating appliances include outdoor wood boilers (also known as outdoor wood-fired hydronic heaters). Currently these appliances do not have to meet any emission standards to be sold in B.C. However, the revised CSA B415.1 standard includes an emission rate applicable to outdoor central heating appliances. The average emissions rate for this class of appliance must not exceed 0.137 grams per megajoule of output. The CSA B415.1 emissions standard for this class of appliance is substantially equivalent to the US EPA's voluntary Phase 2 Hydronic Heater Program (the "White Tag" program).<sup>24</sup> The Phase 2 emission level has been adopted as a regulatory requirement by several US states including Maine, Massachusetts, and Vermont.

The ministries intend to revise the regulation to include a definition and standard for outdoor central heating appliances. Beginning in 2011, only outdoor central heating appliances certified to meet the CSA standard or demonstrated to meet the EPA White Tag emissions level will be legal to offer for sale in B.C. If the US EPA adopts a formal emissions standard for outdoor central heaters (replacing the voluntary White Tag program) a provision in the B.C. regulation could ensure that appliances meeting the US EPA standard would qualify for sale in B.C.

In addition to the emissions standards, the ministries propose to include a setback standard (distance from nearest property line) that will limit the installation of new outdoor central heating appliances to sites on larger properties, where they are far less likely to cause nuisance or health problems to neighbours. A number of US states (including Connecticut, Maine and Vermont) have adopted setback standards for new outdoor central heating appliances.

The ministries are proposing a setback distance from the nearest property line in the range of 60-150 metres for outdoor appliances that do not meet the emission standards<sup>25</sup> and 30-90 metres for outdoor appliances that do meet the emission standards.

<sup>24</sup> See: [www.epa.gov/burnwise/woodboilers.html](http://www.epa.gov/burnwise/woodboilers.html)

<sup>25</sup> Outdoor central heating appliances not meeting the new emission standards would still be legal for sale between the effective date of the regulation and the coming into force of the emissions provisions (see Section 5.7 A)

In order to promote compliance with this provision, retailers of outdoor central heating appliances would be required to provide information to purchasers on these setback requirements. Purchasers of outdoor central heating appliances would be required to provide their name and address and an acknowledgment that they have received this material.

## **5.6 PM emission standards for cook stoves**

The ministries intend to adopt a definition for a "cook stove" in the revised regulation. The proposed definition will include "having an oven and a flame path capable of being routed around the oven." Appliances meeting this definition can continue to be offered for sale in B.C. but will be required to be certified to meet the B.C. emission standard starting in September 2014.

As wood-fired cook stoves are a niche appliance and do not contribute a major proportion of emissions in B.C., the proposed implementation date of 2014 is intended to allow appliance manufacturers sufficient time to certify cook stoves.

## **5.7 Additional considerations**

### **A. Transition Period**

New emission standards, when they come into force, have the potential to leave distributors and retailers in B.C. with appliances that are no longer legal to sell in B.C.

The ministries propose a transition period of 12-18 months between the effective date of the regulation and the coming into force of the emission standards. The proposed dates for introduction of each of the emission standards will thus be dependent on the effective date of the regulation.

### **B. Acceptable Fuels**

Burning improper fuels has the potential to create excessive emissions. In addition burning some unsuitable materials produces toxic emissions that are not associated with combustion of clean dry wood. The ministries intend to include a provision in the revised regulation that lists acceptable fuels that may



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be burnt in solid fuel appliances. Acceptable fuels would include: “untreated seasoned wood with a moisture content below 20%, wood chips, manufactured fire logs, and wood or other biomass pellets; and clean paper, newsprint or cardboard used solely for starting fires.” Fuels not listed as “acceptable fuels” would not be permitted to be used in solid fuel burning appliances in B.C.

## **C. Labelling and information requirements**

To be legally offered for sale in B.C., appliances will be required to have a permanently affixed label according to the requirements of the EPA or CSA standard, showing that they meet the above referenced emission limits. This requirement exists in the current regulation, however, with the proposed changes it will apply to a wider class of appliances. As part of the compliance strategy for the amended regulation, the ministries will track appliances that are legal for sale in B.C.

## **D. Testing and record keeping requirements**

Manufacturers, wholesalers and retailers of appliances will continue to be required to ensure that testing has been done to determine compliance with the emission standard. Testing records will continue to be required to be kept for at least two years and to be made available for inspection.

## **E. Pelletized fuel specification**

The current regulation contains a provision specifying pellet quality for the domestic market (“pelletized fuel specification”). However, pellets are currently manufactured to several different grades and pellet fuel appliances are available that can burn a wide variety of pellets while still meeting emission standards.

The ministries intend to remove the current pellet fuel provision from the regulation as it does not appear necessary for ensuring good air quality.

## **F. B.C. specific appliance testing not required**

It is not the general intent of this regulation to require manufacturers to test appliances separately or specifically for the B.C. market. Appliances that have been tested for the Canadian market by obtain-

ing certification under CSA B415-1 for an emissions rate at or below the B.C. standard, or that have been tested for the US market by obtaining EPA certification for an emissions rate at or below the B.C. standard, will be accepted as legal to offer for sale in B.C. As well, pellet appliances that have been tested to achieve Washington State emission standards will be recognized as meeting the equivalent B.C. emission standards and will be accepted as legal to offer for sale in B.C. on application by a manufacturer, importer, distributor or retailer. Outdoor central heating appliances that have met the requirements of the US EPA White Tag program may also apply to be legally offered for sale in B.C.

## **6. Proposed Phase 2 Revisions to the Regulation**

In Phase 2 of revisions to the regulation, the ministries propose to address emission standards for remaining classes of exempt appliances, and to consider provisions to reduce emissions from existing solid fuel burning domestic appliances.

Provisions that the ministries are considering for Phase 2 include:

- ◆ Emission standards for new masonry heaters sold in B.C. The form and level for these standards will depend on developments in other jurisdictions.
- ◆ Emission standards for all fireplaces that are not covered by Phase 1. The form and level for these standards will depend on developments in other jurisdictions.
- ◆ A standard addressing allowable opacity of smoke from solid fuel appliances that could be applied to complaints of excessive smoke from solid fuel appliances. This could be applied on a province-wide scale or in designated airsheds.
- ◆ A “curtailment” provision that would provide for restrictions on the use of solid fuel burning appliances during air quality advisories.
- ◆ A “sunset” provision that could allow the setting of mandatory timelines for the phase out of old high polluting appliances within designated airsheds.

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- ◆ A prohibition on the sale of used appliances that do not meet the emission standards.
- ◆ A prohibition on the installation of new or used appliances not meeting the emission standards.

The ministries are seeking comment at this time on these and other potential issues and measures that could or should be included in Phase 2 revisions. The ministries will then describe proposed measures in a subsequent intentions paper to allow for additional consultation. It is expected that scoping of Phase 2 revisions would begin approximately two years after the completion of Phase 1 revisions. However, the exact timing of proposed Phase 2 revisions will depend on the implementation of Phase 1 provisions, legislative changes in BC, and regulatory developments in other jurisdictions.

## **7. Additional Provisions in other Legislation**

In addition to revisions to the SFB DAR, the ministries recognize that other legislation, as well as non-regulatory means, may be used to reduce harmful emissions from solid fuel burning appliances. Two examples that the ministries are considering are described below. The ministries are seeking comment on these and other measures that might be enacted outside of the SFB DAR.

### **7.1 Only compliant appliances to be installed in new construction**

Solid fuel burning appliances can be bought on the used market, or bought outside of B.C. and imported into B.C. These markets may provide a source of higher emitting appliances for new or modified construction in B.C. This issue could be dealt with by allowing only solid fuel appliances that meet the emission requirements of this regulation to be installed in B.C. residences. Although such a provision could be enacted in the SFB DAR in future (Phase 2) revisions, the B.C. Building Code might provide another means of controlling what appliances are allowed to be installed in new construction.

### **7.2 Requirement to disclose (or remove) non-compliant appliances on sale of property**

Older non-certified wood stoves continue to account for the majority of solid-fuel burning appliances in B.C. These appliances emit far more PM and other pollutants than modern certified appliances. Because these appliances have a long useful life, many of them may continue polluting years into the future.

The primary means of addressing emissions from this population of old stoves is through the provincial wood stove exchange program.

One measure that could increase the change-out of old stoves would be to require the removal or disclosure of non-certified appliances on the sale or transfer of the home. Comparable programs exist in Washington (disclosure requirement) and Oregon (removal requirement).

## **8. Awareness, Compliance and Enforcement**

### **Awareness and compliance promotion**

The existing SFB DAR applies only to appliance manufacturers, wholesalers and retailers. Proposed revisions to the regulation – in particular proposed emission levels for new appliances and testing, labelling and record-keeping provisions – will be of interest to these same groups. In addition, the revised regulation will contain some provisions that apply to individual users of solid fuel burning appliances – including acceptable fuel provisions and the siting restrictions for new outdoor wood boilers.

Compliance promotion with the appliance industry (manufacturers, wholesalers and retailers) will be accomplished through trade journals, meetings with industry stakeholders and targeted mailings to retailers. Compliance promotion with the public will be undertaken through the B.C. Air Quality website ([www.bc.airquality.ca](http://www.bc.airquality.ca)), partner websites, news releases, partner newsletters and other means as appropriate.

Promoting awareness of the SFB DAR requirements to the general public would become even more criti-

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cal following the Phase 2 revisions where additional responsibility for proper burning could be placed onto users of solid fuel burning appliances.

## **Compliance verification and enforcement**

The Ministry of Environment's approach to assuring compliance with the SFB DAR will include regular and random compliance reviews and inspections, as well as reviews and inspections in response to identified or potential issues or concerns regarding protection of the environment or human health.

The Ministry of Environment's response to non-compliance will entail written advisories, warnings, directives, tickets and prosecutions. The choice of response will be based on ministry-wide policy, the compliance history of the manufacturer, distributor, retailer, or appliance user and the significance of the impact from the non-compliance occurrence.

Contravention of the provisions governing manufacture, distribution, or sale of new appliances will continue to be designated as offences under the revised regulation. New provisions on prohibited fuel and on siting of outdoor wood boilers would be designated as offences, with several of the new offences added to the Violation Ticket Administration and Fines Regulation.

## **9. Providing Comment on the Proposed Intentions for the Regulation**

The ministries are intending to finalize the Solid Fuel Burning Domestic Appliance Regulation in 2010. Comments regarding the proposed intentions of the ministries are being solicited and will be carefully considered in the review and development process. The ministries welcome all suggestions with respect to any aspect of the regulation.

Submissions will be compiled and summarized, without specific attribution, by an independent contractor and the summary posted on the ministries' website. Following review of comments and submissions, the Ministry of Environment will complete legal drafting of the regulation for legislative review and implementation.

This intentions paper and a response form with questions based on proposed intentions for the regulation have been posted on the ministry's web site: [www.env.gov.bc.ca/epd/codes](http://www.env.gov.bc.ca/epd/codes).

Those interested are invited to submit comments using the instructions and questions provided on the response form. Individuals or organizations may also make written submissions to the ministry without following the format set out in the response form.

All submissions will be reviewed for inclusion in a consultation summary report. Comments received will be treated with confidentiality by ministry staff and contractors when preparing consultation reports. Please note that comments you provide and information that identifies you as the source of those comments may be publicly available if a Freedom of Information (FOI) request is made under the *Freedom of Information and Protection of Privacy Act*.

If you have any questions or comments regarding the consultation process, review the information posted on the ministry website, or contact Cindy Bertram of C. Rankin & Associates, who has been contracted to manage consultation comments, at:

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*Thank you for your time and comments!*