



Forest Legislation and Policy Reference Guide 2009

Chapter Eight

Fire Management

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Fire Management

As stewards of British Columbia's forest and range resources, the Forest Service has the responsibility to ensure that the use of forests to generate economic benefits is balanced with the long-term health and sustainability of the forest and range resources. To help ensure the forest will continue to contribute to a strong forest economy, the ministry prevents, mitigates and suppresses wildfire to protect natural resource inventories and investments on both the Crown and private land base. Forest fire response is primarily focused on protecting lives and government forest assets, particularly timber. Without fire protection, some 500,000 hectares of productive forest would be lost annually, costing the province billions of dollars in potential direct revenue as well as structures and, potentially, lives.

Wildfire has the potential to impact people, communities and many industrial sectors. In turn the public, local government, land and resource managers and numerous stakeholders have the potential to impact fire management. Hence the *Wildfire Act* and Regulation impose obligations on those carrying industrial activities and high risk activities that apply on all Crown land as well as private land. Because of concerns for public safety and the potential for severe consequences, obligations under the *Wildfire Act* and regulation apply to a broad range of industrial sectors and not just the forest industry.

8.1 Wildfire Prevention and Suppression

8.1.1 Legislation

The *Wildfire Act* is stand-alone legislation, dedicated exclusively to wildfire protection in British Columbia. The key objective of the *Wildfire Act* is to clearly define the specific responsibilities of all users of forest lands and grass lands with respect to wildfire management including fire use, prevention, control operations and the rehabilitation of fire control works to minimize surface soil erosion.

8.1.2 Legislative Evolution

Prior to the passing of the *Wildfire Act* and Regulation fire prevention and suppression was regulated by **sections 75 to 95** of the *Forest Practices Code of British Columbia Act*, and the Forest Fire Prevention and Suppression Regulation. The development of the *Wildfire Act* and Regulation took place over nearly four years. The Legislative Committee was formed in 2001 when the committee was tasked with policy review and drafting the requirements for the *Wildfire Act* and Regulation.

An active 2003 fire season postponed the implementation of the Act and Regulation. Gary Filmon's Firestorm 2003 review was announced and the *Wildfire Act* was delayed to ensure that public input, and recommendations resulting from the review, could be incorporated into the new legislation, where required. The development of the *Wildfire Act* was also influenced by the Auditor General's report, *Managing Interface Wildfire Risks*.

On April 21, 2004 the BC Legislature gave final approval to the *Wildfire Act*. Bill 9 amendments to the Act were passed March 30, 2006. The passing of the Wildfire Regulation on March 31, 2005 brought the *Wildfire Act* into full force; minor amendments to the Wildfire Regulation were passed April 15, 2005, March 31, 2006, December 01, 2007 and May 31, 2007, and minor amendments to the Act have been made by way of Bill 10 October 2005, Bill 9 March 2006, Bill 18 2007 and Bill 8 in 2008.

8.1.3 Legislative Overview

The key objective of the *Wildfire Act* is to clearly define the specific responsibilities of all users of forest lands and grass lands with respect to wildfire management including fire use, prevention, control operations and the rehabilitation of fire control works to minimize surface soil erosion.

The *Wildfire Act* establishes a results-based approach to fire prevention and limits prescriptive regulations for industrial activities.

Under the *Wildfire Act*, the Province can bill to recover government costs for wildfire control. Depending on the circumstances, sanctions for damage to crown assets including timber stand tending and reestablishment costs, remediation costs, or administrative penalties may be recovered. The *Wildfire Act* also enables the government to enter into agreements for the provision of fire control and other services on a fee for service basis, and the Ministry of Forest and Range Policy 9.1 details responsibilities for wildfire control and costs.

The *Wildfire Act* allows the Minister to establish policies and priorities for the efficient use of fire-fighting resources of the government. This helps define governments' priorities for the protection of life and crown assets, including forest land and grass land resources.

The *Wildfire Act* and Regulation applies to Crown land including Provincial Parks and protected areas. The *Wildfire Act* and Regulation applies on private lands that are not regulated by local government bylaws related to the use of open fire. The *Wildfire Act* and Regulation apply to all industrial operations including forest industry, utility transmission and railway operations.

8.1.4 Looking Ahead

Following the Fires of 2003 and the release of the Filmon Report, fuel management has become a leading issue with the Government of British Columbia. The Ministry of Forests and Range, B.C. Parks, the Integrated Land Management Bureau, and the Ministry of Environment are all working toward fire management initiatives including Ecosystem Restoration. The ABCFP and the Forest Practices Board have been instrumental in broadening the discussion and making recommendations around the value of fuel management in British Columbia and requirements for success.

Key components of the Ministry of Forests and Range Fuel Management Program that are delivered with the aid of the Union of BC Municipalities and First Nations Emergency Society Services are: the Provincial Strategic Threat Analysis (identifies wildfire threats to communities), Community Wildfire Protection Plans (CWPPs are action plans to mitigate wildfire threat), pilot projects (small-scale trial treatment areas), and operational projects to reduce fuel hazard.

Many significant steps have been taken to deal with the complex fuel management challenges faced in BC. In the past two years, the MFR has undertaken the following:

- Initiating the development of best practices papers for key hazard areas of the Province;
- Development of a forest tenure to facilitate fuel treatment for community protection;
- Developing Fire Management and Fuel Management Strategic Plans;
- Ongoing public education efforts such as the FireSmart program, community seminars and the development of new fuel management education materials; and
- Developing fire management strategies specific to mountain pine beetle impacted areas and involvement in mountain pine beetle research projects.

It is anticipated that review and application of the *Wildfire Act* and Regulation will be ongoing and amendments will be made as required.

A review of general Ministry of Forests and Range fire management and aviation policy is currently underway; updates will be posted on the Ministry's policy website at: www.for.gov.bc.ca/tasb/manuals/policy/resmngmt/rm-toc.htm

For more information on developments in wildfire management, please refer to the Protection Program's web site at: bcwildfire.ca/

8.1.5 References

- MFR Wildfire Protection Branch: bcwildfire.ca/
- *Wildfire Act*: www.for.gov.bc.ca/tasb/legsregs/wildfire/wildfireact/wildfire.htm
- Wildfire Regulation: www.for.gov.bc.ca/tasb/legsregs/wildfire/wildfirereg/wildfirereg.htm
- Ministry Policy Manual: www.for.gov.bc.ca/tasb/manuals/policy/resmngmt/rm-toc.htm
- Filmon Report: www.2003firestorm.gov.bc.ca/firestormreport/default.htm
- Auditor General's Joint Follow-up of 2001/2002:
Report 1 Managing Interface Fire Risks and Firestorm 2003 Provincial Review:
www.bcauditor.com/PUBS/2005-06/Report2/InterfaceFires.pdf
- Forest Fires in British Columbia: How Policies & Practices Lead to Increased Risk, August 2005 Association of British Columbia Forest Professionals.
- Turner, J.A.; Lawson, B.D. 1978. Weather in the Canadian Forest Fire Danger Rating System. A user guide to national standards and practices. Environment Canada, Pacific Forest Research Centre, Victoria, B.C. bc-X-177
- Interpretive Bulletin on the Application of the Wildfire Regulation for the Forest Industry:
www.woodlot.bc.ca/pdf/Application-Bulletin-Forest-Industry-Guidance-June-2005.pdf
- Fire Smart Manual:
www.bcwildfire.ca/FightingWildfire/safety/pamphlets/FireSmart-BC4.pdf
- Fire Smart Manual Community Planner: www.partnersinprotection.ab.ca/downloads/
- MFR Resource Policy Manual: www.for.gov.bc.ca/tasb/manuals/policy/poltoc.htm

8.1.6 Apply the Knowledge

1. What are some specific examples of how the *Wildfire Act* “reduces regulatory burden”?
2. How does the *Wildfire Act* address recommendations in Gary Filmon’s report Firestorm 2003?
3. Under the *Wildfire Act*, there is no legal requirement for licensees to provide the Protection Program with a fire preparedness plan.
 - a. What are licensees required to provide under the *Wildfire Act*?
 - b. In exercising due diligence as a forest professional, how would you advise a licensee regarding the production of a fire preparedness plan?
4. What are the obligations of a person carrying out an industrial activity or prescribed activity concerning hazard assessment and abatement and the timeframes involved?
5. All open burning is regulated by the Open Burning Smoke Control Regulation (OBSR). What are the requirements under the OBSR for burning near a community?
6. A person carrying out a high risk activity must determine the Fire Danger Class for the location of the activity by using representative weather data for the area. If an off site weather station is to be used what criteria should be considered to determine which station best represents the site?
7. What are the legal and professional obligations when planning and carrying out harvesting activities within the Wildland Urban Interface?
8. How can professional reliance be satisfactorily implemented in the development of a Community Wildfire Protection Plan and in the implementation of a fuel treatment for community protection?

8.2 Open Burning and Air Quality

Open burning including forestry resource management, residential, land clearing development, industrial, agricultural, residential/backyard, construction and demolition waste disposal as well as prescribed burning, creates smoke and thus PM, which can effect air quality on scales from neighbourhoods to valleys to entire airsheds. Ongoing research shows that both chronic and acute exposure to air pollution can have serious adverse health effects. Particulate Matter¹ (PM), which is the main constituent of smoke (especially PM_{2.5}), remain suspended in the air where they may be inhaled and deposited deep in the respiratory system. Both PM₁₀ and PM_{2.5} have been associated with a range of adverse health effects including hospitalization for lung and heart problems, increases in emergency room visits for lung problems, increases in days of restricted activity in adults and school absenteeism in children, increases in respiratory symptoms, and small reductions in measures of lung function.

New ambient air quality criteria for PM_{2.5} (including objectives) were adopted by the Province of B.C. on April 9, 2009.

The new criteria, which include 24-hour and annual air quality objectives, will be used to guide air-management decisions on a day-to-day basis. They will also support long-term planning to protect and improve air quality. Criteria were selected following a process that included:

- a review of the science and regulatory approaches used in other jurisdictions;
- early consultation with stakeholders;
- development of a government intentions paper; and
- consultation with affected stakeholders.

To guide implementation of these criteria, the B.C. Government has released Guidance on Application of Provincial Air Quality Criteria for PM_{2.5}

8.2.1 Commitment to Clean Air

Province-wide Achievement of the Canada Wide Standard (CWS) for PM_{2.5}² has been set as a goal for the year 2010. This supports BC's fourth great goal, which is to: "Lead the world in sustainable environmental management, with the best air and water quality, and the best fisheries management, bar none". These factors, combined with the "Mountain Pine Beetle Action Plan"³ as well as the provincial Bioenergy Strategy⁴ and other air quality initiatives have led to unprecedented attention to air quality and, by virtue, smoke management. Open burning is one process that leads to air quality impacts and is governed in BC through a series of legislation, some of which is currently under review. The following is a description of open burning legislation as it stands in its current form.

1 Particulate Matter (PM): Minute solid or liquid particles that are suspended in the air, e.g. dust, dirt, soot and smoke. PM can be breathed deep into the lungs, aggravating heart and lung disease. Two types of PM are defined by size, PM₁₀ and PM_{2.5}. PM_{2.5} consists of particles 2.5 micrometers (μm) in diameter or less and PM₁₀ consists of particles 10 micrometers or less. The fraction of PM_{2.5} contained within PM₁₀ is referred to as the fine fraction while the remaining particles greater in size than 2.5 μm but smaller than 10 μm are referred to as the coarse fraction. PM_{2.5} are also generally know as fine particles.

2 The numerical target for the CWS for PM_{2.5} is 30 $\mu\text{g}/\text{m}^3$ (24-hr averaging time), based on the annual 98th percentile ambient measurement, averaged over 3 years.

3 www.for.gov.bc.ca/hfp/mountain_pine_beetle/actionplan/2006/Beetle_Action_Plan.pdf

4 www.for.gov.bc.ca/hts/bioenergy/

8.2.2 Legislative Evolution

Prior to 1992 in British Columbia, the burning of land-clearing debris⁵ was exempted from requiring a permit or approval under the former *Waste Management Act* (WMA now called the *Environmental Management Act*, EMA). In other words the practice was allowed. However, following a major episode of burning of land clearing debris that caused significant smoke impacts to nearby communities, the WMA was amended in 1992 and the exemption was removed, meaning that the practice would require a permit or approval from the Ministry of Environment. Given the potential quantity of permits involved, the ministry chose to instead to legislate the process of open burning through a regulation. The resulting Open Burning Smoke Control Regulation (OBSCR) was created in 1993 with the intent to cover the majority of open burning scenarios. From the perspective of the *Wildfire Act* and regulation, the scope of the OBSCR includes both Category 2 and 3 open fires.

8.2.3 Legislative Overview - The *Environmental Management Act*

The ability to introduce waste⁶ into the environment is currently governed through section 6 of the EMA. Specifically, **section 6 (5)(a) of EMA** allows waste to be introduced into the environment if the discharge is governed by:

- (i) a valid and subsisting permit;
- (ii) a valid and subsisting approval;
- (iii) a valid and subsisting order;
- (iv) a regulation; and
- (v) a waste management plan approved by the minister.

8.2.3.1 Exemptions from the *Environmental Management Act*

EMA sections 6 (5)(e) and (g) exempt certain types of fires from their waste discharge obligations under 6 (5)(a) of the Act. Exempt from 6 (5)(a) are:

- (e) the burning of leaves, foliage, weeds, crops or stubble for domestic or agricultural purposes or in compliance with the *Weed Control Act*, and
- (g) fires set or controlled by a person:
 - (i) acting under an order of a local assistant, as defined in the *Fire Services Act*, if the local assistant orders the fires for training purposes⁷,
 - (ii) carrying out fire control under section 9 of the *Wildfire Act*⁸, or
 - (iii) if the fires are resource management open fires under the *Wildfire Act* and are lit, fuelled or used in accordance with that Act and the regulations under that Act⁹.

5 i.e. woody vegetative debris such as stumps and branches

6 Under the EMA, “waste” includes: air contaminants, litter, effluent, refuse, biomedical waste, hazardous waste and any other substance prescribed by the Lieutenant Governor in Council or by a Code of Practice.

7 For the definition of ‘a local assistant’ see: www.qp.gov.bc.ca/statreg/stat/F/96144_01.htm#section6

8 For the definition of ‘fire control’ see: www.for.gov.bc.ca/tasb/legsregs/wildfire/wildfirereg/wildfirereg.htm#part3

9 For the definition of ‘resource management open fire’ see: www.for.gov.bc.ca/tasb/legsregs/wildfire/wildfirereg/wildfirereg.htm#part3

8.2.4 Legislative Overview – The Open Burning Smoke Control Regulation

“**open burning**” means the combustion of material with or without control of the combustion air and without a stack or chimney to vent the emitted products of combustion to the atmosphere;

“**debris**” means disturbed or undisturbed vegetative matter targeted for management or disposal by open burning;

“**smoke**” means the gases, particulate matter and products of combustion emitted into the atmosphere when debris is open burned;

“**smoke release period**” means a period which commences at the initial release of smoke from open burning of debris on a parcel of land and ends

- (a) in a Category A area after visible smoke ceases to be released from that debris, or
- (b) in a Category B area after not more than 5% of that debris continues to release visible smoke;

Section 2 of the OBSCR stipulates that an air emissions permit or approval is *not required* from the Ministry of Environment for open burning of debris provided *all* of the following conditions are satisfied:

- i) there are no open burning restrictions in effect (both the Ministries of Environment and Forests and Range have the ability to enact open burning or open fire restrictions)
- ii) favourable weather exists for smoke dispersion (see **section 8.2.3.1**)
- iii) Prohibited and/or noxious materials are not burned (see **section 8.2.3.2**)
- iv) The debris is burned on the land from which it originated
- v) all other reasonable options (reduce, re-use, and recycle) have been pursued before burning
- vi) open burning is conducted greater than 100 metres from neighbouring residences and businesses and greater than 500 metres from schools, hospitals, and continuing care facilities
- vii) smoke emissions will not pose a visibility hazard to airports or highways
- viii) the burn complies with any applicable municipal, regional district, or improvement district bylaw that is more restrictive than the regulation
- ix) open burning is conducted in accordance with the *Forest Practices Code of BC*¹⁰
- x) for cities, towns, and villages (Category A areas):
 - a) the smoke release period must not exceed 72 consecutive hours
 - b) no open burning has occurred on the parcel of land at any time during the preceding 15 days
 - c) smoke may be released during open burning on a parcel of land no more than 4 separate occasions during a calendar year
- xi) for areas other than cities, towns, and villages (Category B areas):
 - a) the smoke release period must not exceed 96 consecutive hours

¹⁰ Note: because the regulation is under review, the OBSCR has not changed its references from the *Forest Practices Code of BC* to the *Wildfire Act*. All changes will be made after the final review.

8.2.4.1 Favourable Weather for Smoke Dispersion

Open burning when atmospheric conditions are favourable to dispersion reduces smoke impacts. Atmospheric stability (the mixing height) and wind speed within the mixing height affect how smoke is dispersed. The **Ventilation Index** (VI) is a measure of the atmosphere's ability to disperse smoke emissions and is available either from Environment Canada or, in some parts of the province (northwest and southeast), from the provincial government.

The VI must be forecast as **Good** for the day any open burn is initiated and **Good or Fair** for the second day of smoke release.

8.2.4.2 The Prohibited Materials List

The following materials must not be included in any open burn conducted in accordance with the OBSCR:

- asphalt
- asphalt products
- biomedical waste
- demolition waste
- domestic waste
- drywall
- fuel containers
- lubricant containers
- manure
- paint
- plastics
- rubber
- railway ties
- hazardous waste
- tar paper
- tires
- treated lumber

8.2.4.3 Failure to Satisfy Section 2

Failure to comply with **all** of the conditions in **section 2 of the OBSCR** requires burn operators to satisfy their obligations of **section 6 (5)(a)** of the EMA through the remaining options which include a permit, approval, order or waste management plan approved by the minister.

Common examples of open burning authorizations issued by the Ministry of Environment are for:

- (i) sawmill wood waste (permit);
- (ii) one time demolition wood waste (approval); and
- (iii) wood waste at landfills or transfer stations (waste management plan).

It should be noted that the OBSCR is, in many respects, considered a minimum standard and that other authorizations may contain additional requirements such as (but not limited to) mandatory monitoring and reporting, shorter smoke release periods and forced air combustion assistance.

8.2.5 Looking Ahead

The OBSCR was designed specifically to control the open burning of vegetative land clearing debris, and to control the smoke from such practices. Definitions were later broadened to cover more types of burning (ie: forestry related resource management burns) to create a 'level playing field' across sectors. Since that time, growing awareness and understanding of the health impacts of smoke has led to increased concerns about smoke from a wide variety of open burning activities including forestry related resource management.

An audit of the OBSCR was completed in 2004, and identified issues around enforcement, applicability and effectiveness of the OBSCR to protect the environment and human health, even when all conditions of the regulation have been met. Some key issues included the inability to issue ticketable offences for some types of non-compliance, the ability of burn operators to burn for length periods of time in Category B areas and that the ramifications of burning illegally were not stringent enough to discourage the practice. Furthermore complaints have been made that the OBSCR is not restrictive enough in sensitive areas (near human habitation) and is overly restrictive in less sensitive areas. Also, the OBSCR does not currently ensure that burn operators are skilled in best management practices for debris burning which would minimize smoke generation and reduce smoke impacts. Such practices include but are not limited to pile construction and seasoning.

The Ministry of Environment is therefore undertaking a comprehensive review of the OBSCR with the intent to develop a more comprehensive and manageable regulatory tool to address the growing concerns regarding smoke and its effect on human health. While some questions of enforceability could be addressed with straightforward administrative and wording amendments to the OBSCR, the *Wildfire Act* and the provincial Violation Ticket Administration and Fines Regulation, other issues are not easily addresses with the regulation as it exists. The review is currently ongoing.

8.2.6 References

- Air Burners LLC: www.airburners.com
- Air Quality Objectives for British Columbia and Canada: www.bcairquality.ca/reports/pdfs/aqotable.pdf
- BC Air Quality: www.bcairquality.ca/regulatory/pm25-objective.html
- *Environmental Management Act*: www.qp.gov.bc.ca/statreg/stat/E/03053_00.htm
- *Fire Services Act*: www.qp.gov.bc.ca/statreg/stat/F/96144_01.htm#section6
- Goddard, Katherine. Open Burning Legislation and Regulations: A Jurisdictional Review, March 2007
- Guidance on Application of Provincial Air Quality Criteria for PM2.5: www.bcairquality.ca/reports/pdfs/pm2.5-implement-guide.pdf
- Open Burning and Your Health: www.bc.lung.ca/airquality/wood_burning.html
- Open Burning Smoke Control Regulation: www.qp.gov.bc.ca/statreg/reg/E/EnvMgmt/145_93.htm#schedule%20b
- State of the Air Report 2006: www.bc.lung.ca/airquality/stateoftheair-report.html
- Suzuki, Natalie M. Particulate Matter in BC: A Report on PM10 and PM2.5 Mass Concentrations up to 2000, May 2003.
- Wakelin, Tony. 2000 British Columbia Emissions Inventory of Criteria Air Contaminants: Result Highlights, June 2005.
- *Wildfire Act*: www.for.gov.bc.ca/tasb/legsregs/wildfire/wildfireact/wildfire.htm
- Wildfire Regulation: www.for.gov.bc.ca/tasb/legsregs/wildfire/wildfirereg/wildfirereg.htm#part3

8.2.7 Apply the Knowledge

1. Air curtain / trench incinerators are large rectangular boxes with a ceramic or metal-lined interior that can either be mounted on large trucks / skids or built into the ground. The operating principle of the air curtain incinerator lies in the introduction of controlled high velocity air across the upper portion of the combustion chamber in which wood waste is loaded. The “curtain” of air created in this process traps unburned particles. The increased combustion time, temperature and turbulence results in a “re-burn” and a more complete combustion of the loaded waste. Based on your knowledge of the EMA and OBSCR, is a permit required to operate one of these devices?

A: “open burning” means the combustion of material with or without control of the combustion air and without a stack or chimney to vent the emitted products of combustion to the atmosphere;

Therefore, air curtain burners are considered the same as all other types of open burn, be it industrial, forestry related, agricultural, etc. Whether or not a permit is needed depends on whether the burn operator meets section 2 of the OBSCR. If all conditions in section 2 are met then a permit is not required but if section 2 is not satisfied then a permit is necessary.

2. Given that portions of the *Wildfire Act* relating to types of open burning do not apply within local government boundaries, how does this affect MoE’s ability to regulate within their boundaries?

A: The *Wildfire Act* does not, in any way, affect MoE’s ability to regulate open burning within local government boundaries. In that respect, MoE’s legislation is stand-alone.

3. Atmospheric dispersion is a critical component of open burning because it minimizes smoke impacts from open burning. What are the two key factors used to determine the ventilation index?

A: Atmospheric stability (the mixing height) and wind speed within the mixing height are the key factors used to determine the Ventilation Index (VI).