

BC Health Wildfire Smoke Response Coordination Guideline



March 2017

Table of Contents

Section 1: Introduction	2
Purpose	2
Scope	3
Plan Administration	3
Audience	3
Legislation	3
Public Health Authority.....	4
Section 2: Response Coordination	5
Preparedness	5
Activation	5
Response Coordination.....	5
Section 3: Risk Assessment and Public Health Interventions	7
Weather	7
Wildfire Data	7
Air Quality Measurements.....	7
Wildfire Smoke Projections.....	8
Air Quality Health Index.....	8
Air Quality Visual Assessment.....	9
Supplementary Air Monitoring Equipment.....	10
Health Environmental Surveillance Data	11
Health Effects of Smoke and Pubic Health Interventions	11
Appendix A: Legislation	13
Appendix B: Agency Roles and Responsibilities	15
Appendix C: Example of a Smoky Skies Advisory	20

Section 1: Introduction

During the 2009 and 2010 wildfire seasons, significant wildfire smoke events occurred in regions of BC requiring health interventions for susceptible populations in communities. An After Action Report was developed in 2010 by the Ministry of Health (MoH) in consultation with BC public health stakeholders. The findings in the report were presented to the Environmental Health Policy Advisory Committee (EHPAC) in 2012, where the decision was made to convene a working group to develop provincial health sector wildfire response guidelines. Following that recommendation, the Health Wildfire Smoke Response Coordination Group was created to coordinate planning and response efforts related to public health impacts for significant wildfire smoke events in BC. This Guideline represents a joint effort between all agencies represented as part of the Health Wildfire Smoke Response Coordination Group (the Group).

This document is organized by three sections. The first section provides the background and purpose for the development of the BC Health Wildfire Smoke Response Coordination Guideline. This section also includes a brief description of legislation that can be applied by decision-makers when considering evacuation or other measures due to wildfire smoke and describes the specific powers for medical health officers (MHOs) during a public health event. The second section addresses response coordination related to public health impacts for significant wildfire events in BC. This includes the preparedness activities of the Health Wildfire Smoke Response Coordination Group as well as the activation process and response coordination role of the Group. The third section focuses on the process for assessing the risk of smoke conditions and will inform the recommendations for health interventions during a significant wildfire smoke event.

Complimenting this Guideline, in 2015 the BC Centre for Disease Control (BCCDC) developed the [Guidance for BC Public Health Decision Makers During Wildfire Smoke Events](#). This evidence-based document “describes the wildfire smoke hazard, identifies which health effects are associated with wildfire smoke exposure and which populations are susceptible. It provides BC-specific guidance about tools for situational awareness: smoke and health surveillance and summarizes the evidence for effectiveness of intervention measures to protect public health.”

Purpose

This purpose of this Guideline is to describe how the Health Wildfire Smoke Response Coordination Group will support regional response to a wildfire smoke event that may impact the health of a population in BC.

It is acknowledged that regional, provincial, and federal health agencies have existing plans and procedures internally for emergency response. The intent of this guideline is to ensure a coordinated response across the province and among the various response agencies in order to mitigate health impacts to the public.

Scope

The BC Health Wildfire Smoke Response Coordination Guideline addresses a significant wildfire smoke event in any region of BC and:

- outlines how the Health Wildfire Smoke Response Coordination Group will convene to support the local response
- describes the roles and responsibilities of the regional, provincial, and federal agency members of the Group
- provides guidance on assessing the population health risk and considerations for public health interventions

This Guideline is intended to be used in coordination with the [BCCDC Guidance for BC Public Health Decision Makers During Wildfire Smoke Events](#).

This Guideline does not supersede health authority response plans or existing local, regional and provincial linkages.

Plan Administration

This document will be reviewed annually and updated as lessons are learned through events, exercises, and emerging best practices.

Audience

This Guideline is intended to be used by the health sector partners included in this plan. It is recognized that other agencies not included in this plan may have a role during a significant wildfire smoke event and should activate their emergency plans as required.

Legislation

There is a minimum of two pieces of BC legislation that may be applicable during a significant wildfire smoke event: the *BC Emergency Program Act* and the *BC Public Health Act*. The *BC Emergency Program Act* provides the legislative framework for the management of disasters and emergencies within British Columbia, and specifically addresses evacuation orders under a state of emergency.

In addition or alternatively, the *BC Public Health Act* may be also utilized as it includes provisions that may be applicable during a wildfire smoke event, such as addressing powers of a MHO when a health risk is identified.

See Appendix A for relevant sections of the *Emergency Program Act* and *Public Health Act*.

Public Health Authority

During wildfire smoke events that affect communities within a single regional health authority boundary, public health management decisions remain with the regional health authority MHO. For wildfire smoke events where the smoke is affecting multiple communities across several health authorities, the Provincial Health Officer (PHO) or delegate may choose to lead the public health risk assessment and management, in coordination with the health authority MHOs.

Section 2: Response Coordination

Following recommendations from public health stakeholders in 2010, the Health Wildfire Smoke Response Coordination Group was established to support planning and response efforts related to public health impacts for significant wildfire events in BC. The Group membership includes MoH, BCCDC, regional health authorities (HAs), BC Emergency Health Services (BCEHS), First Nations Health Authority (FNHA), Ministry of Environment (MoE), Emergency Management BC (EMBC), and the Public Health Agency of Canada (PHAC). Membership of the Group may expand as required.

Preparedness

The Group has a seasonal meeting schedule in order to maintain situational awareness, review response capacity and to ensure consistency. This schedule includes:

- Meeting prior to wildfire season to review current guidance documents, share the wildfire season forecast and specific preparations required, and update the group membership list
- Attending EMBC seasonal stakeholder meetings to ensure situational awareness
- Scheduled teleconferences during periods of significant wildfire or wildfire smoke activity, or at the request of the PHO or MHO
- Meeting after wildfire season to review any recommendations for future planning or response

Activation

During a significant wildfire smoke event with a threat to public health the regional MHO or PHO can request support from the Wildfire Smoke Response Coordination Group. The request can be made through the regional health emergency management structure to the provincial level via the MoH 24/7 Duty Officer. The Duty Officer will then convene a meeting with the Group that includes the local MHO.

Response Coordination

When activated, the Group will provide consultation and advice during a wildfire smoke event to assist in the development of recommendations or actions in response to the risk to human health. This response coordination role of the group includes:

- Maintaining situational awareness of the current wildfire / wildfire smoke risk(s) and, when requested by an MHO or the PHO, activate in order to provide recommendations to local/regional government and/or First Nations
- To provide recommendations, a risk assessment will be completed by the Group which will include a review of current and projected weather, wildfire data, wildfire smoke modeling, air quality ratings, and health and environmental surveillance data from BCCDC (*see Section 3*)
- Following any activation of the group, the Wildfire Smoke Response Coordination Group will coordinate post event debriefs and After Action Reports (*see Diagram 1: Response Coordination Cycle*)

When the Group is required to convene in response to a significant wildfire smoke event, each agency member of the Group has a role in response coordination. These agency roles and responsibilities are outlined in *Appendix A – Agency Roles and Responsibilities*. This appendix also includes considerations for local authorities, health facilities, and the health authority.

Diagram 1: Response Coordination Cycle



Section 3: Risk Assessment and Public Health Interventions

When the Wildfire Smoke Response Coordination Group is required to convene to support response to a significant wildfire event, a risk assessment will be conducted based on current and projected conditions. This assessment will:

- ensure consistency in messaging across health authorities and local jurisdictions
- support recommendations for interventions to protect the public
- support decisions made by public health officials during wildfire smoke events

The risk assessment will be conducted with reference to the BCCDC [Guidance for BC Public Health Decision Makers During Wildfire Smoke Events](#) and include the following criteria:

- current and projected weather
- current wildfire data
- air quality measurements
- wildfire smoke projections
- the Air Quality Health Index
- an Air Quality Visual Assessment
- supplementary air monitoring equipment ratings
- Health environmental surveillance data from BCCDC

The frequency for conducting a risk assessment will be determined by the Group based on the nature of the wildfire smoke event.

Weather

The current weather situation and forecast can be provided by MoE air quality staff or through the Daily Wildfire Situation Report provided by the BC Wildfire Service (BCWS). In addition, BCWS conducts fire weather forecasting in each of the six Regional Wildfire Coordination Centres (RWCC), as well as a provincial forecast for the Provincial Wildfire Coordination Centre (PWCC). During periods of increased activity, the PWCC and RWCCs hold daily fire weather briefings via conference call and online meeting, conducted by a fire weather forecaster. Although these briefings are primarily intended to help inform wildfire response and preparedness, factors related to visibility and atmospheric stability may also be presented, specifically in relation to wildfire operations limitations (i.e. air tanker and helicopter operations). This can be used to determine how long smoke is expected to remain in a geographical area.

Wildfire Data

The Daily Wildfire Situation Report is distributed by BCWS to government and partner agencies daily during periods of elevated wildfire activity. General wildfire situation information is also available on the public website. For further information, contact the PWCC's Information section at FireInfo@gov.bc.ca.

Air Quality Measurements

MoE maintains a health network of air quality monitoring stations across the province. Different stations measure different air pollutants in real-time and report hourly average concentrations to the central [website](#). The pollutant most relevant to wildfire smoke exposures is particulate matter less than 2.5 microns in diameter (PM_{2.5}), though other pollutants such as ozone (O₃) and carbon monoxide (CO) can also be elevated when smoke affects air quality. As of summer 2017 there are approximately 50 stations monitoring PM_{2.5} concentrations in BC.

Wildfire Smoke Projections

There are two systems that provide smoke forecasts for BC: FireWork and BlueSky. Environment and Climate Change Canada (ECCC) produces animated maps of PM_{2.5} forecasts using its FireWork system, which is a smoke-specific addition to the ECCC air quality prediction system. FireWork forecasts are issued twice daily at approximately 05:00 and 17:00 universal time and the animated maps indicate how surface smoke is expected to behave hour-by-hour across North America over the 48 hours following the time at which the forecast was made. Additional information is provided [here](#).

The University of British Columbia (UBC) produces animated maps of PM_{2.5} forecasts using the Western Canada BlueSky Smoke Forecasting System, which was developed by the US Forest Service. Similar to FireWork, BlueSky forecasts are issued at approximately 03:00 and 13:00 Pacific time daily, and the hourly maps depict the expected movement of surface smoke over the next 60 hours. Additional information is provided [here](#).

While FireWork and BlueSky are conceptually similar, they are quite different from an operational perspective. The most important difference between them is related to the forecast area, which includes all of North America for FireWork and all of Canada for BlueSky. Both systems have strengths and limitations and gathering information from both is preferable to gathering information from one in isolation.

Air quality meteorologists at the MoE monitor PM_{2.5} measurements, FiresSmoke forecasts, and BlueSky forecasts during the wildfire season. In conjunction with the local MHO, the MoE can issue a Smoky Skies Advisory for a geographical area when smoke concentrations may reach levels expected to affect human health. The purpose of Smoky Skies Advisory is to inform the public about degraded air quality or the potential for degraded air quality, especially in areas without PM_{2.5} monitoring stations. This allows people to make informed choices about reducing their exposures and provide vulnerable individuals and the general public with health advice developed by BC health agencies. See Appendix C for an example of a Smoky Skies Advisory.

Air Quality Health Index

The Air Quality Health Index (AQHI) (*see Table 1*) is a public information tool that helps Canadians protect their health from the effects of poor air quality. This tool has been developed by Health Canada and ECCC, in collaboration with the provinces and key health and environment stakeholders. The AQHI provides information about the health risk associated with local air quality on an hourly basis. The index value is calculated using measurements from a combination of common air pollutants known to be harmful to human health. Under smoky conditions the multi-pollutant AQHI value may be overridden by the single-pollutant AQHI-Plus value based on PM_{2.5} concentrations alone. There will be no outward

changes to the AQHI reporting mechanisms when this occurs, but stakeholders on the MoE AQHI-Plus email distribution list will be notified when the system is triggered. The AQHI communicates four primary things:

1. An AQHI value on a scale of 1 to 10. The higher the number, the greater the health risk associated with the air quality.
2. A category that describes the level of health risk associated with the index value (Low, Moderate, High or Very High).
3. Health messages customized to each category for both the general population and the 'at risk' population.
4. Current hourly AQHI values and maximum forecast values for today, tonight, and tomorrow.

Table 1 Air Quality Health Index Categories and Health Messages¹

The following table provides the health messages for 'at risk' individuals and the general public for each of the AQHI Health Risk Categories.			
Health Risk	Air Quality Health Index	Health Messages	
		At Risk Population*	General Population
Low	1 - 3	Enjoy your usual outdoor activities.	Ideal air quality for outdoor activities.
Moderate	4 - 6	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.
High	7 - 10	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.
Very High	Above 10	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

Current and forecasted AQHI values can be found at <http://www.bcairquality.ca>. The MoE representative on the Health Wildfire Response Coordination Group will review ratings and provide a synopsis to the Group as required.

¹ (Environment Canada, 2015)

Air Quality Visual Assessment

It is important health professionals receive up-to-date information about air quality in order to assist in making timely decisions to protect public health. Communities without continuous particulate monitoring (e.g. air quality meters) require alternate means to estimate particle levels. Because smoke concentrations can vary widely within short distances and can change rapidly, having alternate means to estimate particle levels is also needed for areas that do have continuous monitors. An environmental health officer (EHO) or other trained personnel located in the affected area can assist with estimating the AQHI from Visibility Assessment.

The visibility index (*Table 2*) provides a quick, alternate way to estimate smoke levels. Using landmarks at known distances, an experienced observer can provide a reasonable estimate of particle concentration. It is wise to identify visibility landmarks before they are needed.

Table 2. Estimating the AQHI from Visibility Assessment

Visibility in km (Visual Range)	Approx PM _{2.5} 3-hr avg µg /m ³	Air Quality Health Index (AQHI) Value
> 35 km	0 to 15	Low risk 1 to 3
8 to 35 km	15 to 65	Moderate risk 4 to 6
3.5 to 8 km	65 to 150	High risk 7 to 10
< 3.5 km	>150	Very High risk > 10

When using the visibility index to determine smoke concentrations, it is important to:

- Face away from the sun
- Determine the limit of your visibility range by looking for targets at known distances (kms). The visible range is the point at which even high-contrast objects (e.g., a dark forested mountain viewed against the sky at noon) totally disappear

Using Visual Range for this purpose is only appropriate at humidities <70%. At high humidities it is possible to have very low visibility with relatively low PM_{2.5} levels. This Table should not be used at night or in the period of dawn or dusk. The Visual Range/AQHI relationship shown here involves a number of assumptions – consider the visibility values as very approximate. If available, use air quality monitoring data rather than Visual Range to estimate health risk. Visual Range is ideally estimated from a location with a view in several directions to multiple “targets” (i.e. landmarks) of known distance.

Supplementary Air Monitoring Equipment

MoE has equipment ranging from battery powered monitors through to a fully instrumented trailer.

MoE air quality staff will work with the Health Wildfire Smoke Response Coordination Group to provide any available and appropriate monitoring equipment. Various pieces of air quality monitoring equipment can be obtained directly through Health Canada or through PHAC from the Water, Air and Climate Change Bureau. This equipment can be deployed on short notice from the National Capital Region. Additional supports can be requested through the Bureau to support the deployment of Health Canada assets. Data analysis and interpretation services can also be provided through the PHAC, Health Canada, and other federal partners with mandates in Air Quality and Emergency Management.

Health Environmental Surveillance Data

Both BCCDC and the local health authority have a responsibility for monitoring the effects of smoke on local residents. Since the summer of 2011, BCCDC has been running the BC Asthma Monitoring System (BCAMS), which is intended for use by BC health professionals in support of public health protection during wildfire smoke events. Although retrospective, BCAMS integrates PM_{2.5} information from the MoE air quality monitoring network, the BCCDC Optimized Statistical Smoke Exposure Model (OSSEM), and the FireWork and BlueSky forecasting systems. This allows users to visually evaluate how population health responded to each of these smoke indicators.

Two types of BCAMS reports are produced weekly by the Environmental Health Services at BCCDC and include information on Physician Visits and Salbutamol Dispensations. More frequent reports can be made available during extreme wildfire smoke events.

Physician Visits

BCAMS provides information on recent physician visits for asthma. The data include all billings submitted to the Medical Services Plan (MSP), with the limitation that some practices bill daily while others may only bill on a monthly cycle. Information from the BCAMS systems does not stabilize until at least five days of data are available. Previous work has shown that outpatient visits for asthma are consistently increased when populations are exposed to wildfire smoke².

Salbutamol (Ventolin) Dispensations

BCAMS provides information on recent dispensations of salbutamol, which is used to control acute exacerbations of asthma. These data are made available from the MoH once every two weeks. Previous work has shown that salbutamol dispensations are consistently increased when populations are exposed to wildfire smoke³.

Other means of monitoring health effects within a population may include monitoring calls to BCEHS, information gathered from local health facilities or community health care workers, and monitoring the number of calls to or information requested from Health Link BC.

Health Effects of Smoke and Public Health Interventions

The BCCDC [Guidance for BC Public Health Decision Makers During Wildfire Smoke Events](#) provides a summary of the current evidence-based information on wildfire smoke exposure, health effects, and effectiveness of interventions. Interventions to protect the public during wildfire smoke events can include communications advising the public to take specific precautions, providing community clean air shelters, augmenting air filtration in institutions, and evacuating to protect from exposure.

² BC Asthma Monitoring Program. Physician Visits 2015-07-13 5 days

³ BC Asthma Monitoring Program. Salbutamol Dispensations 2019-07-22

A number of factors may contribute to some populations being more susceptible to the effects of air pollution, which includes wildfire smoke. The BCCDC [Guidance for BC Public Health Decision Makers During Wildfire Smoke Events](#) identifies populations that are known or suspected to be sensitive to wildfire smoke. The level and duration of exposure, age, individual susceptibility, including the presence or absence of pre-existing lung or heart disease, and other factors, play a significant role in determining whether someone will experience smoke-related health problems.

The decision to evacuate a population (or subgroup of a population) due to wildfire smoke is the responsibility of the local authority in coordination with the local MHO.

Appendix A: Legislation

The following are excerpts from two pieces of BC legislation that may be applicable during a significant wildfire smoke event: the *BC Emergency Program Act* and the *BC Public Health Act*. The content represented in this appendix is taken from sections of the Acts that may be relevant to health interventions during a wildfire smoke event. To see the full version of the Act go to the link provided below.

BC Emergency Program Act: http://www.bclaws.ca/Recon/document/ID/freeside/00_96111_01

BC Public Health Act: http://www.bclaws.ca/civix/document/id/complete/statreg/00_08028_01

<i>BC Emergency Program Act</i>
<p>Emergency Program Act Definition of Emergency</p> <p>"emergency" means a present or imminent event or circumstance that</p> <p>(a) is caused by accident, fire, explosion, technical failure or the forces of nature, and</p> <p>(b) requires prompt coordination of action or special regulation of persons or property to protect the health, safety or welfare of a person or to limit damage to property;</p>
<p>Section 9 (1)</p> <p>9 (1) If satisfied that an emergency exists or is imminent, the minister or the Lieutenant Governor in Council may, by order, declare a state of emergency relating to all or any part of British Columbia.</p>
<p>Section 10 (1) (h)</p> <p>10 (1) After a declaration of a state of emergency is made under section 9 (1) and for the duration of the state of emergency, the minister may do all acts and implement all procedures that the minister considers necessary to prevent, respond to or alleviate the effects of an emergency or a disaster, including any or all of the following:</p> <p>Cause the evacuation of persons and removal of livestock, animals, and personal property from any area of BC that is or may be affected by an emergency or disaster and make arrangements for the adequate care and protection of those persons, livestock, animals, and personal property.</p>

BC Public Health Act

30 (1) A health officer may issue an order under this Division only if the health officer reasonably believes that

- (a) a health hazard exists,
- (b) a condition, a thing or an activity presents a significant risk of causing a health hazard\

31 (1) If the circumstances described in section 30 [*when orders respecting health hazards and contraventions may be made*] apply, a health officer may order a person to do anything that the health officer reasonably believes is necessary for any of the following purposes:

- (b) to prevent or stop a health hazard, or mitigate the harm or prevent further harm from a health hazard;

32 A health officer may order a person to do one or more of the following:

- b) in respect of a place,
 - (i) leave the place
 - (ii) not enter the place...etc

39 (3) An order may be made in respect of a class of persons.

This allows an order to be directed at defined groups of people, such as those with health issues that would be impacted by smoke

81 In the event that a medical health officer determines that public health is threatened by a health hazard, an infectious agent or a hazardous agent,

- (a) the medical health officer is responsible for directing the local response, in respect of public health, to the threat, and
- (b) for the purposes of paragraph (a), the health authority that employs the medical health officer must
 - (i) provide the medical health officer with the staff and other resources that the medical health officer reasonably believes are necessary for the response.

Appendix B: Agency Roles and Responsibilities

Agency	Program Area	Roles/Responsibilities
Ministry of Environment	Environment Standards Branch Clean Air staff and Regional Operations Branch Air Quality staff	<ul style="list-style-type: none"> • Issue Smoky Skies Advisory, in conjunction with Health Authority MHO/Communications • Monitor BlueSky Smoke modelling system • Monitor weather forecast and general synoptic conditions • Collaborate with Environment Canada and BC Wildfire Service to improve knowledge of current and predicted wind, weather, fire and smoke information near threatened communities • Provide real time analysis of the current PM2.5, ozone, nitrogen oxides and AQHI for the affected area(s) • Assist in the analysis and acquisition of supplemental monitoring equipment • Provide advice on predicted smoke plume behavior using all available tools, including BlueSky and other forecast models
Ministry of Health	HEMBC MoH	<ul style="list-style-type: none"> • Chair and coordinate the Wildfire Smoke Response Coordination Group • MoH 24/7 Duty Officer receive and disseminate emergency advisories and notifications • Provide support to regional HAs, FNHA, BCEHS • Provide support to PHO • Situational awareness and recommendations for decision makers • Liaise with other government ministries as required • Support Provincial Emergency Coordination Centre (PECC) with appropriate health representation
	Provincial Health Officer	<ul style="list-style-type: none"> • Monitor health of the population, provide independent advice on health issues to the Minister, Ministry of Health, and other public officials • Report to British Columbians on the health of the population and other health issues • Recommend actions to with respect to health promotion and health protection • Work with BCCDC and MHOs to fulfill their responsibilities on disease control and health protection
Health Authority	HA Emergency Response Structure	<ul style="list-style-type: none"> • Lead and coordinate the integrated health response at the regional and local level • Provide liaison to external agencies (EMBC Provincial Regional Emergency Operation Centres (PREOCs), regional/municipal EOCs, agencies, MoE, MoH, etc)

Agency	Program Area	Roles/Responsibilities
	Medical Health Officer	<ul style="list-style-type: none"> • Issue Smoky Skies Advisory (Issued in conjunction with MoE Air Quality) • Conduct media interviews (support from HA Communications) • Review internal smoke related documents to ensure the public health advice is medically accurate and appropriate to the risk • Ultimately responsible for Ordering population specific or community wide evacuation due to poor air quality
	Environmental Health Officer	<ul style="list-style-type: none"> • Validate anecdotal reports of poor air quality where air quality monitoring equipment does not exist • Assist with estimating AQHI from Visibility Assessment. The ability to complete a Visibility Assessment is determined by location of staff during the wildfire smoke event • Work with local government EOC to determine suitable community clean air shelters locations/facilities if/when considered
BC Centre for Disease Control	Environmental Health Services	<ul style="list-style-type: none"> • Routine surveillance of provincial smoke exposures and associated population health response • Daily province-wide smoke exposure information available from the Optimized Statistical Smoke Exposure Model (OSSEM), which integrates air quality information with satellite data and meteorological information • Integration of estimates from OSSEM with measurements from the regulatory air quality monitoring network and forecasts from BlueSky and FireWork via the BC Asthma Monitoring System (BCAMS) • Daily or weekly BCAMS reports on asthma-related physician visits, dispensations of salbutamol sulfate (Ventolin), and ambulance dispatches (expected summer 2017) • Provisions of epidemiologic expertise on the population health impacts of forest fire smoke exposures and interventions to minimize those effects
BC Emergency Health Services	Emergency Management	<ul style="list-style-type: none"> • Maintain situational awareness and make recommendations to BCEHS executive on response and response coordination. • Provide liaison to partner agencies
	Responder	<ul style="list-style-type: none"> • Perform a Hazard Risk Assessment when responding to determine whether their personal safety/health is at risk. The risk assessment will determine whether or not to continue to respond or rather to stage in a safe area waiting for the patient to be handed over to them.

Agency	Program Area	Roles/Responsibilities
	Dispatch	<ul style="list-style-type: none"> • If a 911 call for someone requiring pre-hospital care is received, ensure that there are no risks to responding crews due to extreme smoke conditions • Activate the BCEHS Major Incident Notification Matrix for Internal/External notifications
Ministry of Forests, Lands and Natural Resource Operations	BC Wildfire Service	<ul style="list-style-type: none"> • Lead agency for wildfire prevention and suppression • PWCO provides strategic direction and accountability for provincial wildfire operations • Perform detailed fire weather forecasting at the regional and provincial levels to enhance situational awareness related to wildfire operations • Forecast smoke impacts in relation to aviation safety (i.e. air tankers and helicopters).
First Nations Health Authority	Senior Medical Officer	<ul style="list-style-type: none"> • Issue Smoky Skies Advisory (Issued in conjunction with MHO, MoE Air Quality) • Conduct media interviews (support from FNHA Communications) • Review internal smoke related documents to ensure the public health advice is medically accurate and appropriate to the risk • Work with MHO in ordering community evacuation for First Nation communities due to poor air quality. Note: SMO does not have legislated power to enact orders for evacuation
	Environment Health Officer	<ul style="list-style-type: none"> • Validate anecdotal reports of poor air quality where air quality monitoring equipment does not exist • Assist with determining AQHI from Visibility Assessment • Work with local government EOC to determine suitable community clean air shelters locations/facilities if/when considered
	Manager of Emergency Management	<ul style="list-style-type: none"> • Coordinate FNHA response to emergency and disaster events • Act as a liaison on behalf of FNHA to Provincial Emergency Operations Centers • Work with First Nations communities to address concerns and provide guidance on actions and supports available • When required, provide emergency management funds to support counselling services, traditional wellness ceremonies, and food for impacted communities

Agency	Program Area	Roles/Responsibilities
Emergency Management BC		<ul style="list-style-type: none"> • Co-Chair the CCG for Wildland Urban Interface Fire • Lead coordinating agency in the provincial government for emergency management activities • Provide executive coordination, strategic planning and coordination with emergency management stakeholders • Provide internal and external situational awareness • Activate the PECC or PREOC(s) as required • Assist with the distribution of health related messaging that is developed by the PHO/MoH • Facilitate information sharing between local authorities, First Nations, health authorities and key stakeholders
Public Health Agency of Canada		<ul style="list-style-type: none"> • During large scale emergency events, assist in coordination of federal health portfolio response and can coordinate requests for federal assistance from the various program areas of the health portfolio • Work to ensure an effective and appropriate response capacity, providing support to the provincial response • Mobilize the National Emergency Stockpile System (NESS), , Microbiological Emergency Response Team (MERT), Epidemiological Response Team (Epi ERT), and any Health Portfolio program area assets including air quality monitoring equipment, as well as, services such as those provided by Health Canada’s Chemical Emergency Preparedness Response Unit (CEPRU), Environmental and Radiation Health Sciences Directorate (ERHSD), regional Health Programs, and those provided by Safe Environments Division • Has responsibilities related to the International Health Regulations (IHR) • The regional PHAC EP&R Program (BC/AB) an serve as a link between BC and AB Emergency Management Organizations and provincial units with responsibilities in environmental and population health
Government Communications and Public Engagement		<ul style="list-style-type: none"> • Support communications efforts led by the MoH
Additional Considerations		
Local Authority	<p>Both the Emergency Program Act and the Local Authority Emergency Management Regulation established the responsibility of local authorities to develop emergency plans.</p> <p>The following are considerations for the local authority during a wildfire smoke event:</p>	

Agency	Program Area	Roles/Responsibilities
		<p><i>Activities for the local Emergency Manager/Coordinator:</i></p> <ul style="list-style-type: none"> • Work with the impacted health authority and local MHO when making decisions impacting the health of a community • Connect with Ministry of Environment regional contacts in each community to identify specific landmarks at various distances that can then be used to estimate smoke concentrations and risks using the BlueSky forecasting tool and Estimating the AQHI from Visibility Assessment chart (Table 1.) • Identify sites within the community that can be used as cleaner air shelters in the event of short-term smoke conditions within the community • Develop a list of key contacts and decide who takes charge during an incident • Educate citizens about hazards and provide a plan to follow in case of a wildfire
Health Authority/ Facilities		<p>The Emergency Program Act also requires that health authorities develop emergency plans.</p> <p>The following are considerations for the health authority or and health emergency managers to consider during a wildfire smoke event:</p> <ul style="list-style-type: none"> • Support health facilities preparation and planning • Arrange a planning review with the local authority or community's emergency coordinator or contact person • Collaborate with MHO, other public health staff and local government to ensure the community has a plan to inform its citizens of hazards and procedures to follow in the event of a wildfire • Meet with the local authority officials/emergency coordinator and identify someone to assess smoke conditions and changes in visibility • Collaborate with the local authority to identify and communicate the location of facilities within the community to use as cleaner air shelters when short-term smoke conditions occur and make sure they are available for emergency use. <p>A health facility may consider the following when developing a routine seasonal plan for wildfire smoke events:</p> <ul style="list-style-type: none"> • Reviewing the stock of emergency supplies related to: first aid, oxygen, oxygen delivery systems, emergency kits, and stock of filters Educating facility staff about the wildfire smoke response plan; • Update the list of sensitive and vulnerable patients, including the patient's health information and specific care needs; during smoke threats, a list of priority risk people will be required and this will help-- in larger communities, several care providers may be involved in preparing these lists. <i>[Note: Individual health information records partially filled out in advance can help during a selective priority or full evacuation; a copy should be given to the evacuee and a copy kept at the facility]</i>

Appendix C: Example of a Smoky Skies Advisory



Ministry of
Environment



MEDIA UPDATE

SMOKY SKIES ADVISORY IN EFFECT FOR THE ENTIRE BOUNDARY AND KOOTENAY AREAS

August 24th, 2015 16:00 PDT– Penticton. The Ministry of Environment, in collaboration with the Interior Health Authority, is updating the Smoky Skies Advisory issued on August 20th to include the entire Boundary and Kootenay areas due to forest-fire smoke that is affecting the region.

Southerly winds have continued to spread further north heavy plumes of smoke from the large wildfires burning in Washington State, resulting in high concentrations of fine particulates and poor air quality. While this episode is expected to persist until a major shift in wind patterns and weather conditions, smoke concentrations will vary widely as winds, fire behaviour and temperatures change.

Avoid strenuous outdoor activities. If you are experiencing any of the following symptoms, contact your health care provider: difficulty in breathing, chest pain or discomfort, and sudden onset of cough or irritation of airways. Exposure is particularly a concern for infants, the elderly and those who have underlying medical conditions such as diabetes, and lung or heart disease.

This advisory will remain in effect until further notice.

Tips to reduce your personal health risk:

- People with heart or lung conditions may be more sensitive to the effects of smoke and should watch for any change in symptoms that may be due to smoke exposure. If any symptoms are noted, affected individuals should take steps to reduce their exposure to smoke and if necessary see their physician. People with symptoms should go to their health care provider, walk in clinic or emergency department depending on severity of symptoms.
- Use common sense regarding outdoor physical activity – if your breathing becomes difficult or uncomfortable, stop or reduce the activity.
- Stay cool and drink plenty of fluids.

- Smoke levels may be lower indoors; however, levels of smoke particles will still be increased. If you stay indoors, be aware of your symptoms.
- Consider visiting a location like a shopping mall with cooler filtered air. Keep in mind that staying indoors may help you stay cool and provide some relief from the smoke, however many air conditioning systems do not filter the air or improve indoor air quality.
- Reduce indoor pollution sources such as smoking or burning other materials.
- You may be able to reduce your exposure to smoke by moving to cleaner air. Conditions can vary dramatically by area and elevation.
- Residents with asthma or other chronic illness should activate their asthma or personal care plan.
- Pay attention to local air quality reports, air quality may be poor even though smoke may not be visible.
- Commercially available HEPA (high efficiency particulate air) filters can further reduce poor indoor air quality near the device.
- Maintaining good overall health is a good way to prevent health effects resulting from short-term exposure to air pollution.
- For general information about smoke and your health, contact HealthLink BC available toll free, 24 hours a day, 7 days a week at 8-1-1, or via the web at: <http://www.healthlinkbc.ca/kbairindex.asp>.
- Real-time air quality information in Grand Forks, Castlegar, Creston, Golden and other communities in B.C. is available at <http://www.bcalrquality.ca>.
- Visit <http://www.interiorhealth.ca>, click on the "Your Environment" tab at the top of the page, then Emergency Information → Forest Fire, and under the "During" tab, scroll to Your health and living with smoky skies.

Food safety and water quality tips:

- During a forest fire, it's also important to be aware of health risks associated with food safety in power outages and water quality.
- Interior Health's website contains helpful information and other resources related to forest fire smoke exposure / air quality, as well as food safety when the power is out and ensuring your drinking water is safe. <http://www.interiorhealth.ca>

What is a Smoky Skies Advisory?

- A Smoky Skies Advisory is a new type of public advisory being tested by the Ministry of Environment, in collaboration with the Interior Health Authority, to improve communication on wildfire smoke.
- It will be issued when smoke concentrations in an area have, or may, reach levels that are of concern for human health.
- Such decisions are based on satellite information, smoke transport models, photographs of visual air quality, first-hand observations from the area, in addition to concentrations of fine particulate matter recorded at local air quality stations.
- This differs from the Wildfire Smoke Advisories issued by the Ministry of Environment, which are based primarily on concentrations of fine particulate matter measured over a 24-hour period at fixed monitoring stations in Grand Forks, Castlegar and Creston.

- A Smoky Skies Advisory is a pilot program intended to respond to the rapidly changing nature of wildfire smoke, in which smoke concentrations can vary significantly over short distances and periods of time that may not be well-characterised by the existing air quality monitoring network or responded to in a timely manner by Wildfire Smoke Advisories.
- The key messages of a Smoky Skies Advisory are:
 - a) In most fire seasons, there are occasions when smoke from forest fires is carried into our region.
 - b) Under these conditions, smoke concentrations may vary dramatically over short periods and over small distances.
 - c) Those members of the public who are sensitive to the effects of smoke should monitor their symptoms and, if necessary, take steps to reduce their exposure to smoke.
 - d) During the fire season, a heavy bluish-white haze, possibly accompanied by the smell of smoke, are clear indications that smoke concentrations are higher than usual. The concentrations and air quality health index measured at an air station many kilometres away may not be a good indication of local smoke conditions.

Contacts: For media and public questions regarding air quality and this advisory. Tarek Ayache, Air Quality Meteorologist, Ministry of Environment, 250-488-1631

For media questions regarding health implications of wildfires. Lesley Coates, Public Health Communications Officer, Interior Health Authority, 250-870-4689

