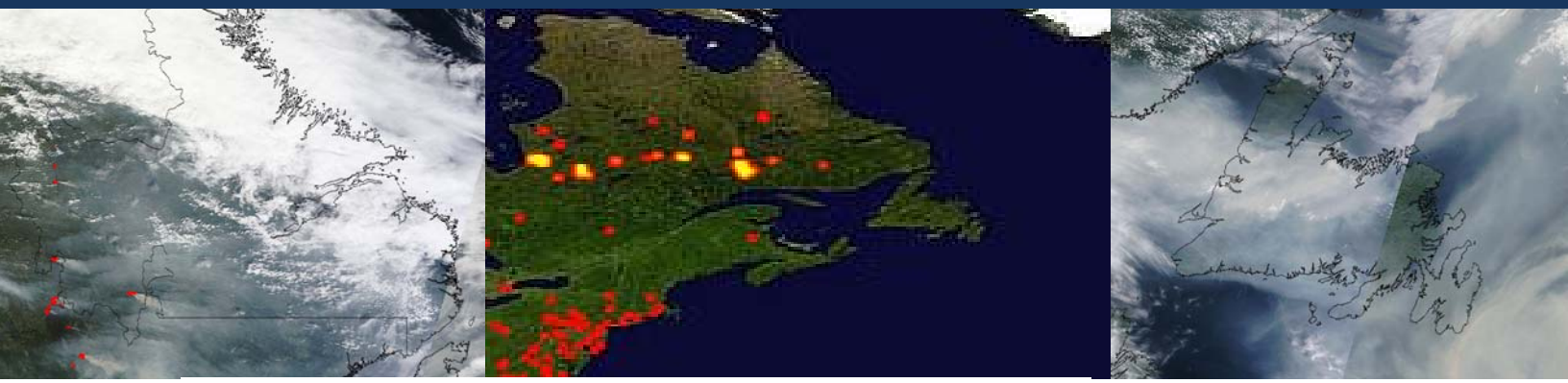
Forest Fire Smoke and Air Quality

Public Health Guidelines



Public Health Division
Department of Health and Community Services

Revised: May 2018
Original Document Date: October 2013

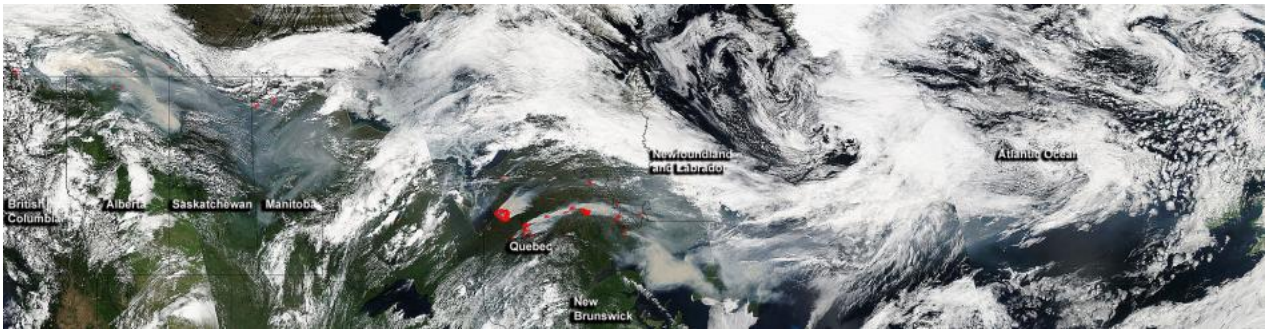
Table of Contents

INTRODUCTION

Forest fires generate smoke that can negatively impact the health and well-being of people who are exposed. Vulnerable people, such as those with existing respiratory illness, are at a particular increased risk to the ill health effects of prolonged exposure to forest fire smoke.

People in the province have the potential to be exposed to forest fire smoke from local fire sources. In addition, given the location of Newfoundland and Labrador on the eastern portion of the North American continent and the prevailing air currents moving air from west to east, both Labrador and the island of Newfoundland are at risk of receiving smoke-filled air from fire sources originating hundreds of kilometres away.

This guidelines document has been prepared to assist public health and other officials during prolonged poor air quality events caused by forest fire smoke. The guidelines are intended to provide officials with information to allow for effective communication of health risks and precautionary measures to the people of the province. The guidelines may also be useful during poor air quality events caused by airborne pollution from other sources.



Smoke from Forest Fires Burning in Eastern Canada in 2013 (Source: NASA)

For photos, we acknowledge the use of Rapid Response imagery from the Land Atmosphere Near-real time Capability for EOS (LANCE) system operated by the NASA/GSFC/Earth Science Data and Information System (ESDIS) with funding provided by NASA/HQ.

FOREST FIRE SMOKE

Smoke from forest fires is a mixture of gases and fine particles from burning trees and other plant materials. Smoke composition depends on multiple factors, including the fuel type and moisture content, the fire temperature, wind conditions and other weather-related influences, whether the smoke is fresh or “aged,” and other variables

Particulate matter is the principal pollutant of concern from forest fire smoke for the relatively short-term exposures (hours to weeks) typically experienced by the public. Particulate matter is a generic term for particles suspended in the air, typically as a mixture of both solid particles and liquid droplets. Particles larger than 10 micrometers do not usually reach the lungs, but can irritate the eyes, nose, and throat. For purposes of comparison, a human hair is about 60 micrometers in diameter. Small particles with diameters less than or equal to 10 micrometers, also known as particle pollution or PM_{10}, can be inhaled deep into the lungs; exposure to the smallest particles can affect the lungs and heart. Particle pollution includes "coarse particles," also known as $PM_{10\text{-}2.5}$, with diameters from 2.5 to 10 micrometers and "fine particles," also known as $PM_{2.5}$, with diameters that are 2.5 micrometers and smaller.

HEALTH EFFECTS OF FOREST FIRE SMOKE

Not everyone who is exposed to smoke from forest fires will have health problems. Factors such as the level of smoke, duration of exposure, age, individual susceptibility, including the presence or absence of pre-existing lung or heart disease, and other factors play a role in determining whether someone will experience forest fire smoke related health problem.

The possible health effects of smoke are either short or long-term. The following symptoms may indicate that you are being affected by forest fire smoke.

- Coughing
- Scratchy throat
- Irritated sinuses
- Chest Pain
- Headaches
- Watery/irritated eyes
- Asthma
- Runny Nose

If you have heart or lung disease, smoke might make the symptoms worse. People who have heart disease might experience:

- Chest pain
- Rapid heartbeat
- Shortness of breath
- Fatigue

Smoke may worsen symptoms for people who have pre-existing respiratory conditions, such as respiratory allergies, asthma, and chronic obstructive pulmonary disease (COPD), in the following ways:

- Inability to breathe normally
- Cough with or without mucus
- Chest discomfort
- Wheezing and shortness of breath

Vulnerable People

Most healthy adults and children will recover quickly from forest fire smoke exposure and will not suffer long-term consequences. However, certain sensitive populations, including people with respiratory and cardiovascular illnesses may experience more severe short-term and long-term symptoms. People with multiple chronic diseases are at a higher risk of complications.

Individuals with Asthma and other Respiratory Diseases

Levels of pollutants that may not affect healthy people may cause breathing difficulties in people with asthma, chronic obstructive pulmonary disease, or other chronic pulmonary disease.

Individuals with Cardiovascular Disease

People with diseases of the circulatory system, including high blood pressure, cardiovascular disease and cerebrovascular conditions, are at a higher risk of complications.

Elderly People

Elderly people may be more affected than younger people because important respiratory defense mechanisms decline with age. Particulate matter in smoke may compromise the functions of cells involved in immune defense in the lungs, potentially increasing susceptibility to bacterial or viral respiratory infections, which may carry a worse prognosis in older adults.

Pregnant Women

Forest fire smoke contains many of the same compounds as cigarette smoke. Therefore, it would be prudent to consider pregnant women as a potentially susceptible population as well.

Children

Several factors lead to increased exposure in children compared with adults: they spend more time outdoors; they inhale more air per kilogram of body weight; they engage in more vigorous activity. As a result, they are more susceptible to the exposure.

Smokers

People who smoke, especially those who have smoked for many years, have compromised lung function, are also in the sensitive groups and may expect negative health consequences due to forest fire smoke exposure.

AIR QUALITY HEALTH ASSESSMENT

Regional and provincial public health officials should assess air quality and health risks during poor air quality events caused by forest fire smoke and other airborne pollutants.

A number of tools are available to public health officials for the assessment of the health effects of forest fire smoke (and airborne pollution from other sources) on people who are being exposed. The tools include:

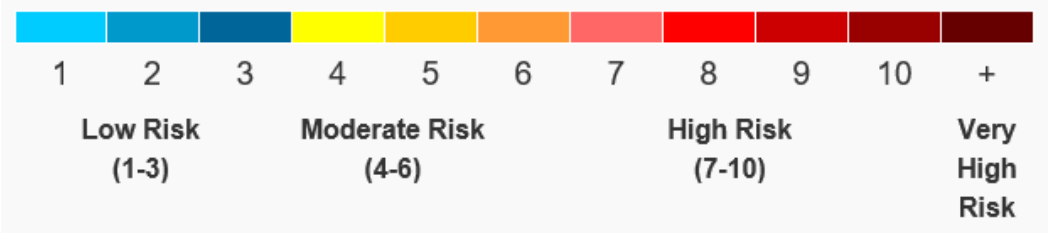
- Air Quality Health Index
- E-Smog Bulletins
- Air Quality Monitoring Station Results
- Particulate Matter Estimation - Visibility Index
- BlueSky Canada's Wildland Smoke Forecasts

The availability of these tools varies from region to region. One or more is available in all regions and will allow public health officials to assess air quality and health risks. Each tool is discussed in more detail below.

1. Air Quality Health Index

The Air Quality Health Index (AQHI) provides an indicator of the level of health risk posed by the air people breathe.

The AQHI is measured on a scale ranging from 1 - 10+. The AQHI index values are also grouped into health risk categories as shown below. These categories help to easily and quickly identify your level of risk.



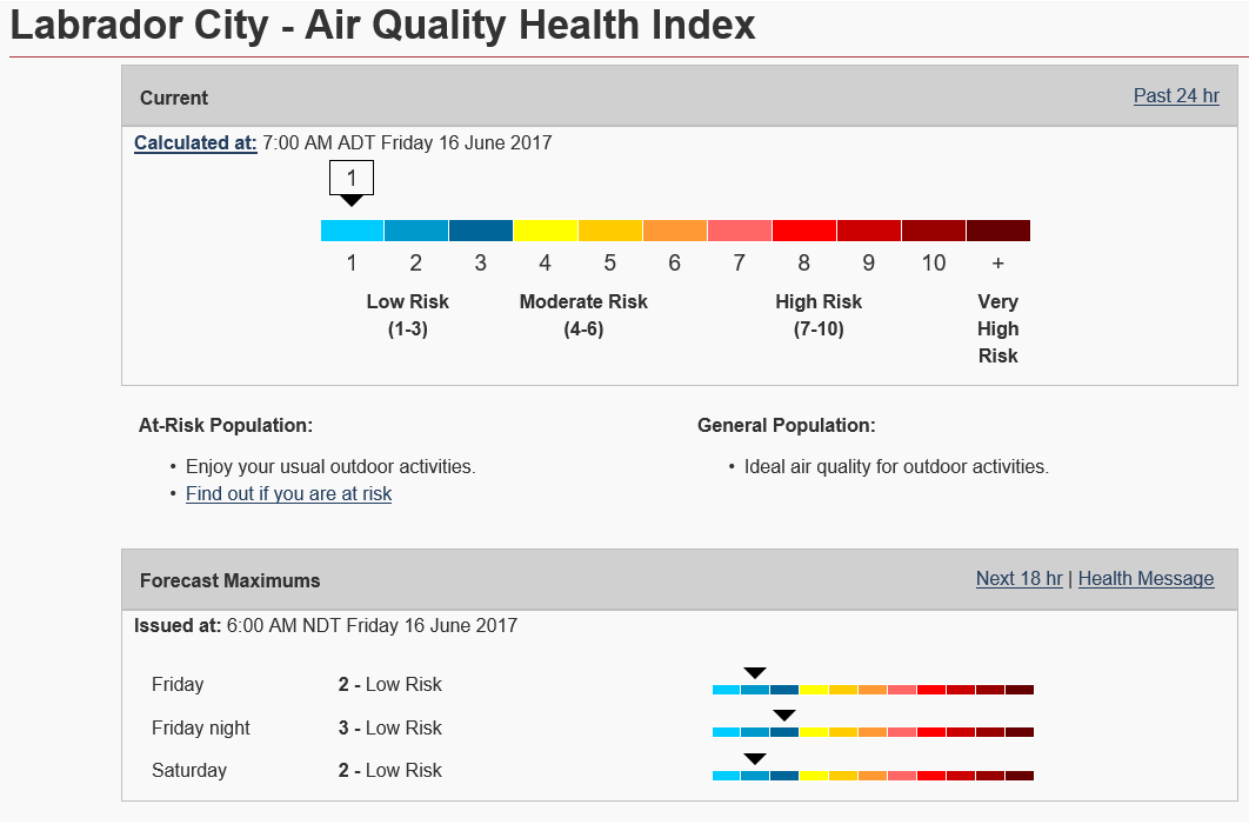
The Air Quality Health Index (AQHI) for the Province can be accessed at Environment Canada's website at http://weather.gc.ca/airquality/pages/provincial_summary/nl_e.html and http://www.ec.gc.ca/cas-aqhi/

The AQHI is currently available for the following locations:

- Corner Brook
- Grand Falls-Windsor
- Burin
- St. John's
- Labrador City

The AQHI is produced from data available at air quality monitoring stations operated by the Department of Municipal Affairs and Environment.

Below is an example of the AQHI for Labrador City, NL.



AQHI and AQHI Forecast

The current and forecasted AQHI are available on the AQHI website for the sites listed above. The AQHI is updated hourly. In addition, forecasted maximum AQHI values for the next 24 hours are available on the site. Forecasts are available twice daily. The first is between 5:00 A.M. and 6:00 A.M. and the second one is issued between 4:00 P.M. and 5:00 P.M. local time.

2. E-Smog Plus – Air Quality Bulletin

In addition to the AQHI, in Atlantic Canada, including Newfoundland and Labrador, Environment Canada also issues special air quality advisories, through their e-Smog Bulletin. The advisories are warnings and/or clarification regarding "extra-ordinary" air quality events (such as smoke from forest fires) in the region. They provide information on the area impacted by forest fire smoke, a forecast related to the smoke event and messages for vulnerable people to protect their health.

E-Smog Bulletins are issued regularly throughout a poor air quality event for all areas of the province impacted. A sample e-smog bulletin is provided below.

Environment Canada e-Smog Bulletin

WOCN21 CYQX 070129
SPECIAL AIR QUALITY STATEMENT FOR NEWFOUNDLAND UPDATED JOINTLY BY ENVIRONMENT CANADA AND THE DEPARTMENT OF ENVIRONMENT AND CONSERVATION OF NEWFOUNDLAND AND LABRADOR AND THE DEPARTMENT OF HEALTH AND COMMUNITY SERVICES OF NEWFOUNDLAND AND LABRADOR AT 10:59 PM NDT SATURDAY 6 JULY 2013.

SPECIAL AIR QUALITY STATEMENT FOR:
NEWFOUNDLAND.

SMOKE FROM FOREST FIRES IN QUEBEC WILL CONTINUE TO AFFECT SOME
OR ALL OF THE ISLAND.

==DISCUSSION==
A GENERAL WESTERLY FLOW IS ALLOWING SMOKE FROM FOREST FIRES IN QUEBEC TO BE TRANSPORTED OVER NEWFOUNDLAND.
WIDESPREAD SMOKE HAS MIXED DOWN TO THE SURFACE REDUCING AIR QUALITY TO POOR AT TIMES.
PLEASE CONSIDER REDUCING OR RESCHEDULING STRENUOUS OUTDOOR ACTIVITIES IF YOU EXPERIENCE SYMPTOMS SUCH AS COUGHING AND THROAT IRRITATION.
PEOPLE AT HIGHER RISK SHOULD AVOID OUTDOOR PHYSICAL EXERTION.

END

Visit http://www.ec.gc.ca/cas-aqhi/default.asp?lang=En&n=B162FCF7-1 to subscribe to the service that will automatically send air quality related bulletins to your e-mail address.

Public weather alerts for Newfoundland and Labrador can also be accessed by visiting http://weather.gc.ca/warnings/index_e.html?prov=nl.

3. Air Quality Monitoring Stations

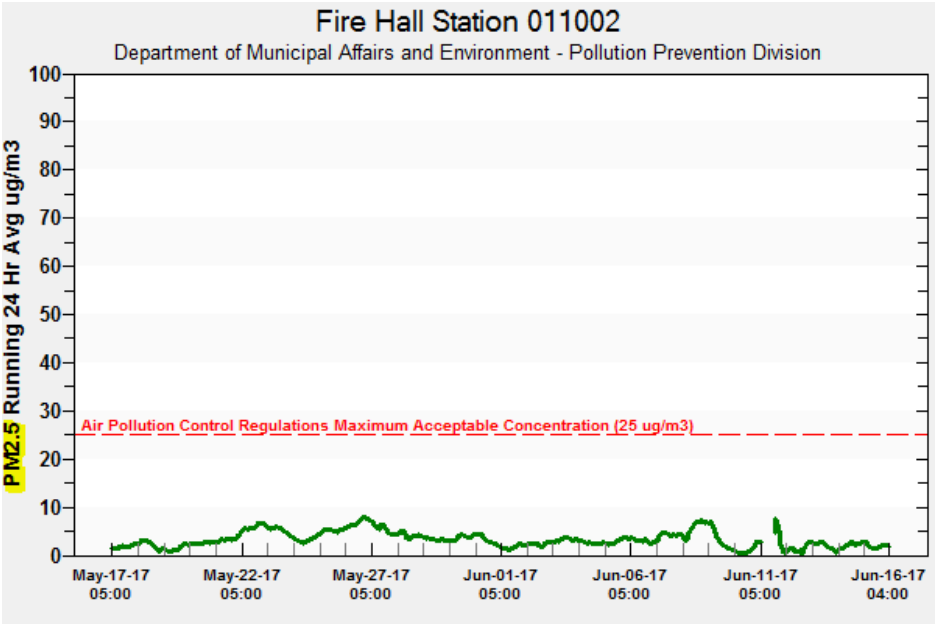
The Department of Municipal Affairs and Environment has air quality monitoring stations located at:

- Port au Choix
- Corner Brook
- Grand Falls-Windsor
- Burin
- Mount Pearl
- St. John's
- Labrador City

These stations are National Air Pollution Surveillance (NAPS) stations. NAPS is a cooperative partnership of federal, provincial, territorial and some regional governments measuring air quality throughout Canada. The NAPS program supports air quality programs across Canada designed to protect human health and the environment. The air monitoring site located in Burin is a temporary mobile station.

Near real-time air quality data is available online from the Department of Municipal Affairs and Environment's website at:
http://www.env.gov.nl.ca/env/env_protection/science/airmon/index.html

An example of the information available from the website is presented below for particulate matter $PM_{2.5}$ for Labrador City. Similar information is available from the other sites and for other air pollutants.



In addition to the NAPS stations, several air quality monitoring stations are located in Labrador West to monitor industrial compliance with air quality emissions standards. Data from these stations are available from Municipal Affairs and Environment, in the form of excel spreadsheets via email, to public health officials during a forest fire air quality event.

4. Visibility Range

In the absence of air quality monitoring equipment to provide the AQHI or specific results for particulate matter, visibility can be used to evaluate air quality and the health risks posed by the air quality event.

Table 1 from the U.S. Environmental Protection Agency document, *Wildfire Smoke: A Guide for Public Health Officials (Revised May 2016)* provides actions to take to reduce smoke exposure after determining visibility. Greater visibility corresponds to better air quality. Low visibility during a forest fire smoke event corresponds to poor and potentially harmful air quality.

Table 1. Visual Range and actions to take to reduce smoke exposure when wildfire smoke is in the air **

Distance You Can See	**You are:**		**OR**	**You have:**
	A Healthy Adult, Teenager, or Older Child	Age 65 and Over, Pregnant, or A Young Child		Asthma, Respiratory Illness, Lung or Heart Disease
> 10 miles	Watch for changing conditions and moderate outdoor activity based on personal sensitivity			
5-10 miles	Moderate outdoor activity	Minimize or avoid outdoor activity		
< 5 miles	Minimize or avoid outdoor activity	Stay inside or in a location with good air quality		

** *Sensitivity to smoke can vary highly from person to person, and individuals can become more sensitive to smoke after extended periods of exposure. Individuals should pay attention to the advice of medical professional or local health officials, and adjust activity accordingly to your particular tolerance or sensitivity.*

[1] *1 mile = 1.6 kilometres*

Limitations of the visual range method can be viewed on page 37 of the Wildfire Smoke: A Guide for Public Health Officials (Revised May 2016). The document is available at: https://www3.epa.gov/airnow/wildfire_may2016.pdf

Visibility

Visibility and weather data from various airports in the province can be obtained from Nav Canada's aviation weather website. The website is www.flightplanning.navcanada.ca.

Once at the site, click the "METAR/TAF button as indicated in the screenshot on the next page.

Then enter the applicable 4 letter airport code in the box shown on the screen shot below and select “plain language” to receive the results in a user-friendly format.

The airport codes for airports in the Province are provided below in table 2.

Table 2: Airport Codes

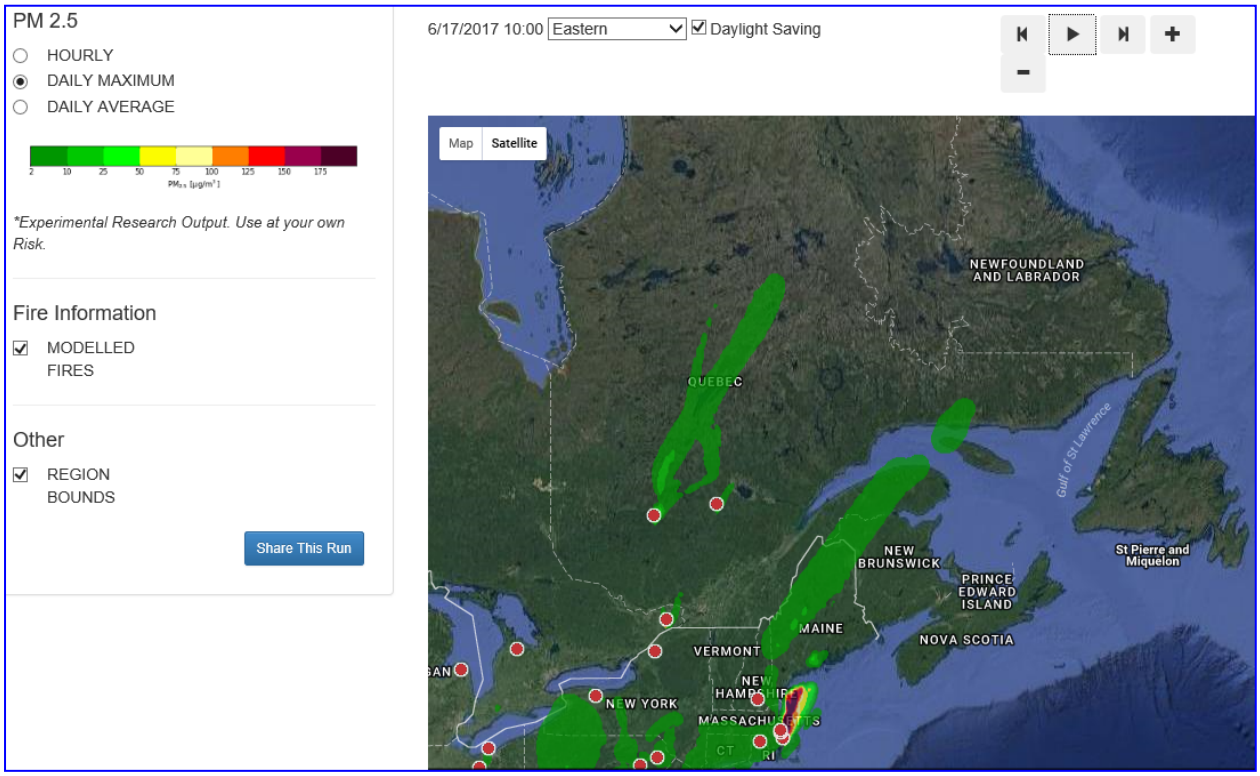
Airport	Airport ID	Airport	Airport ID
Wabush	CYWK	**Marys Harbour**	CYMH
Churchill Falls	CZUM	**St. Anthony**	CYAY
Goose Bay	CYYR	**Deer Lake**	CYDF
Nain	CYDP	**Stephenville**	CYJT
Makkovik	CYFT	**Gander**	CYQX
Cartwright	CYCA	**St. John’s**	CYYT

If airport visibility data is not available, or is not representative of visibility at the site of human exposure to forest fire smoke, following these steps should be give an estimate of visibility.

- When relative humidity levels are less than 65% during daylight hours, facing away from the sun, determine the limit of your visibility range by looking for targets at known distances (miles/kilometres).
- The visible range is the point at which high-contrast objects (e.g., a dark forested mountain viewed against the sky at noon) totally disappear.

5. FireSmoke.ca – Smoke Forecast

Wildfire smoke forecasts for Newfoundland and Labrador and Eastern Canada are available at http://firesmoke.ca/forecasts/viewer/run/ops/BSC-EC-01/current/. The website provides an animated hour-by-hour forecast of smoke (as $PM_{2.5}$) from wildfires in Eastern Canada up to 48 hours in the future. Different exposure levels of smoke are provided in colours that correspond to different concentrations of $PM_{2.5}$ at ground-level. The forecast is updated every morning and afternoon. A screen shot from June 1, 2017, is provided below.



Disclaimer: This BlueSky Canada smoke forecast is considered experimental because it is produced by a system that is an ongoing research project and subject to uncertainties in weather forecasts, smoke dispersion and fire emissions. For example, the system uses satellite detections to locate fires. If there is cloud cover or smoke that obscures the detection of fires from space, the resulting smoke from these fires will not be accounted for in the forecast. This forecast does not include smoke from sources that are outside the boundaries of the forecast domain. The BlueSky Framework currently does not have a mechanism to transport smoke into the model domain from external sources. Please use the Canada-wide forecast to evaluate whether long-range smoke transport may affect your region.)

6. FireWork: National Wildfire Smoke Model

FireWork is Canada's Wildfire Smoke Prediction System, an air quality modeling system that produces $PM_{2.5}$ concentrations from estimates of wildfire emissions from wildfires occurring in North America. The model is available from April to October and can be viewed at http://weather.gc.ca/firework/index_e.html.

A sample is provided below.

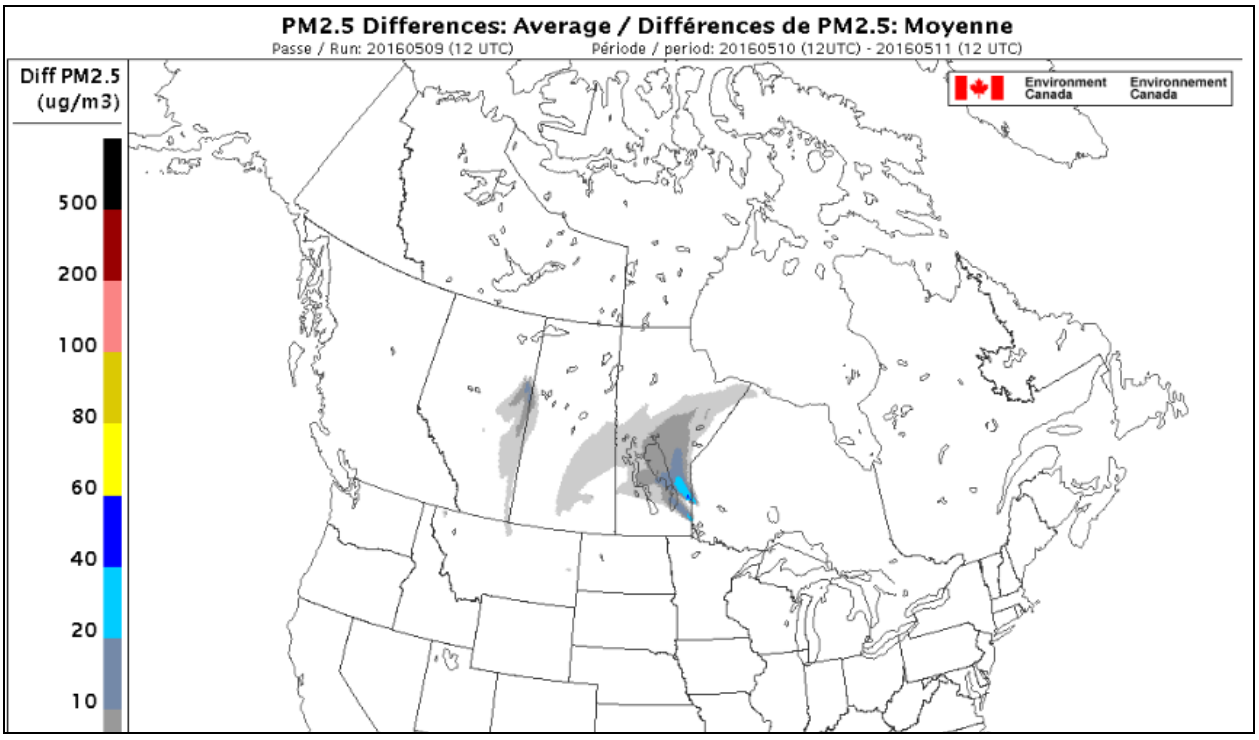


Figure: Sample FireWork $PM_{2.5}$ estimates for North America

PUBLIC HEALTH RECOMMENDATIONS

Health Warning Messages and Precaution Measures

When the air quality health assessment identifies that forest fire smoke will be at levels posing a health risk to people, appropriate health warning messages, along with precautionary measures, should be provided to the public as soon as possible. This is particularly important for vulnerable individuals. Health warning messages and precaution measures are available through e-Smog bulletins, the AQHI and guidelines from other jurisdictions. They are summarized in the sections that follow.

1. E-Smog Bulletin:

Environment Canada's e-smog bulletin will identify the area with poor air quality and provide recommendations such as:

- Please consider reducing or rescheduling strenuous outdoor activities if you experience symptoms such as coughing and throat irritation.
- People at higher risk should avoid outdoor physical exertion.

2. AQHI

For locations where the AQHI is available the following table 3 provides recommendations for public health officials during forest fire smoke events.

Table 3: AQHI Health Messages for Vulnerable People and the General Population

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	> 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.

(Source: Adapted from Environment Canada's Air Quality Health Index Website)

Additional health messages for vulnerable populations is available at http://www.ec.gc.ca/cas-aqhi/default.asp?lang=En&n=8727DF6F-1

3. Air Quality Monitoring Data or Visibility Index

For locations where the AQHI is unavailable and particulate matter levels are determined from air quality monitoring stations, or other sources, table 4 provides recommendations for public health, and other, officials.

Table 4: Recommended Actions for Public Health Officials

Risk Category	$PM_{2.5}$ 24- Hour Average Level in $\mu g/m^3$	Recommendations
Good	0 -12	• If smoke event forecast, implement communication plan
Moderate	12.1– 35.4	• Prepare for full implementation of School Activity Guidelines (SAG) (https://www3.epa.gov/airnow/flag/school-chart-2014.pdf) • Issue public service announcements (PSAs) advising public about health effects, symptoms and ways to reduce exposure • Distribute information about exposure avoidance
Unhealthy for Sensitive Groups	35.5 – 55.4	• Evaluate implementation of School Activity Guidelines • If smoke event projected to be prolonged, evaluate and notify possible sites for cleaner air shelters • If smoke event projected to be prolonged, **prepare evacuation plans**
Unhealthy	55.5 – 150.4	• Full implementation of School Activity Guidelines • Consider canceling outdoor events (e.g., concerts and competitive sports), based on public health and travel considerations
Very Unhealthy	150.5 – 250.4	• Schools move all activities indoors or reschedule them to another day. • Consider closing some or all schools (see SAG at above link). • Cancel outdoor events involving activity (e.g., competitive sports) • Consider cancelling outdoor events that do not involve activity (e.g. concerts)
Hazardous	>250.5 - 500	• Consider closing schools • Cancel outdoor events (e.g., concerts and competitive sports) • Consider closing workplaces not essential to public health • If PM level is projected to remain high for a prolonged time, **consider evacuation of at-risk populations**

(Source: Adapted from the U.S. Environmental Protection Agency document, Wildfire Smoke: A Guide for Public Health Officials (Revised May 2016)

4. Other Messages

Additional recommendations for reducing exposure to forest fire smoke are provided below:

- The most common and effective measure to minimize health impacts during a smoke episode is to stay indoors. Keep your house cool. Move to the coolest room in the house. In the long term, ensure energy-efficient cooling and heating.
- Avoiding outdoor physical activity will lower the dose of inhaled air pollutants and reduce health risks during a forest fire smoke event.
- Keep the body cool and hydrated. Take cool showers or baths. Wear light, loose fitting clothes. If you go outside, wear a wide-brimmed hat or cap and sunglasses. Drink regularly and avoid drinks with sugar or alcohol.
- Keep indoor air clean by closing windows and turning off ventilation systems that bring outside air into the home.

- People who live in areas that are regularly affected by smoke from forest fires would be well advised to create a "clean room" in their homes. A good choice is an interior room, with as few windows and doors as possible, such as a bedroom.
- Facilities in the community could be used as clean air shelters in the event of short-term smoke conditions within the community. Schools, commercial buildings, halls or anyplace with central air conditioning and filtration can be used as clean air shelters.
- While driving, use air conditioning in the recirculation mode and keep windows closed.
- Individuals with asthma, heart and lung conditions are at greatest risk to the effects of forest fire smoke. These individuals should watch for any change in symptoms that may be due to smoke exposure.
- If any unusual symptoms are noted people should contact their physician or the Province's Health Line (811).
- People with severe symptoms from smoke exposure should present themselves to the nearest emergency department.

5. Personal Protective Equipment

The use of personal protective equipment to prevent or reduce exposure to forest fire smoke should be based on the advice of an individual's health care provider. NIOSH-certified disposable respirators (N95) available in hardware or other stores may provide some level of protection from exposure to particles in smoke, if a close-fitting model and size is selected and they are used properly.

One-strap paper masks, surgical masks, or other face coverings (e.g., wet bandanas and cloths) will provide little if any protection from fine particles but may offer some relief if heat stress is also associated with the forest fire smoke air quality event.

Additional Information is provided in appendix 2.

Evacuation Considerations

The decision to evacuate people who have prolonged exposure to poor air quality caused by forest fire smoke should be based on a variety of factors and will typically be made by Municipal officials in consultation with the event emergency management team (i.e., EOC).

The factors that should be considered as part of the decision making process includes the following:

- Air quality monitoring results / estimates
- Air quality and weather forecasts
- Vulnerability of people
- Symptoms being experienced by people
- Duration of exposure to poor air quality, including continuous or intermittent exposure.
- Ability to safely evacuate
- Ability to accommodate evacuees and family members

Public health officials will provide input into the decision making process. Officials will assess air quality throughout a poor air quality event to determine when it might be necessary to consider the evacuation of vulnerable people.

Recommendation Trigger

The trigger for a recommendation from public health officials to the event emergency management team to consider evacuation would be fine particulate matter levels projected to be high (i.e., greater than 250.5 to 500 $\mu g/m^3$) for a prolonged time.

Communications Protocol

Regional Health Authorities

The responsibility for assessing air quality and health impacts in a region is ultimately the responsibility of the Regional Medical Officer of Health. The assessment is done in consultation with regional environmental health officials, meteorologists, emergency management officials, air quality regulators and others, as necessary. Communicating health warning messages and precaution measures to the public normally rests with the Regional Health Authority (RHA) in the area being impacted by forest fire smoke.

The communications are normally in the form of a media release and the posting of information on the RHA website. Other means of communicating messages may be considered in times of power outages when media and websites will not be available.

Event applicable health warning messages and precaution measures should be prepared by the Regional Medical Officer of Health and Regional Environmental Health Manager, in consultation with members of the RHA's Senior Management and Executive teams.

Event Emergency Management Team

Where the forest fire smoke exposure event is part of an ongoing emergency situation (e.g., forest fire event), the method of communicating the health warning messages and precaution measures should be considered in consultation with the municipal council and event emergency management team (i.e., municipal EOC, and Fire and Emergency Services Emergency Operations Centre).

Where evacuation is a potential recommendation, consultation between the impacted municipality, event emergency management team, the Regional Health Authority (Regional Medical Officer of Health) and the Department of Health and Community Services (Chief Medical Officer of Health) should occur.

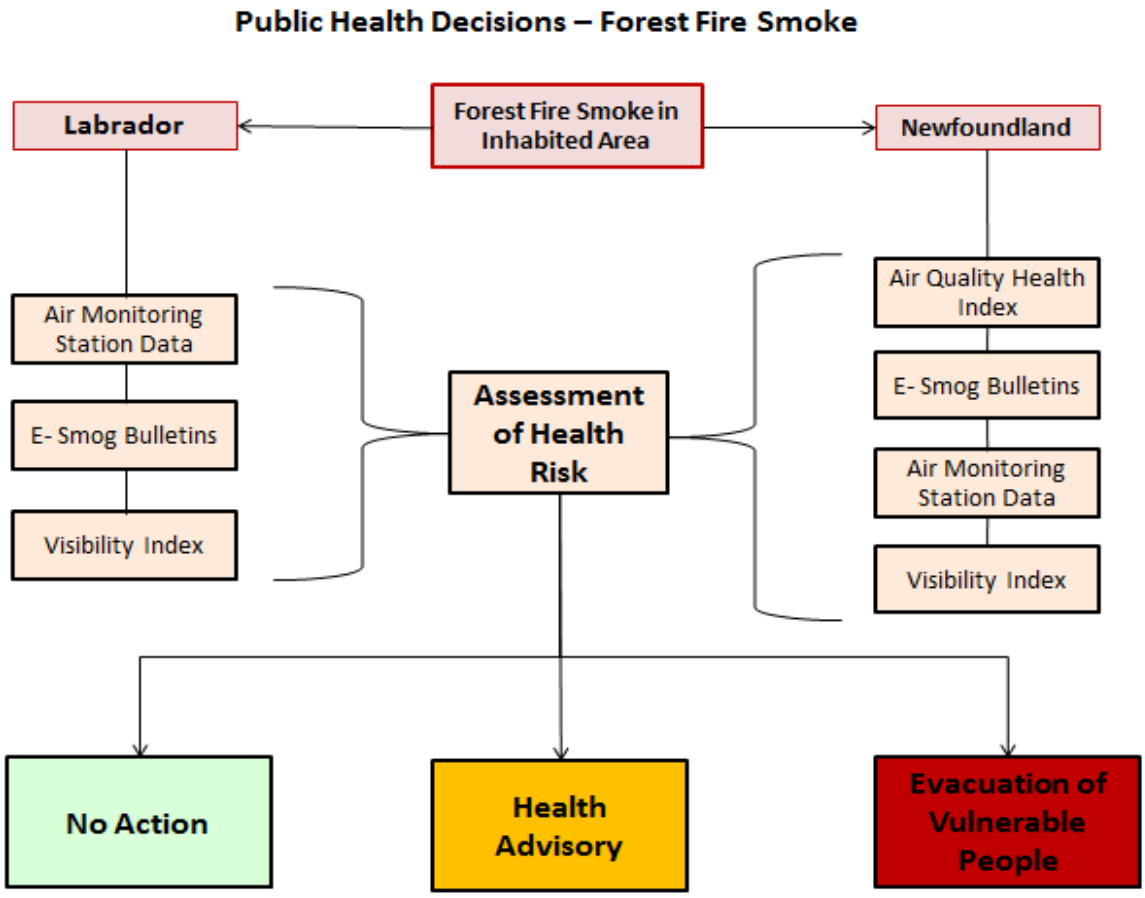
Department of Health and Community Services

Where an air quality event from forest fire smoke encompasses more than one RHA and would be considered high risk (i.e., AQHI at 7 or higher) or very unhealthy, the Department may issue media releases and post event specific health messages and precaution measures on the Department's website.

Event applicable health warning messages and precaution measures should be prepared by the Chief Medical Officer of Health and Provincial Director of Environmental Health, in consultation with the members of the Department's Senior Management and Executive teams, and other Departments/Agencies of Government, as required.

SUMMARY

The figure below provides a summary of the tools available for public health decision making during forest fire smoke, and other poor air quality events in Newfoundland and Labrador.



REFERENCES

California Office of Environmental Health Hazard Assessment, Wildfire Smoke: *A Guide for Public Health Officials* (2012).

Canadian Lung Association, *Forest Fires and Lung Health,* https://sk.lung.ca/protect-your-lungs/air-quality/forest-fires-and-lung-health-fact-sheet

Environment Canada, Air Quality Health Index, http://www.ec.gc.ca/cas-aqhi/.

Newfoundland and Labrador Department of Environment and Conservation, Air Quality Data, http://www.env.gov.nl.ca/env/env_protection/science/airmon/index.html

Northwest Territories Health and Social Services, *Health Effects of Smoke Exposure due to Forest Fires,* http://www.hss.gov.nt.ca/sites/hss/files/health-effects-smoke-exposure-forest-fires.pdf

Manitoba Health, *Smoke Exposure from Wildland Fires: Interim Guidelines for Protecting Community Health and Wellbeing* (2012).

Montana Department of Environmental Quality, *Visibility Ranges*, http://deq.mt.gov/Air/CurrentAQ/visibilityranges

Ontario Ministry of Health and Long-Term Care, Emergency Management, *Forest Fire Smoke and Your Health*, http://www.health.gov.on.ca/en/public/programs/emu/fire_mn.aspx

Oregon Department of Environmental Quality, *Using Visibility to Estimate Health Effects*, http://www.oregon.gov/deq/aq/Pages/Wildfires-Visibility.aspx

Saskatchewan Health, *Guidelines for Health Staff in Northern Saskatchewan Communities Preparation for Forest Fires and the Assessment of Health Effects from Forest Fire Smoke* (2012).

U.S. Environmental Protection Agency document, *Wildfire Smoke: A Guide for Public Health Officials* (Revised May 2016)

Washington State Department of Health, *Wildfire Smoke*, http://www.doh.wa.gov/CommunityandEnvironment/AirQuality/OutdoorAir/SmokeFromFires/WildfireSmoke.aspx

Appendix 1

Forest Fire Smoke Health Advisory

Sample 1

For Immediate Release
Date:

Regional Health Authority Urges Residents to Take Precautions

The Regional Health Authority is advising residents of to take precautions against potential health risks associated with poor air quality due to smoke from forest fires in the region.

Smoke from forest fires is a mixture of gases and fine particles from burning trees and other plant material. Smoke can hurt eyes, irritate the respiratory system and worsen chronic heart and lung diseases.

Residents in the affected areas can reduce their exposure to and the effects from forest fire smoke by doing the following:

- *Stay indoors and keep your house cool. Close windows and move to the coolest room in the house.*
- *Avoid outdoor physical activity and keep the body cool and hydrated. Drink regularly and avoid drinks with sugar or alcohol.*
- *Individuals with asthma, heart and lung conditions are at greatest risk to the effects of forest fire smoke. These individuals should watch for any change in symptoms that may be caused by exposure to smoke. If you experience unusual systems, contact your physician, any Regional Health Authority facility, or the provincial Healthline at 811 or 1-888-709-2929.*
- *Individuals with severe symptoms from smoke exposure should present themselves to the nearest emergency department or health care facility.*

More detailed information about forest fire smoke and your health can be found at www.

The Regional Health Authority will continue to advise residents of information that will help protect themselves against the health risks posed by forest fire smoke.

Forest Fire Smoke Health Advisory

Sample 2

Potential Health Risk Associated with Air Quality in the Region

The Regional Health Authority is advising residents of to take precautions against potential health risks associated with poor air quality due to smoke from forest fires. The risk today for our region is 5 (moderate risk).

Individuals with respiratory concerns, the young and the elderly are at greatest risk from poor air quality. Residents can reduce their exposure to the effects from forest fire smoke by doing the following:

- *Avoid strenuous outdoor physical activity and keep the body cool and hydrated. Drink regularly and avoid drinks with sugar or alcohol.*
- *Individuals with asthma, heart and lung conditions are at greatest risk to the effects of forest fire smoke. These individuals should watch for any change in symptoms that may be caused by exposure to smoke.*
- *If you experience unusual systems, contact your physician, a health care facility, or the provincial Healthline at 811 or 1-888-709-2929.*

Regional Health Authority will continue to advise residents of information that will help protect themselves against the health risks posed by forest fire smoke.

Attach information at http://www.ec.gc.ca/cas-aqhi/default.asp?lang=En&n=8727DF6F-1

Forest Fire Smoke Health Advisory
Sample 3

FOREST FIRE SMOKE WARNING - PUBLIC SERVICE ANNOUNCEMENT

Unhealthy levels of forest fire smoke are expected in the following areas:

Forest fire smoke has harmful chemicals that can affect your health. It can cause eye and throat irritation, coughing, and difficulty breathing.

People who are at greatest risk of experiencing symptoms due to smoke include those with chronic lung disease (such as asthma) and/or heart disease, young children, pregnant women, and older adults. Even healthy adults can be affected by smoke. Seek medical help if you have symptoms that worsen or become severe.

If you smell or see smoke, take these steps to protect your health:

- *Minimize or stop outdoor activities, especially exercise.*
- *Stay indoors with windows and doors closed.*
    - *Do not run any fans or ventilation systems that bring smoky outdoor air inside.*
    - *If you have an air-conditioner run it only if it does not bring in smoke from outdoors. Change the standard air-conditioner filter to a medium or high efficiency filter. If you have a wall-unit or window-unit air conditioner, set it to "re-circulate."*
    - *Do not smoke, fry food, or do other things that will create indoor air pollution.*
- *If you have any chronic lung disease (including asthma) or heart disease, closely monitor your health and contact your doctor immediately if you have symptoms that worsen, including repeated coughing, shortness of breath or difficulty breathing, wheezing, chest tightness or pain, palpitations, nausea, unusual fatigue or lightheadedness.*
- *Consider going to an emergency clean air shelter or leaving the area until smoke conditions improve.*

If you do not have air conditioning, take these additional steps to protect yourself and your family from heat exhaustion, which can be especially dangerous for infants, children, the elderly, and people with chronic disease.

- *Lower body temperature by using cold compresses, misting, and taking cool showers, baths, or sponge baths.*
- *Drink plenty of fluids. Don't wait until you're thirsty to drink. However, if your doctor has told you to limit the amount you drink or you are taking water pills, ask your doctor how much you should drink during the heat.*
- *Avoid drinks with alcohol or large amounts of sugar, as these can promote dehydration.*
- *Consider moving to location (i.e. clean air shelter) that has air conditioning if one is available.*
- *Do not exercise or do physical activity.*
- *Wear light-weight and light-colored clothing.*
- *Watch for signs of heat exhaustion, including fatigue, nausea, headache, and vomiting, and contact your doctor immediately if these occur.*

Contact your doctor to discuss what you should do if smoke becomes worse in your area, especially if you have lung disease (including asthma), heart disease, are elderly, pregnant, or have children in your home.

For updates and additional information please visit the following website:

Appendix B

Personal Protective Equipment

Forest fire smoke can irritate your eyes, nose, throat and lungs. It can make you cough and wheeze, and can make it hard to breathe. If you have asthma or another lung disease, or heart disease, inhaling wildfire smoke can be especially harmful. If you cannot **leave** the smoky area, good ways to protect your lungs from wildfire smoke include staying indoors and reducing physical activity. Wearing a special mask called a "**particulate respirator**" can also help protect your lungs from forest fire smoke.

How to Choose the Correct Mask to Protect Your Lungs

- Choose a mask called a "**particulate respirator**" that has the word "**NIOSH**" and either "**N95**" or "**P100**" printed on it. These are sold at many hardware and home repair stores and pharmacies.
- Choose a mask that has **two straps** that go around your head. **DO NOT** choose a mask with only one strap or with straps that just hook over the ears.
- Choose a size that will fit over your nose and under your chin. It should seal tightly to your face. These masks do not come in sizes that fit young children.
- Do not use bandanas (wet or dry), paper or surgical masks, or tissues held over the mouth and nose. These will not protect your lungs from fine particulate matter found in forest fire smoke.

How to Use a Mask

- Place the mask over your nose and under your chin, with one strap placed below the ears and one strap above.
- Pinch the metal part of the mask tightly over the top of your nose.
- The mask fits best on clean shaven skin.
- Throw out your mask when it gets harder to breathe through, or if the inside gets dirty. Use a new mask each day if you can.
- It is harder to breathe through a mask, so take breaks often if you work outside.
- If you feel dizzy or nauseated, go to a less smoky area, take off your mask and get medical help.
- If you have a heart or lung problem, ask your doctor before using a mask.

For more information about protecting yourself from forest fire smoke please visit the following website:

(Adapted from the United States Environmental Protection Agency document, Wildfire Smoke: A Guide for Public Health Officials)