

# STATE OF THE AIR 2010

british columbia

## The BC Lung Association

Established over a century ago, the BC Lung Association is one of Canada's oldest and most respected health charities. It is the leading organization for science-based research, information, education, support programs and advocacy on lung health issues.

Its mission is to improve lung health in British Columbia, where respiratory disease accounts for one in every seven deaths (respiratory disease is the fourth leading cause of death in Canada). In B.C., breathing problems are the primary reason for emergency room visits and work/school absenteeism as well as the fastest-growing cause of disability.

Through research it has funded and partnerships it has established with universities, the public health sector and the government, the BC Lung Association has recognized the importance of air quality to its mission; in particular, that air pollutants, regardless of source, impact lung health.

Currently, there is no level of air pollution that doesn't have any effects. The BC Lung Association unites the public and environmental health leaders with provincial decision-makers to ensure that today's knowledge of air pollution's health effects will influence tomorrow's public planning and policy.

The BC Lung Association raises awareness of air quality issues through knowledge shared in the Annual Air Quality and Health Workshop, the annual State of the Air Report, and advocacy at all government levels. Only with continuing vigilance and collaboration can it offer improved lung health to all British Columbians.

## FOREWORD

Our sixth annual State of the Air Report in British Columbia is once again packed with valuable information on many issues related to air quality in our province—from pollution levels to air quality management milestones, from the 2010 wildfire season to the launching of a new wildfire smoke forecasting tool. We have updates on clean-air initiatives of agencies at various levels of government and a report on recommendations made at the IUAPPA World Clean Air Congress held in Vancouver last September.

We also profile two individuals who, despite their contrasting backgrounds, have equally inspiring stories to tell. A severe asthmatic, Myrtle O'Connor has struggled with her condition for over three decades. Hers is an inspiring story of perseverance and resilience. Bernadette Wyton's story, on the other hand, is one of courage and commitment. From her early work to protect Port Alberni's airshed, she now helps other communities address air quality issues in their regions, making her a true clean air champion. In this report, we also introduce a new section in which we answer questions dealing with neighbourhood issues.

This document is the fruit of a remarkable partnership between the BC Lung Association and numerous individuals and agencies tirelessly committed to educating the public on air quality concerns in B.C. and what they can do to help ensure our clean-air future. Ultimately, however, we are all responsible for protecting the air we breathe.

If you have comments or ideas for articles you'd like to see in future editions of this report, please send them to us at the address on the back cover.

Meanwhile, a big thank you to everyone who helped make this report possible.



SCOTT MCDONALD  
Executive Director,  
BC Lung Association

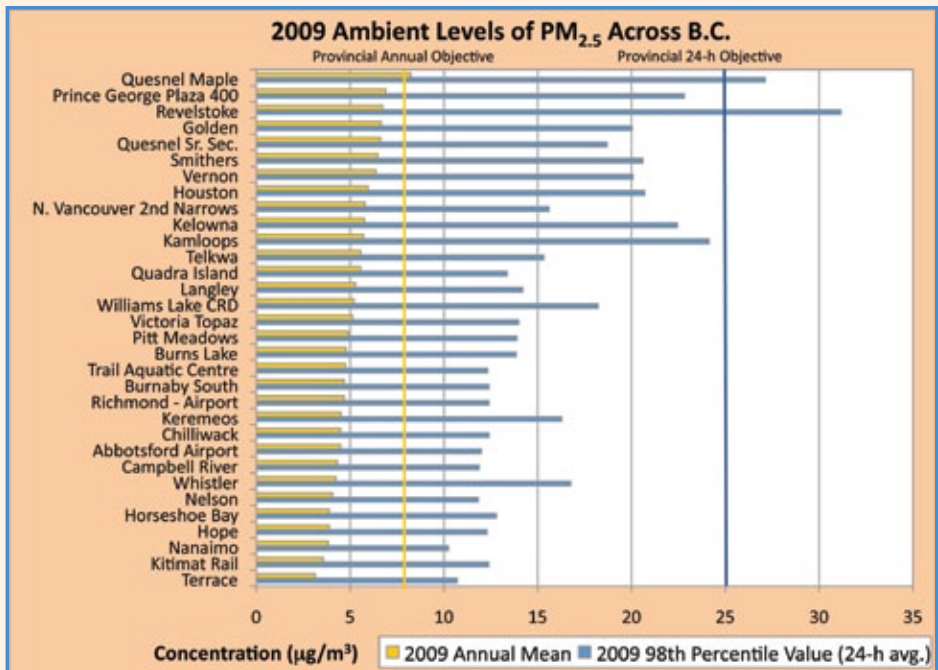


# What's in the air we breathe

Pollutant	Description	Sources	Human Health and Environmental Effects
<b>Particulate Matter (PM<sub>2.5</sub>)</b>	Microscopic solid and liquid particles that are suspended in the atmosphere; PM <sub>10</sub> refers to particles 10 micrometres and smaller and PM <sub>2.5</sub> to particles 2.5 micrometres or smaller.	Fuel combustion (including wood and diesel), industrial processes, agriculture, unpaved roads, and reactions in the atmosphere involving NO <sub>x</sub> , SO <sub>2</sub> and ammonia.	Aggravation of respiratory and cardiovascular disease, reduced lung function, increased respiratory symptoms and premature death. Impairment of visibility, effects on climate, and damage and/or discolouration of structures and property.
<b>Ground-level Ozone</b>	Very reactive oxygen species. In the upper atmosphere, ozone shields the earth from sun's harmful ultraviolet rays.	Formed in the atmosphere from reactions involving NO <sub>x</sub> and hydrocarbons in the presence of sunlight.	Aggravation of respiratory and cardiovascular disease, decreased lung function and increased respiratory symptoms, increased susceptibility to respiratory infection and premature death. Damage to vegetation such as impacts on tree growth and reduced crop yields.
<b>Nitrogen Oxides (NO<sub>x</sub>)</b>	Group of highly reactive gases that include nitric oxide (NO) and nitrogen dioxide (NO <sub>2</sub> ); NO <sub>2</sub> is odorous, brown and highly corrosive.	High-temperature combustion sources, such as transportation and industry.	Aggravation of respiratory disease and increased susceptibility to respiratory infections. Contributes to ozone and PM formation with associated health and environmental effects. Contributes to acidification and nutrient enrichment of soil and surface water.
<b>Sulphur Dioxide (SO<sub>2</sub>)</b>	Colourless gas with pungent odour that smells like a struck match.	Burning of sulphur-containing fossil fuels and processing of sulphur-containing ores.	Aggravation of asthma and increased respiratory symptoms. Contributes to PM formation with associated health and environmental effects. Contributes to acidification of soil and surface water and mercury methylation in wetland areas.

Based on: U.S. Environmental Protection Agency (2008) National Air Quality Status and Trends Through 2007. Report EPA-454/R-08-006, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Assessment Division, Research Triangle Park, North Carolina, November 2008.

## POLLUTION LEVELS: How do B.C. communities measure up?



### Fine Particulate Matter

Levels of fine particulate matter (PM<sub>2.5</sub>) from continuous monitors in B.C. are summarized in Figure 1. Two measurement scales are shown—the highest 2% of daily measurements (or 98th percentile) and the annual average concentrations—because PM<sub>2.5</sub> is linked to both short-term (i.e. hours to days) and long-term (i.e. months to years) exposures.

In 2009, a full year of data was collected at 39 continuous monitoring sites across B.C. Annual average concentrations ranged from 3.1 to 8.2 µg/m<sup>3</sup>. The Quesnel Maple Drive site was the only continuously monitored site to exceed the provincial objective of 8 µg/m<sup>3</sup> (shown by the orange line). Daily values ranged from a low of 9 µg/m<sup>3</sup> in Campbell River to a high of 31 µg/m<sup>3</sup> in Revelstoke (based on the annual 98th percentile concentration). Both the Revelstoke and Quesnel Maple Drive sites exceeded the provincial daily objective of 25 µg/m<sup>3</sup> (shown by the blue line).

Figure 1: Ambient levels of PM<sub>2.5</sub> at select sites across B.C. The 98th percentile is the daily value that is greater than 98% of other values in a year.

Figure 2: Ambient levels of ozone at select sites across B.C. Achievement of the Canada-wide Standard is based on the three-year average of the annual fourth highest daily eight-hour average.

### Ground-level Ozone

Concentrations of ground-level ozone are shown in Figure 2. Both short-term eight-hour measurements (represented by the Canada-wide Standard) and annual average concentrations are presented. For the third straight year, no B.C. site exceeded the Canada-wide Standard of 65 ppb (shown by the blue line). Short-term measurements ranged from 35 to 62 ppb, with the highest concentrations continuing to be observed in the eastern parts of the Lower Fraser Valley, particularly Hope and Chilliwack. Aside from the elevated site at Burnaby Mountain (not shown), the highest average concentrations were found in Kelowna and Kamloops.

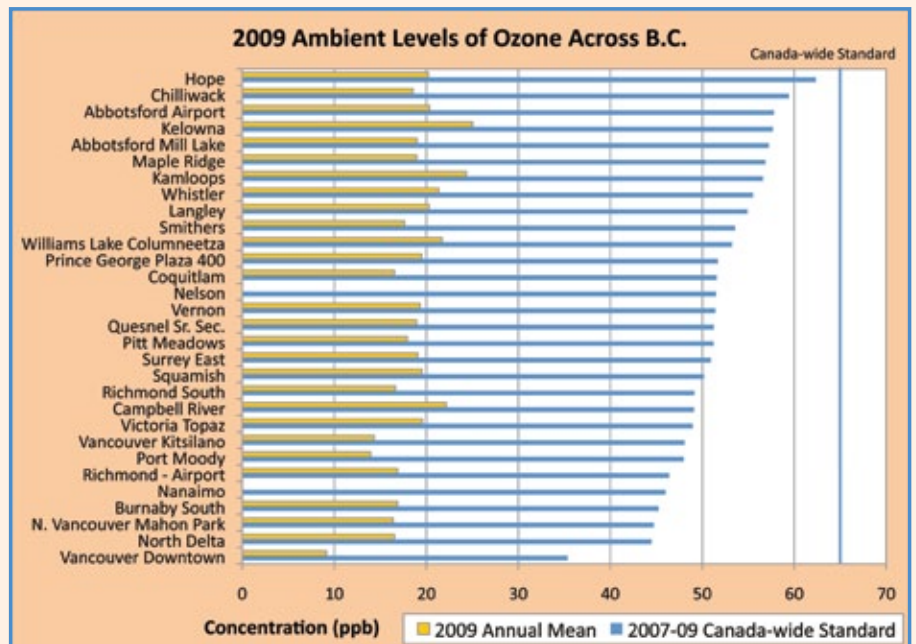


Figure 3: Ambient levels of NO<sub>2</sub> (annual average) across B.C. Metro Vancouver annual objective is denoted by the blue line.

### Nitrogen Dioxide

Annual average NO<sub>2</sub> levels across B.C. are shown in Figure 3. Average concentrations ranged from 3 to 41 µg/m<sup>3</sup>, with the highest concentrations found in urban areas near major transportation routes, specifically downtown Vancouver, Kitsilano and Richmond Airport. All B.C. sites were well below the national objective of 60 µg/m<sup>3</sup>, but the downtown Vancouver site exceeded Metro Vancouver's objective of 40 µg/m<sup>3</sup> (shown by the blue line).

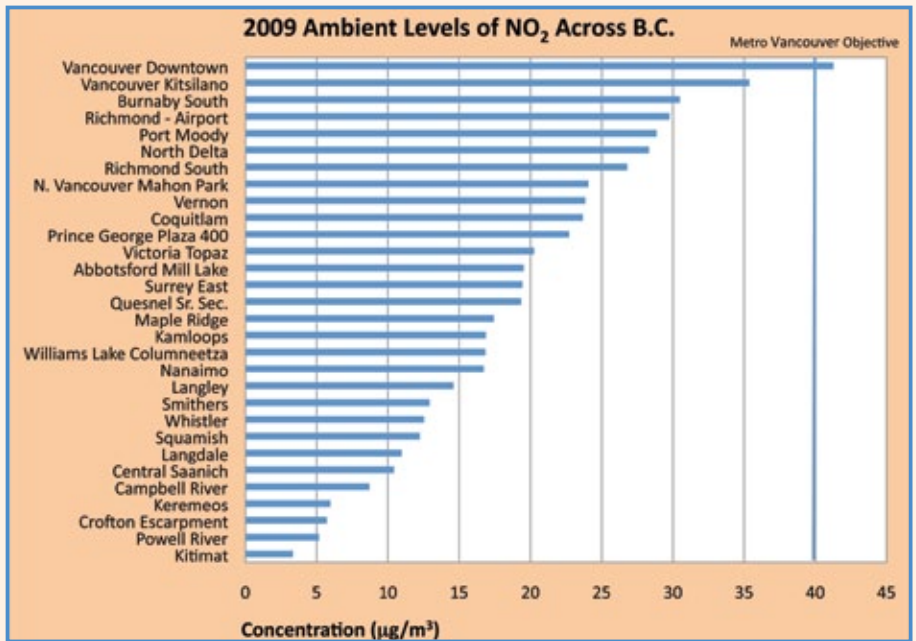
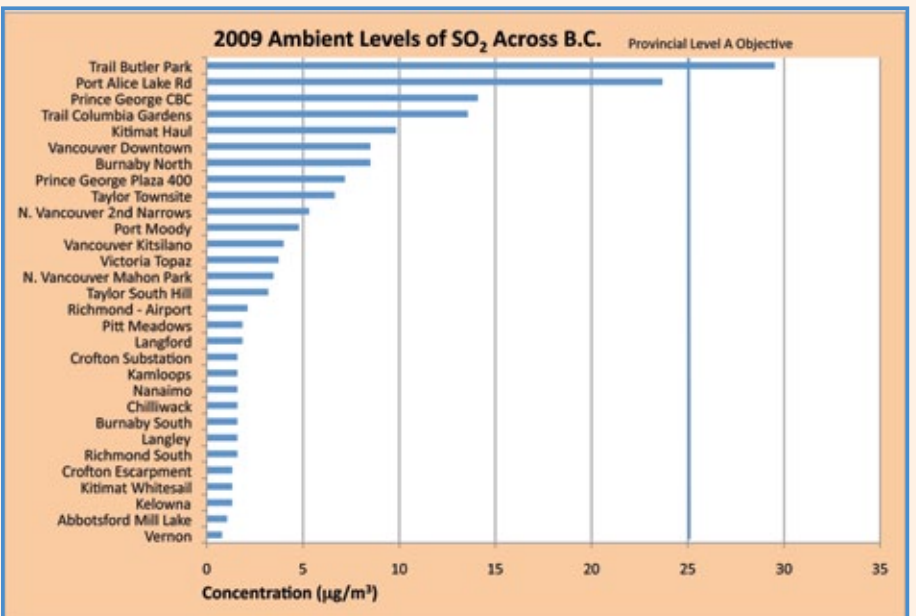


Figure 4: Ambient levels of SO<sub>2</sub> (annual average) across B.C. Provincial Level A objective of 25 µg/m<sup>3</sup> is denoted by the blue line.

### Sulphur Dioxide

Annual average SO<sub>2</sub> concentrations across B.C. are presented in Figure 4. Concentrations were low at most sites, with the exception of those in close proximity to major industrial sources, such as smelters, pulp mills, refineries, gas processing facilities, and marine sources. Annual concentrations ranged from less than 1 µg/m<sup>3</sup> in Vernon to a high of 29 µg/m<sup>3</sup> in Trail. Trail was the only community in the province to exceed the annual provincial objective of 25 µg/m<sup>3</sup> in 2009 (shown by the blue line). The Port Alice Lake Road site was just below the objective at 24 µg/m<sup>3</sup>.





# Air Quality Management Milestones

Despite a population that grew from about 2.7 million in 1981 to over 4.1 million in 2006, British Columbia's air quality has remained relatively good; in some cases, it has even improved. Reductions in industrial, residential and transportation emissions have certainly contributed to these improvements.

Table 1 summarizes the major milestones in the province's emission control programs. These actions initially focused on industrial sources only. With changes to legislation, however, they were expanded to include gasoline vehicles, sources of wood smoke, and now diesel vehicles. This broader view of air management is embodied in airshed plans developed for a number of communities.

Current actions are guided by an improved understanding of the multitude of sources that contribute to local air quality issues and emerging information on the types of emissions of greatest concern to human health. As the population of B.C. continues to grow, ongoing efforts to protect local air quality are crucial and should be coordinated with those designed to reduce greenhouse gases.

For more information on air quality management in B.C., see:

- [www.bcairquality.ca](http://www.bcairquality.ca) (B.C. Ministry of Environment)
- [www.metrovancouver.org/services/permits](http://www.metrovancouver.org/services/permits) and [www.metrovancouver.org/services/air](http://www.metrovancouver.org/services/air) (Air Quality Permits and Regulations & Enforcement and Air Quality Planning in Metro Vancouver)
- [www.fvrd.bc.ca/Services/AirQuality](http://www.fvrd.bc.ca/Services/AirQuality) (Fraser Valley Regional District)
- [www.ec.gc.ca/air/default.asp?lang=En&n=F963E49C](http://www.ec.gc.ca/air/default.asp?lang=En&n=F963E49C) (Environment Canada)

<b>1949</b>	The first air pollution program is launched by the City of Vancouver
<b>1956</b>	Widespread conversion from oil and coal to natural gas heating
<b>1970s</b>	Air emissions are first regulated under the Pollution Control Act (1970) GVRD takes over air management in its region (1972) Pollution control objectives for specific industries are developed Catalytic converters and unleaded gasoline are introduced in Canada (1975)
<b>1980s</b>	SkyTrain begins operating in the Lower Mainland (1986) Limits for sulphur content in heating and industrial fuels (<1.1 wt.%) are adopted
<b>1990s</b>	Tetraethyl lead motor vehicle gasoline is banned in Canada (1990) B.C. holds the first Clean Air Day in Canada, and AirCare is introduced in the Lower Mainland (1992) Vehicle-related regulations are introduced to limit gasoline vapour pressure (1992) and diesel sulphur content in the Lower Fraser Valley (1994), and to ensure gasoline quality (1995) and vehicle emission standards (1995) province-wide Regulations are introduced to address sources of smoke, including open burning (1993), wood stoves (1994) and beehive burners (1995) Old vehicle scrappage program is launched (1996) AirCare On-Road heavy-duty vehicle testing program is formally established (1999) Airshed plans are developed for Smithers/Bulkley Valley, GVRD, FVRD and Prince George
<b>2000s</b>	Canada-wide Standards for PM and Ozone are adopted (2000) New Environmental Management Act provides that only prescribed activities require authorizations to introduce waste to the environment (2004) Tighter Tier 2 vehicle emission standards are introduced in new vehicles (2004) First diesel retrofits are used on B.C. school buses (2004) Federal requirements for low-sulphur diesel (<15 ppm) for on-road vehicles are developed (2006) Provincially funded school bus retrofit program is launched (2008) New policy for determining Best Achievable Control Technology and new standards for Poultry and Slaughter and Agricultural Operations are set (2008) Airshed plans are made for Quesnel, Bulkley Valley-Lakes District, Williams Lake, Whistler, Sea-to-Sky Corridor, Regional Districts of Okanagan-Similkameen, Central Okanagan and North Okanagan, Merritt and Grand Forks Metro Vancouver adopts a new airshed plan Idle-Free BC is launched (2009)
<b>2010s</b>	Mandatory diesel retrofits for heavy-duty diesel vehicles are introduced Low-sulphur (<15 ppm) diesel requirements are set for marine vessels and railway locomotive engines (after May 31, 2012) New Best Achievable Technology (BAT) requirements are set for Biomass Electricity Generation (2009) and Wood Pellet Manufacturing (2010)

Table 1: A summary of British Columbia's emission control programs through the years.

# SMOKY SKIES: The 2010 Wildfire Season

The summer of 2010 was a particularly bad year for wildfires when over 1,600 fires covered more than 330,000 hectares of land (see Fig. 5). This compares with the 30-year average of 2,300 wildfires per year covering 75,000 hectares. Hardest hit were those areas in the central interior closest to the fires, such as Prince George, Quesnel and especially Williams Lake, which measured record-high levels of fine particulate matter (PM<sub>2.5</sub>) that

reached an hourly maximum of 421  $\mu\text{g}/\text{m}^3$  and a 24-hour maximum of 267  $\mu\text{g}/\text{m}^3$  (rolling average). Even areas hundreds of kilometres downwind of the fires, including Vancouver Island, the Lower Mainland and places in Alberta, experienced periods of poor air quality due to transported smoke from British Columbia.

Wildfire smoke is a mixture of gases, liquid and solid constituents, including PM<sub>2.5</sub>, carbon monoxide, nitrogen dioxide and hundreds of hydrocarbons and oxygenated organics. Some of these chemicals, such as formaldehyde and benzo[a]pyrene, have been classified as human carcinogens. Of the contaminants measured routinely, PM<sub>2.5</sub> is the most highly elevated during wildfire events. This is a health and safety concern since particles produced during wildfires are very small, allowing them to pen-



Fig. 5: MODIS Satellite image from August 26, 2010 showing wildfire smoke in B.C. The red squares are thermal anomalies (i.e. wildfires) detected by the satellite. Retrieved from: [http://modis.gsfc.nasa.gov/gallery/images/image08262010\\_500m.jpg](http://modis.gsfc.nasa.gov/gallery/images/image08262010_500m.jpg)

etrate deeply into the lungs, to scatter light and degrade visibility, and to travel long distances before being removed.

Studies have linked wood smoke exposure to various health issues, including eye and respiratory tract irritation, increased respiratory symptoms and risk of respiratory illness, and decreased lung function. Asthmatics are particularly susceptible to the effects of woodsmoke. What's more, smoke from wildfires reduces visibility and limits people's ability to carry out their normal daily activities.



## NEW TOOL: The Western Canada BlueSky Smoke Forecasting System

The Western Canada BlueSky Smoke Forecasting System was launched in August 2010 as a tool to provide up-to-date wildfire smoke forecasts. It is the product of a multi-agency collaboration, which includes the Province of B.C. (Ministries of Environment, Forests and Range as well as the former Healthy Living and Sport), federal agencies (Environment Canada, National Resources Canada), the Province of Alberta (Alberta Environment and Alberta Sustainable Resource Development), the University of British Columbia and the United States Forest Service.

Using satellite technology, forest inventory data and weather forecasts, this innovative system provides an hour-by-hour prediction of PM<sub>2.5</sub> smoke concentrations up to 48 hours into the future for any B.C. or Alberta location. A wide variety of groups with an interest in smoke forecasts will benefit from these predictions, among which are the health community, transportation sector, emergency measures organizations, air quality management agencies, wildfire management agencies, weather forecasters and the general public.

Figure 6 shows a typical screen shot in Google Earth format. The various colours (refer to the legend for a defi-



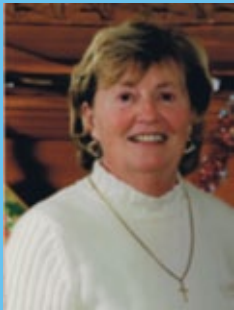
Figure 6: BlueSky Smoke Forecast Screen Shot: Colours indicate hourly concentration of PM<sub>2.5</sub> at ground level at 8:00 pm for Aug. 5.

inition) indicate PM<sub>2.5</sub> hourly concentration forecast at ground level. The complete forecast in animation is also available for every hour, allowing users to see the progression of the smoke plume throughout the forecast period.

The system is a pilot project and the output should be considered experimental. During the fire season, forecasts are updated each day and can be viewed online at: [www.bcairquality.ca/bluesky/](http://www.bcairquality.ca/bluesky/).



## MYRTLE O'CONNOR: Inspiring Resilience



Myrtle O' Connor has lived with asthma for at least 35 years. "I am classified as a severe asthmatic," says the Kelowna resident, whose asthma is exacerbated by stress, exercise, and cold weather. Certain fragrances, aerosols, solvents and fumes also trigger her asthma attacks.

Myrtle takes controller medication (inhaled glucocorticosteroid) daily and rescue medication (Ventolin) as needed for quick relief of her symptoms. She wasn't always very diligent however. "My medication makes my hands shake for about an hour after I take it and increases my heart rate," she explains. "But, if I don't take it, I'd have bad breathing days." She learned the hard way that "taking medication regularly, even if one has no symptoms, will help one lead a normal life."

Myrtle also monitors her peak flow. She blows into a device that measures the amount of air she can exhale. The higher the reading, the better her airflow is. With good asthma control, Myrtle's peak flow is around 300. Still, it can change dramatically when air quality is poor, like this past summer when there were many forest fires and waves of extremely hot, dry weather.

"In August, when we went to Abbotsford," Myrtle narrates, "the heat and air pollution were really bad. I was visiting my sister for lunch when I started to feel like I was smothering. So I told my husband we should go. The moment we got in the car, he turned on the air conditioner, but by then I could already feel tightness in my chest. I couldn't breathe or get my inhaler to work. I ended up in a hospital in Abbotsford with a very bad asthma attack."

Myrtle says that even the slightest amount of smoke in the air, something even she may not immediately notice, can make her chest and back tighten—early signs of an impending asthma attack. When this happens, she stays indoors and uses Ventolin, until she can breathe normally again. "I just stay in, put the air conditioning on, and close the windows," she offers. "If I have to go out, I'll cover my mouth with my hand until I get into the car. Poor air quality definitely limits my ability to do things." But, when summer and forest fire season starts to wind down, she notices an improvement in her breathing.

Myrtle keeps an eye to the sky and an ear to the daily news. "Before going on my merry way, I look out to see if the sky is OK, and listen to the news for any air quality warnings." In addition, she has her loved ones looking out for her. "My granddaughters or my daughter-in-law will tell me not to come into town if the pollution there is bad." But pollution isn't the only challenge for asthmatics. As Myrtle notes, "People who go out with colds or flus are a risk to us. We are more susceptible to infections, so if we catch germs from them, we'll be worse off than they are."

Because asthma affects people in various ways, Myrtle feels that it may be difficult for others to learn from her experience. "It's hard to advise other asthmatics because the condition is so individual," she volunteers. "Some people can be on their way after taking just a couple of puffs. That's not the case with me, especially if pollution is really bad or if there's a virus in the air. So, if anything, I'd tell people to keep taking their prescribed medications even when they feel they have no symptoms."

Despite her challenges, Myrtle remains positive, determined and unrelenting: "Sure, asthma limits me, but I don't dwell on it. I take all the precautions that I can, knowing there are triggers out there. But I can't live in a cocoon. I try to live a normal life."



## TIPS: What Myrtle and other asthmatics can do

Asthma is a chronic lung condition in which the airways become swollen, narrow and extremely sensitive. It affects an estimated 300,000 British Columbians.

Different factors known as triggers can set off an asthma attack. An individual may have several different triggers and react differently to each one. Asthma attacks can be mild, moderate or severe. Recognizing and avoiding one's triggers is just as important to asthma management as taking one's medications regularly.

Myrtle is very knowledgeable of her condition, allowing her to manage it very well. She recognizes the importance of taking her medications properly, besides being aware of her triggers and what they do to her asthma.

Poor air quality due to forest fires and several days of hot, dry summer weather is one of Myrtle's triggers. While there isn't much she can do to control air pollution, she can reduce her exposure to it.

Like Myrtle, people with lung or heart diseases as well as the young and the elderly are very susceptible to poor air quality. The following are some of the ways they can reduce or limit the effects when air quality is poor:

1. Stay indoors with the air conditioner on or look for "clean air shelter" in places like shopping malls.
2. Limit outdoor activities such as exercise as both rate and depth of breathing increase when one is active. Alternately, exercise as far away as possible from busy roads, factories or smoke, and, during summer, exercise earlier during the day when ozone concentrations tend to be lower.



3. On hot days, stay cool by drinking plenty of fluids. During heat waves, avoid strenuous activities, cool off and hydrate if you feel "off."



4. Those with asthma or heart disease should take their medications and see their doctors if their symptoms worsen. Symptoms must be kept under control. If one has an action plan, he/she must follow it.

5. Reduce indoor levels of pollutants at home or in the office. See "Air Pollution Sources at Home" on page 9 for more information.



6. Check the Air Quality Health Index (AQHI) at [www.bcairquality.ca](http://www.bcairquality.ca), which provides recommendations on activity levels based on local air quality.



## BERNADETTE WYTON: Clean Air Champion



Port Alberni has long suffered from temperature inversions, which keep air pollution trapped in the valley, particularly in the winter. It already had a history of industrial pollution from the local paper mill when, in 2001, it was selected to be the site for a gas-fuelled generation plant.

Concerned about the plant's future ill effects, Port Alberni citizens rallied against what they believed was a threat to their environment. Among them was Bernadette Wyton, who sought the help of experts in order to gather and organize information on air quality for use in the Environmental Review of the Proposed Port Alberni Generation Project.

The Citizens' Stewardship Coalition was formed in 2001 to respond to the controversial project. The Coalition drew on knowledge gained from the input of scientists and health experts. It organized community meetings, collected thousands of names in a signature campaign, urged the citizenry to write to various editors, and demonstrated at a city council meeting. Ultimately, the gas generation project was defeated and the Coalition was awarded a Canadian Environmental Award in 2002.

"When it was all over, it became apparent that very little was known about Port Alberni's airshed and very little protection was in place," remarks Bernadette. "So, we were inspired to continue working on these issues."

In 2003, the Air Quality Council was established, and it set about understanding Port Alberni's airshed and creating some level of airshed management. It developed a mission statement and goals. It also invited people from a broad cross section of the community to become members. "We were able to bring in health people because that connection is so important," Bernadette recalls. "We got a few nurses and our chief of staff to come and sit with us. Within a year, there was representation from the city, the regional district, First Nations and industry."

---

**"Air as our unseen life support system is something we can't ignore or simply use as a dump. Caring for it requires diligence and vigilance over time."**

---

Taking on the challenge of improving local air quality can be daunting. It's hard to know where to start. For this reason, Bernadette advises to "select projects that will give the greatest benefit, that are easiest to address in a public way, and have the best potential for success." She continues: "But as you pick a project, you'll discover it has a larger impact and social profile, which creates sort of a bank account for further work."

As well, Bernadette cites the importance of creating projects that are close to the heart and capture the mind of the community while engaging the media. Thus, the Air Quality Council's initial work was in air quality education.

"We spent a few months talking to grade five students in a public school, and running through the papers and community TV everything we did in the school," Bernadette shares about

the air quality literacy program they conducted among young, receptive minds and future adult citizens. "Since every student is connected to a family—and families value children and their education so much—it had a huge impact on everyone. We learned that if educating a community around something it can't see is the goal, starting with young people is an excellent strategy."

Before air quality is understood, improved and protected, it should be possible to measure it. In Port Alberni, the Ministry of Environment

designed a fine particulate sampling project, which was carried out by Air Quality Council members.

The project proved pivotal for much of the work that followed. As Bernadette notes: "It inspired Council members, and created a great deal of interest in the community. It was embedded in a scientific paper co-authored by both parties, becoming a strong lever to get better equipment for the community to monitor our air and to create baseline data."

The project, Bernadette adds, "formed a scientific basis to appeal to the public and policy makers for change. It went a long way toward creating credibility for the Council's work. When people saw that the Council was engaged in that level of work, they respected what was coming out of it. It took us out of just being an interest or lobby group."



The woodstove exchange was another of the Council's projects that engaged and educated the public. The program, which ran from Fall 2009 to Spring 2010, received a lot of local media coverage. Residents changed out almost 100 stoves, which will no doubt help significantly reduce particulates being released into the air.

For communities looking to address air quality issues in their region, Bernadette suggests forming a working group to identify local issues and needs around air quality and airshed management. It's also essential, she notes, to partner with the Ministry of Environment and to have the participation of experts from the medical field and members of the political community.

"We set goals fairly early in the process with the working group," Bernadette offers. "To maintain a certain level of education and stay up to date with concerns on a broader level, we do networking through the work of the BC Lung Association and the Fraser Basin Council, which we've found to be very helpful."

Reflecting on her commitment to air quality, Bernadette ultimately has this to say: "I stepped up to the plate because of the threat posed by the gas generation project. I saw a huge gap in information, and a lack of protection for Port Alberni. After that threat was removed, I had a much better understanding of air as a life support system. So the task turned to urging people to pay more attention to air as our unseen life support system that we can't ignore or simply use as a dump. The bottom line is, caring for the air requires diligence and vigilance over time."

## Air Pollution Sources at Home: An In-Depth Look



Air quality at home is important. Pollution sources, both indoor and outdoor, affect indoor air quality. A better understanding of these sources can help residents find ways to improve the quality of the air they breathe.

Pollutants such as particulate matter (PM), ozone, nitrogen dioxide and volatile organic compounds have been found in Canadian homes. The actual levels of these pollutants, which determine their health effects, vary according to the presence of pollution sources as well as the conditions at home that may promote or hinder pollutant build-up.

Indoors, among the most common sources of pollution are tobacco smoke, wood stoves, fireplaces, cleaning products, personal care products, new furniture and carpets that may emit chemicals.

Outdoors, some of the most common sources are traffic and off-road machines (rail, marine, construction), home heating devices, and outdoor burning appliances. Pollutants can easily move from outdoors to indoors.

Three ways to reduce or get rid of indoor air pollution at home are:

1. By removing the source
2. By increasing air exchange
3. By filtering indoor air

Getting rid of the source of pollution is the best way to improve indoor air quality. But while some sources can be removed completely, others could only be limited. For example, pollution from tobacco smoke can be eliminated by prohibiting smoking at home. On the other hand, pollution caused by cleaning products can be reduced by limiting their use and having proper ventilation during cleaning.

Increasing air exchange by flushing out indoor air and replacing it with fresh outdoor air can also help improve indoor air quality. Bear in mind, however, that outdoor air may also carry pollutants.

"Infiltration" is the term researchers use to describe the amount of a particular pollutant that moves from outdoors to indoors. Infiltration may cause levels of PM from wood stoves, forest fires and heavy vehicle traffic to rise in homes.

Pollutants can move indoors not just through open windows and doors. They can also go through various cracks and openings in the home, such as those around windows and doors.

Studies show that 30-80% of outdoor PM can make its way indoors. Some factors that can affect infiltration of PM into homes are:

- **The age of the home.** The tendency of older homes to be "leaky" allow more of what's outside to get inside.
- **Window usage.** Open windows let more of the outdoor air in.
- **Season.** More outdoor air comes in during summer than winter as more windows and doors are kept open.
- **Air cleaner use.** Air cleaners, such as HEPA filter units, can remove particles in the air so they cannot be inhaled.

Studies have found that ozone and nitrogen dioxide, gases both, move indoors mainly through open windows. Ozone is usually a concern only in the summer, when sunlight and other pollutants mix to create this secondary pollutant.

Indoor and outdoor sources of pollution influence air quality at home. Indoor air quality can be improved both by managing indoor pollution sources and by controlling the amount of outdoor air moving in when air quality outdoors is poor.

# Neighbourhood Air Quality Issues

The BC Lung Association periodically receives questions from the public on neighbourhood air quality issues. Here are two such questions and the answers to them.

**Q: The farm next door to my property has changed its practices, such that now it periodically produces strong, offensive odours. At times, it's so bad that it makes me feel both dizzy and nauseated. Who can I contact to do something about these smells?**

A: If you feel ill after being exposed to farm odours, you should consult a physician.

The first action you can take to reduce the problem is to speak with your farmer neighbour. The practice causing the odours may be due to a temporary situation, and may change in a day or two. There may be something simple that your neighbour could do to help resolve the situation. If that doesn't work, there are informal and formal processes to address your concerns.



## Informal Process

Farm practices fall under the Ministry of Agriculture. Regional offices are knowledgeable of farm practices and are available to help resolve farm-related problems. For their contact information, visit: [www.agf.gov.bc.ca/ministry/who.htm](http://www.agf.gov.bc.ca/ministry/who.htm).

The public often turns to municipal and regional governments for advice and action. In some cases, there may be applicable nuisance or other bylaws that could be enforced. For example, in extreme cases where air pollution may be occurring within Metro Vancouver, regulatory actions can be initiated under local air quality bylaws. This process is usually carried out in consultation with the Ministry of Agriculture and/or the nearest Health Authority based on an assessment of emissions. Complaints within Metro Vancouver can be addressed to: [www.metrovancouver.org](http://www.metrovancouver.org) (search "air quality complaints").

In some areas of the province, peer advisors are available to investigate nuisance concerns when requested. Peer advisors are drawn from the farm sector. For example, the Grower Liaison Office of the BC Blueberry Council deals with noise complaints related to audible bird scare devices in the Lower Mainland.

## Formal Process

Under the BC Farm Practices Protection (Right to Farm) Act, there is protection for farmers who use normal farm practices (see: [www.al.gov.bc.ca/resmgmt/sf/farmpp/resolve.htm](http://www.al.gov.bc.ca/resmgmt/sf/farmpp/resolve.htm)). However, the Act also provides a process to resolve complaints about farm practices through the Farm Practices Board. This is a formal process that may have a fee associated with it. Therefore, it is important to follow the steps above before lodging a formal complaint with the Board.

**Q: In winter, smoke from my neighbour's wood stove seeps into our house. I've asked him to limit the amount of wood he burns, but he is not very cooperative. What can I do short of moving?**

A: Infiltration of your neighbour's wood smoke into your own home is a serious nuisance issue that can affect both your health and home comfort. A tip sheet developed by the Bulkley Valley - Lakes District (BVLD) Airshed Management Society provides a number of steps ([www.cleanairplan.ca/documents/SmokeyNeighbours\\_tipsheetmar4-09pdf](http://www.cleanairplan.ca/documents/SmokeyNeighbours_tipsheetmar4-09pdf)) that you can take to address the problem:



- Talk to your neighbour, focusing on the issue rather than the person.
- Help your neighbour resolve the issue. Share Information on how to reduce wood stove emissions. For examples, see:
  - [www.bcairquality.ca/topics/wood-appliances-types.html](http://www.bcairquality.ca/topics/wood-appliances-types.html)
  - [www.bc.lung.ca](http://www.bc.lung.ca)
  - [www.ec.gc.ca](http://www.ec.gc.ca) (search "residential wood heating pollutants")
  - [www.cmhc-schl.gc.ca/odpub/pdf66067.pdf](http://www.cmhc-schl.gc.ca/odpub/pdf66067.pdf).
  - [www.metrovancouver.org](http://www.metrovancouver.org) (search "wood smoke health")
- Occasionally, both parties may choose to seek assistance through mediation. In the Skeena region, the Ministry of Environment or the BVLD Airshed Management Society may be able to help or can refer you to a professional mediator.
- If the issue cannot be resolved informally through negotiation or mediation, you may take civil action by reporting the smoky wood stove to your local municipal or regional office. Municipalities in B.C. can enact bylaws controlling some aspects of wood burning, such as nuisance and opacity rules and curtailment provisions that restrict the use of wood-heating appliances during air quality advisories, and several municipalities have already done so. In Metro Vancouver, air quality enforcement officers can investigate and suggest methods for improvement, although their ability to control residential wood burning is currently limited. Complaints can be directed to: [www.metrovancouver.org/services/air/Pages/AirQualityComplaints.aspx](http://www.metrovancouver.org/services/air/Pages/AirQualityComplaints.aspx).
- The B.C. government sets emission standards for new wood-burning appliances, and is working to improve those standards as well as to establish standards for appliances currently not covered by regulation (e.g. wood-fired outdoor boilers). However, the legislation does not allow for the regulation of existing appliances, so enforcement capabilities are very limited for smoky appliances.



# TRENDS: Air Pollution in B.C. through the Years

Trends in annual PM<sub>2.5</sub> are shown in Figure 7. Large year-to-year variability can be seen, especially at sites in the southern and central interior. Meteorology and intermittent sources such as wildfires strongly influence concentrations from year to year, as evidenced by the high PM<sub>2.5</sub> concentrations in the southern Interior in 2003. However, average PM<sub>2.5</sub> concentrations over the past three years in Prince George, the Lower Fraser Valley (LFV) and Nanaimo were among the lowest recorded over the 12-year period.

Trends in 8-hour ozone concentrations are shown in Figure 8. Based on this indicator, no significant trends in regional ozone levels were observed, although past studies have reported increasing trends at individual sites within the Lower Fraser Valley and Kelowna.

NO<sub>2</sub> trends are shown in Figure 9. Downward trends are evident in the Lower Fraser Valley and Kamloops. Improved vehicle emission standards and the AirCare vehicle inspection program in the Lower Fraser Valley contribute to these findings. Trends analysis for Kelowna and Victoria is limited by fewer complete years of monitoring data.

Trends in annual SO<sub>2</sub> levels at sites in Trail, Prince George, Kitimat and downtown Vancouver are shown in Figure 10. Annual concentrations in Trail have been consistently well above the provincial objective of 25 µg/m<sup>3</sup> over the past four years. In contrast, 2009 ambient SO<sub>2</sub> levels in downtown Vancouver were the lowest recorded over the 12-year period, reflecting reduced sulphur content of fuels as well as the shutdown of several local refineries and reduced emissions from the cement industry over this period.

Pollutant levels can be summarized over different averaging periods, and the choice of the averaging period may yield different trend results. Here, the annual average is used to examine trends for all pollutants except ozone. The annual average is widely used and useful to track progress in reducing emissions over the years. Given the large contribution of background ozone to annual levels, the average of the daily 8-hour maximum is used instead for ozone. Where data is available for less than 75% of all hours in each quarter, this is considered an incomplete year and the annual values are not shown.

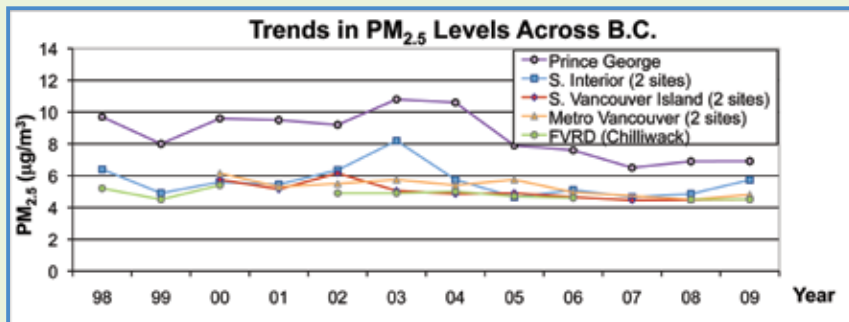


Figure 7: Trends in PM<sub>2.5</sub> levels across B.C. between 1998-2009.

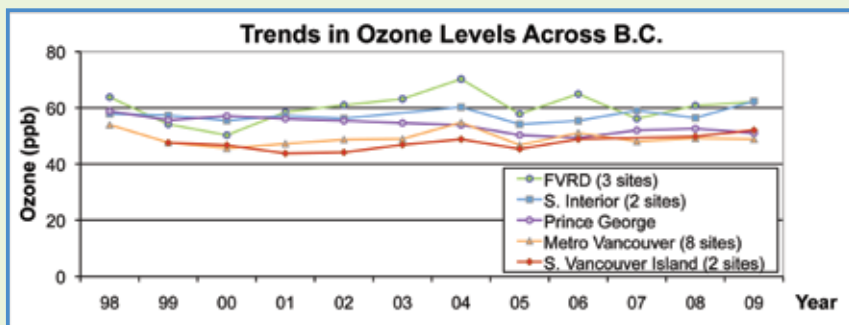


Figure 8: Trends in ozone levels across B.C. between 1998-2009.

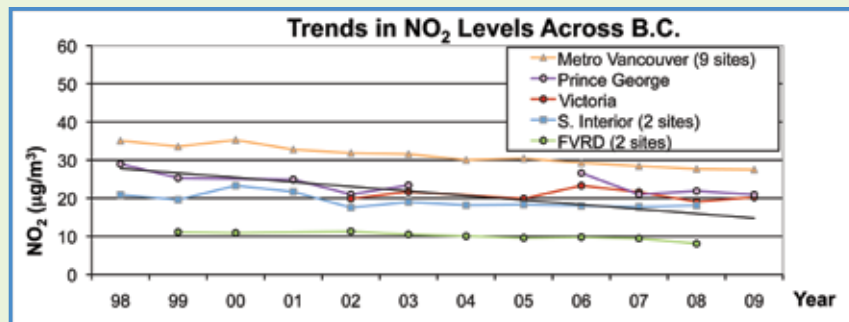


Figure 9: Trends in NO<sub>2</sub> levels across B.C. between 1998-2009.

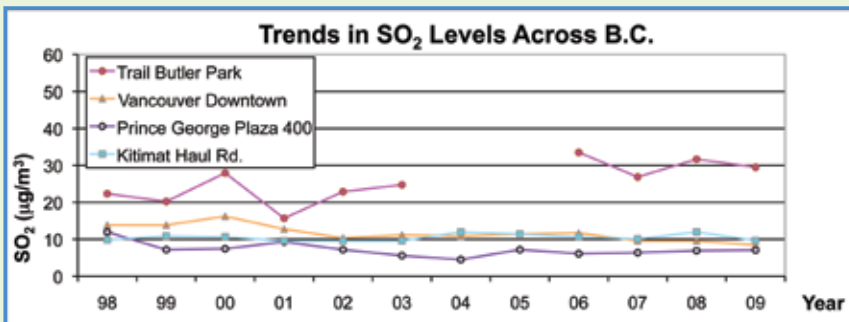


Figure 10: Trends in SO<sub>2</sub> levels across B.C. between 1998-2009.

## Visibility Initiative

In the last few years, B.C.'s air quality management agencies consisting of the Ministry of Environment, Environment Canada, Metro Vancouver and the Fraser Valley Regional District have been working to develop a visibility protection and improvement program that is in step with existing air quality management programs.

These agencies realize that air pollution haze can obscure the province's spectacular natural and urban vistas, and may result in decreased quality of life for its residents as well as economic loss through reduced tourism. Given that haze is composed primarily of the same microscopic particles (PM<sub>2.5</sub>) that have been linked to cardio-respiratory disease, improving visibility, the agencies believe, would also produce a healthier living environment.

On Clean Air Day this past June, the agencies' efforts were recognized with the official launching of Clear Air BC, an initiative aimed at improving visibility across the province. The initiative includes:

- Scientific studies led by Environment Canada on the characterization of current conditions and long-term visibility trends; on the causes of impaired visibility in the Lower Fraser Valley; and the assessment of visibility improvement in response to air quality management programs
- A new website with information about air quality and visibility
- A pilot project to test several strategies for improving visibility

Environment Canada is also working with Health Canada to assess the health and related economic benefits associated with improvements in visibility in the Lower Fraser Valley.

For more information on the subject of visibility and the Clear Air BC initiative, visit: [www.clearairbc.ca](http://www.clearairbc.ca).

## Climate Change

Metro Vancouver has adopted a plan for its operations to become carbon-neutral by 2012. With three main strategies for energy conservation and reduction, energy recovery, and carbon sequestration, the plan also aims to prepare Metro Vancouver for the impacts of climate change, based on a risk assessment completed in Spring 2010.

Metro Vancouver continues to target greenhouse gas emission reductions in the region. It partnered with seven local municipalities, training 120 small and medium size businesses to track and reduce their carbon footprint. Metro Vancouver is also in the process of identifying potential district energy opportunities in the region.

The B.C. government is acting firmly to address climate change. It continues to set and implement the policy context for Provincial Government operations and for the province's residents, communities and industries so as to reduce greenhouse gas emissions and adapt to the unavoidable effects of a changing climate. In doing so, B.C. is taking advantage of opportunities being created in the emerging low-carbon economy. Over the past year, these actions include:

- Introducing a new Clean Energy Act that harnesses B.C.'s natural advantages to help build electricity self-sufficiency, create jobs and reduce GHG emissions
- Adopting a zero net deforestation policy to increase the carbon storage value of the province's forests
- Creating a Reporting Regulation that sets out the requirements for reporting CO<sub>2</sub>-equivalent GHG emissions from B.C. facilities beginning on January 1, 2010
- Implementing the Renewable and Low Carbon Fuel Regulation, which establishes a 5% provincial annual average renewable fuel requirement for 2010 and mandates further decreases to carbon intensities through 2020
- Implementing an Adaptation Strategy to address climate change impacts now and in the future
- The ongoing implementation of the world's first broad-based, revenue-neutral carbon tax

Health Canada understands the importance of extreme heat exposure's health effects and of adapting to a changing climate. For this reason, the Climate Change and Health Office is releasing several public information pieces in March 2011, including a Best Practices Guide for Heat Alert and Response Systems; a Guideline for Healthcare Workers on Extreme Heat Events; and a Heat-Health Messaging Communication Toolkit.

## Experts Call for Paradigm Shifts in International Air Pollution Policy

Last September, over 300 scientists and policymakers from 38 countries convened in Vancouver for the IUAPPA World Clean Air Congress to discuss the latest science and new policies related to the theme of "Achieving environmental sustainability in a resource-hungry world."

As a result of discussions held during the Congress, the IUAPPA Board issued the *One Atmosphere* declaration (<http://www.iuappa.com/newsletters/VancouverDeclaration.pdf>), which calls for radical new directions in international air pollution policy to help tackle the world's multiple and interlinked environmental challenges.

In this declaration, the IUAPPA recommended that policymakers adjust their environmental policies to:

- 1. Reduce the impacts of air pollution on ecosystems and biodiversity.** This will lessen long-term damage to food security and ecosystem services on which the human race depends. While reducing direct human health impacts is important, it's not enough.
- 2. Integrate climate and air pollution policies.** This will lower the long-term costs of achieving objectives for each. Focusing on reducing short-term climate forcers (like methane, ozone and black carbon) can produce immediate health and climate benefits and buy time for longer-term carbon dioxide-focused measures to take effect. In addition, it can make actions intended to reduce ozone, methane and black carbon more economical to implement.
- 3. Strengthen cooperation on air pollution at regional, hemispheric and global scales.** This will help create greater awareness that concentrations of some pollutants continue to rise across the globe. Improvements must be made globally to achieve air quality objectives in many jurisdictions.

For more information about the IUAPPA, visit: [www.iuappa.com](http://www.iuappa.com).



# COLLABORATIVE INITIATIVES

Various partnerships between Health Canada, Environment Canada, Metro Vancouver, the Fraser Valley Regional District and the B.C. government (henceforth, the Province) have produced several clean air initiatives.

## Locomotive and Rail Yard Emissions and Health Risks

Metro Vancouver and Environment Canada in collaboration with Port Metro Vancouver and local rail yard operators completed a study to assess and mitigate locomotive idling. The study included the investigation of five resident complaint case studies.

Metro Vancouver and Environment Canada have also partnered to conduct a human health risk assessment of rail yard activities in the Burrard Inlet Area of Metro Vancouver. The study is expected to be completed by March 2011.

## Marine Vessels and Port Operations

Environment Canada, the Province and Metro Vancouver are working with marine industry stakeholders and port authorities to improve air emissions from ocean-going vessels and landside port operations.

The Ports of Metro Vancouver, Seattle and Tacoma work through the *Pacific Northwest Ports Clean Air Strategy* to address maritime and port-related emissions that affect air quality and climate change.

The three ports release annual implementation progress updates that identify emission reduction activities underway, and report on progress towards goals. The 2009 Implementation Report is available online at: [www.portmetrovancouver.com/Libraries/ABOUT\\_News\\_Press\\_Releases/NWPCAS\\_2009\\_Implementation\\_Report.sflb.ashx](http://www.portmetrovancouver.com/Libraries/ABOUT_News_Press_Releases/NWPCAS_2009_Implementation_Report.sflb.ashx).

After several years of extensive research and collaboration between Environment Canada, the Province and Metro Vancouver, Canada and the US submitted a joint application to the International Maritime Organization (IMO) in 2009. The application proposed the designation of specific portions of Canadian and US coastal waters as Emission Control Areas

(ECA) that would impose much more stringent standards for marine fuels and SO<sub>x</sub> and NO<sub>x</sub> emissions.

The Canada-US joint ECA proposal was approved by the IMO in March 2010. Canada is currently amending regulations under the Canada Shipping Act to implement and enforce the ECA and the newly revised air emission standards.

The following restrictions will apply to ships in the North American ECA, including B.C. coastal waters:

- Beginning in August 2012, marine fuel sulphur content cannot exceed 1% (10,000 ppm).
- Beginning in 2015, marine fuel sulphur content cannot exceed 0.1% (1,000 ppm). This requirement alone is expected to reduce PM and SO<sub>x</sub> emissions by more than 85%.
- Beginning in 2016, new marine engines must achieve "Tier 3" emission standards that reduce NO<sub>x</sub> emissions by 80%.

## Woodstove Exchange Program

Since 2007, the Provincial Woodstove Exchange Program has provided 23 communities and regional districts with education on clean-burning practices as well as funding to offer incentives for exchanging old, smoky stoves for clean-burning, low-emission-certified appliances.

Since 2007, approximately 3,500 stoves have been exchanged across B.C., resulting in annual provincial reductions of over 200 tonnes of fine particulate matter. Community applications for the 2011 program were accepted in September 2010.

For more information, visit: <http://www.bcairquality.ca/topics/woodstove-exchange-program/index.html>.

Metro Vancouver and the FVRD are partnering with the Province to implement a regional wood stove change-out program. Since the exchange program began in the fall of 2009, about

80 old wood-burning appliances have been exchanged for new, low emission units in Metro Vancouver and the FVRD.

Fifty of the 80 exchanges took place in Metro Vancouver, where wood stoves account for 10% of regional PM<sub>2.5</sub> emissions. This has reduced PM<sub>2.5</sub> by approximately 850 kilograms annually. Both Metro Vancouver and the FVRD plan to continue with the program in 2011, and hope to exchange 200 additional stoves.

## AirCare Program Review

The AirCare vehicle emissions inspection and maintenance program is a key component in Metro Vancouver's Air Quality Management Plan. Since its inception in 1992, the program has helped significantly reduce the emission of hydrocarbons, nitrogen oxides, carbon monoxide and other air contaminants from motor vehicles.

Provincial legislation provides that AirCare be operated by TransLink. Any major changes or enhancements to the program require the Province's approval prior to implementation.

At the end of 2011, the current contract to operate the AirCare program will expire. The AirCare Review Committee (ARC) has been established to review the program. ARC has members from the BC Ministry of Environment, TransLink, Fraser Valley Regional District, ICBC, Environment Canada and Metro Vancouver.

ARC commissioned a third-party consultant review of the costs and benefits of operating the AirCare program beyond 2011. The review findings, which were supported by the ARC, were that AirCare could achieve cost-effective reductions of harmful air pollutants until at least 2020, and reduce health effects associated with motor vehicle emissions. The Province, Metro Vancouver, FVRD and

TransLink will consider recommendations and decide on the next phase of the program in early 2011.



# AGENCY UPDATES

## MINISTRY OF ENVIRONMENT

The Ministry of Environment seeks to protect the environment and prevent pollution through monitoring, reporting, regulations, and enforcement activities. The following are some of its projects to improve air quality in B.C.

### Idle-Free Initiative

Since 2008, B.C. has developed different measures to help advance the Air Action Plan's Provincial Idle Reduction Initiative. These include the appointment of Idle-Free Ambassadors to promote anti-idling behaviour; the HASTE school program to encourage walking and biking to school ([www.hastebc.org](http://www.hastebc.org)); the distribution of a free BC Public Service Idle Reduction toolkit to fleet managers and Idle-Free signs to schools; the development of an Idle-Free Pledge for public sector workers and the general public; and the formation of idle-reduction initiatives at the Peach Arch border crossing.



The Province is exploring other measures that will strengthen idle-reduction action in B.C., including the feasibility of enacting a province-wide regulation, and will be consulting with local government and other stakeholders in 2011.

### Regulatory Review

In order to reduce the effects of emissions on human health and the environment, the following regulations are currently under review:

- The Wood Residue Burner and Incinerator Regulation, which specifies the phase-out dates for wood residue (i.e. beehive) burners in the province
- The Open Burning Smoke Control Regulation, which outlines the conditions under which the open burning of vegetative debris can be authorized
- The Solid Fuel Burning Domestic Appliance Regulation, which sets out the requirements for selling wood stoves and other solid fuel-burning domestic appliances

### Air Quality Objectives

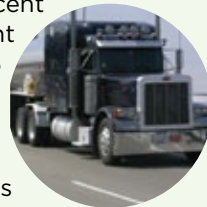
As a first step to reviewing B.C.'s existing air quality objectives and devel-

oping new criteria, the government is putting together a framework that outlines the approach to be taken, the goals and guiding principles that will inform decisions, and the roles and responsibilities of key stakeholders. The framework is expected to be finalized in 2011.

## ENVIRONMENT CANADA

### Cleaner Vehicles and Fuels

On October 1, 2010, the Government of Canada announced final regulations that establish progressively more stringent greenhouse gas emission standards for new passenger automobiles and light trucks for the 2011-2016 model years. These are aligned with similar regulations in the United States. A requirement for five percent renewable fuel content in gasoline was also announced as one of several steps the Government is taking to reduce greenhouse gas emissions in the transportation sector, which accounts for about a quarter of greenhouse gas emissions in Canada. Environment Canada has prepared a Regulatory Framework consultation document to seek early views from interested parties on key elements being considered for future regulations to limit greenhouse gas emissions from new on-road heavy-duty vehicles and engines of the 2014 and later model years. Canada's heavy-duty vehicle regulations will be aligned with those of the United States.



### Reducing Emissions from Automotive Refinishing Products

The Government has been implementing regulations to reduce VOC emissions from everyday consumer and commercial products. For example, in July 2009 the Government released new regulations to reduce Volatile Organic Compounds (VOC) in automotive refinishing products.

### Proposed New National Air Quality Management System

At the October 2010 meeting of the Canadian Council of Ministers of the Environment, federal, provincial and terri-

torial Environment Ministers agreed to move forward with a new collaborative air management approach to better protect human health and the environment.

### West Coast Trans-Pacific Transport Study

In April 2010, Environment Canada established a special study site to measure the impact of trans-Pacific transport of air pollution on the west coast of Canada. The site was established at Amphitrite Point, Ucluelet, in collaboration with the B.C. Ministry of Environment, Metro Vancouver and the University of British Columbia. Measurements include criteria air contaminants, sulphate and mercury. By measuring air quality on the west coast of Canada, the study will: characterize the trans-Pacific transport of air pollutants, inform air quality management activities in B.C., contribute to the assessment of compliance with federal and provincial air quality objectives and standards, and contribute to international efforts to document global air quality. Measurements at Amphitrite Point are part of a larger Environment Canada intensive study involving two additional western locations at Whistler and Little Fox Lake in the Yukon.

## HEALTH CANADA

Health Canada's Environmental Health Program (EHP) promotes healthy living, working and recreational environments for British Columbians. It supports scientific research and develops strategies to protect human health against risks from the environment.

### Indoor Air

The EHP continues to participate in provincial programs seeking to raise awareness of radon's health risks and encouraging the testing and remediation of homes to reduce radon levels. For more information on radon and to obtain a copy of the brochure, "Radon: Is it in Your Home?," visit Health Canada's website at: [www.healthcanada.gc.ca/radon](http://www.healthcanada.gc.ca/radon).





## Air Quality Health Index

The EHP continues to fund promotional and educational activities relating to the Air Quality Health Index (AQHI) in the province. Developed to increase awareness of the link between health and air quality, the AQHI measures air quality on a scale of one to 10. The AQHI is now available in 18 communities across B.C. For the current and forecasted AQHI in your region, visit [www.bcairquality.ca](http://www.bcairquality.ca).

## METRO VANCOUVER

### Non-Road Diesel Engine Initiative

Metro Vancouver is developing emission regulations for diesel particulate matter emissions from existing non-road diesel engines and machines (e.g. excavators, backhoes, loaders, and stationary equipment) that operate in the region. Older engines will be required to register, label and pay fees for emissions. Fees collected will establish an emission reduction incentive fund, which will be available for engine owners to achieve emission reductions. For more information, visit: [www.metrovancouver.org/services/permits/DieselEmissions](http://www.metrovancouver.org/services/permits/DieselEmissions).



### Odour



Metro Vancouver is addressing emissions of malodorous substances from select sources in the region, including new facilities to meet the goals of regional liquid

and solid waste management plans. Proposed regulatory requirements for odours from industrial operations, such as composting, aerobic and anaerobic digestion, and rendering facilities, are being developed for consultation with industry, government, and the public in 2011.

### Special Monitoring Studies

Local air quality monitoring studies were recently conducted in New Westminster, Surrey and the Burrard Inlet area. The New Westminster study was initiated in November 2008 to

measure air quality in a heavy duty truck route area (Front Street) and in a community (Sapperton Park). The Surrey study began in January 2009 to determine whether existing air monitoring stations accurately represented local air quality in Surrey, with the Mobile Air Monitoring Unit being deployed at several Surrey locations.

The two-year Burrard Inlet study monitored air quality in several locations. Air quality in the Burrard Inlet area is influenced by many air emission sources, including trucks, heavy industrial and construction equipment, locomotives, and marine vessels. Findings will be reported in 2011.

In early 2010, Metro Vancouver monitored PM<sub>2.5</sub> levels in suspected wood smoke-affected areas. Neighbourhood PM<sub>2.5</sub> levels were compared with the regional concentrations, and the nature and magnitude of wood smoke effects on local air quality were determined. Recent health studies have concluded that, even in urban centres such as Metro Vancouver, residential wood smoke can have an impact on local neighbourhood air quality.

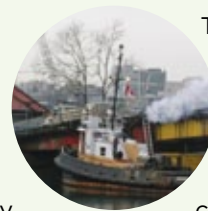
### New Monitoring Station

Metro Vancouver, in partnership with Port Metro Vancouver, commissioned a new air quality monitoring station in Pebble Hill Park in Tsawwassen in April 2010, filling a gap in the regional monitoring network in the south-west part of the airshed. Air Quality Health Index (AQHI) can also be provided every hour for this station.

## FRASER VALLEY REGIONAL DISTRICT

### Air Quality Management Plan

In 2010, the Fraser Valley Regional District (FVRD) completed a draft revision to its Air Quality Management Plan after a preliminary review. It was approved for consultation by the FVRD Board of Directors and its Environment Committee, and comments are now being sought from different stakeholders.



The Plan addresses air quality issues in the eastern part of the Lower Fraser Valley airshed, recognizing that much of the pollution originates from sources in Metro Vancouver and Whatcom County (US). Actions will complement those of other agencies in the airshed, and will specifically tackle sources in the FVRD itself. Consultation is expected to be complete in Fall 2010, to be followed by final Board adoption before the end of the year.

### New Monitoring Stations

Two new air quality stations are currently being built in the eastern valley—one each in the Districts of Kent (Agassiz) and Mission. The goal is to have them operational in Fall/Winter 2010. Together with existing stations in Abbotsford, Chilliwack and Hope, these new stations should provide a representative picture of air quality in the FVRD.

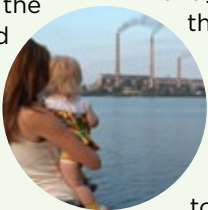
### Ozone Research

Some of the highest ozone levels in B.C. continue to be measured at FVRD air quality monitoring stations, with peaks having moved eastward into the Fraser Valley (peaks were previously measured in eastern Metro Vancouver areas). In summer, ozone levels often exceed Canada-wide Standards.

Research aimed at identifying the conditions under which these high levels are occurring was launched in 2009 by UBC and UNBC experts guided by local air quality agencies. A report is expected in the first half of 2011, which will help local policymakers decide on actions to take to mitigate these high levels.

### Air Quality Authority

For several years, the FVRD has been investigating having similar air quality regulation and enforcement authority as Metro Vancouver. This is a key recommendation in the draft air quality management plan, and talks with the Province became more focused in 2010. Various models for this new function will be examined before any recommendation to the Province and the FVRD Board of Directors is made.



Visit or contact the following agencies  
FOR MORE INFORMATION

**BC LUNG ASSOCIATION**

www.bc.lung.ca  
2675 Oak Street  
Vancouver, B.C. V6H 2K2  
(604) 731-5864 or toll-free at  
1-800-665-5864 (in B.C. but outside  
the Lower Mainland)

**BC CENTRE FOR DISEASE CONTROL**

www.bccdc.ca/util/contact/default.htm  
655 West 12th Avenue  
Vancouver, B.C. V5Z 4R4  
(604) 707-2400

**ENVIRONMENT CANADA -  
PACIFIC AND YUKON REGION**

www.ec.gc.ca/Air/default.  
asp?lang=En&n=14F71451-1  
401 Burrard Street  
Vancouver, B.C. V6C 3S5  
(604) 664-9100

**HEALTH CANADA ENVIRONMENTAL  
HEALTH PROGRAMME - B.C. REGION**

www.hc-sc.gc.ca/ewh-semt/air/index-  
eng.php  
400-4595 Canada Way  
Burnaby, B.C. V5G 1J9  
(604) 666-2671

**B.C. MINISTRY OF ENVIRONMENT**

www.bcairquality.ca

**Environmental Standards Branch**

PO Box 9341, Stn Prov Govt  
Victoria, B.C. V8W 9M1  
(250) 387-9932

**Vancouver Island Region**

2080-A Labieux Road  
Nanaimo, B.C. V9T 6J9  
(250) 751-3100

**Lower Mainland Region**

2nd floor #10470 152nd Street  
Surrey, B.C. V3R 0Y3  
(604) 582-5200

**Cariboo Region**

#400 640 Borland Street  
Williams Lake, B.C. V2G 4T1  
(250) 398-4214

**Kootenay Region**

#401 333 Victoria Street  
Nelson, B.C. V1L 4K3  
(250) 354-6333

**Skeena Region**

3726 Alfred Avenue, Bag 5000  
Smithers, B.C. V0J 2N0  
(250) 847-7260

**Omineca and Peace Regions**

3rd Floor, 1011 Fourth Avenue  
Prince George, B.C. V2L 3H9  
(250) 565-6135

**Thompson & Okanagan Regions**

1259 Dalhousie Drive  
Kamloops, B.C. V2C 5Z5  
(250) 371-6200

**METRO VANCOUVER**

www.metrovancouver.org  
4330 Kingsway Avenue  
Burnaby, B.C. V5H 4G8  
(604) 432-6200

**FRASER VALLEY  
REGIONAL DISTRICT**

www.fvrd.bc.ca  
45950 Cheam Avenue  
Chilliwack, B.C. V2P 1N6  
(604) 702-5000 or 1-800-528-0061

**BRITISH COLUMBIA  
HEALTH AUTHORITIES**

**Northern Health Authority**

www.northernhealth.ca  
Suite 600, 299 Victoria Street  
Prince George, BC V2L 5B8  
(250) 565-2649

**Vancouver Island Health Authority**

www.viha.ca  
1952 Bay Street  
Victoria, B.C. V8R 1J8  
(250) 370-8699

**Vancouver Coastal Health Authority**

www.vch.ca  
11th Floor, 601 West Broadway  
Vancouver, B.C. V5Z 4C2  
(604) 736-2033 or 1-866-884-0888

**Fraser Health Authority**

www.fraserhealth.ca  
300, 10334 152A Street  
Surrey, B.C. V3R 7P8  
(604) 587-4600 or 1-877-935-5669

**Interior Health Authority**

www.interiorhealth.ca  
2180 Ethel Street  
Kelowna, B.C. V1Y 3A1  
(250) 370-8699

Please send correspondence to  
Dr. Menn Biagtan, biagtan@bc.lung.ca  
or call (604) 731.5864 • 1-800-665-LUNG  
(outside the Lower Mainland).

Published January 2011

**Working Committee:**

Ms. Prabjit Barn  
Dr. Menn Biagtan  
Ms. Patti Dods  
Mr. Derek Jennejohn  
Mr. Bob Smith  
Ms. Natalie Suzuki

**Contributing Writers:**

Ms. Laurie Bates-Frymel  
Mr. Larry Pellizzari

**Content Editing &  
Graphic Design:**

Little Brown Bros.  
Advertising & Marketing