



the air quality flag project

coordinator handbook



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What is the Air Quality Flag Program?

The Air Quality Flag Program for schools is unique – the first of its kind in Canada – designed to help children and school communities understand what kind of air day it is.

Air quality can change, just like the weather. When school communities know what kind of air day it is, they can make decisions about reducing exposure to air pollution while getting active outdoors.

Air quality flags – in blue, grey, brown and red colours – are flown each day to help people understand what the air quality is like based on reporting through the Air Quality Health Index or AQHI. The AQHI is a scale from 1 to 10 that measures air quality in relation to health. The lower the number; the lower the health risk associated with the air quality.

- Fly a blue flag to tell your school it's a good air day for everyone to get active outside - an AQHI of 1-3.
- A grey flag means it's a good air day for most people to get active - an AQHI of 4-6.
- Fly a brown flag to tell your school it's an OK air day for some, but others might feel symptoms if they are getting active - an AQHI of 7-10.
- A red flag means there is a lot of air pollution today. Everyone should take it easy - an AQHI of 10+

In addition to sharing air quality information, the Air Quality Flag Program encourages outdoor activity when the air is good, and provides school communities with ideas on how to remain active if the air quality is poor.

It's easy

The practice of selecting a flag only takes minutes each day, encourages students to think more about air quality and its relationship to health, and increases the likelihood of people checking and using the Air Quality Health Index on a daily basis.

It's healthy

The Air Quality Flag Program encourages children to get active outside recognizing that most of the time our air quality is good. However, during times of poor air quality, the program encourages people to consider reducing their exertion levels or rescheduling their outdoor activities until a time when the air quality improves.

It's educational

Everyone reacts differently to air pollution, some more than others. Children may be more at risk to poor air quality because they are more active outside, have less developed respiratory systems, and inhale more air per kg of body weight compared to adults. This program informs schools about local air quality conditions, while focusing on the importance of being active, and comes with resources and curriculum-linked materials that can be used in the classroom, too.



What is the Air Quality Health Index?

The Air Quality Health Index (AQHI) is a scale from 1 to 10 that tells people what kind of air day it is in their community. It is a tool used all across Canada and is available to more than 80% of the population in British Columbia.

The AQHI is designed to protect health by encouraging people to adjust activity levels during times of increased air pollution. It also provides advice on how people can improve the quality of the air they breathe.

The AQHI pays attention to people who are sensitive to air pollution and provides them with advice on how to protect their health during air quality levels associated with low, moderate, high and very high health risks.

Blue Day			Gray Day			Brown Day				Red Day
1	2	3	4	5	6	7	8	9	10	+
Low Risk			Moderate Risk			High Risk				Very High Risk

	At risk population	General Population
Blue Day Low Risk	Enjoy your usual outdoor activities.	Ideal air quality for outdoor activities.
Grey Day Moderate Risk	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 or throat irritation.
Brown Day High Risk	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.
Red Day Very High Risk	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.



Participation is easy

1. Fill in the participate form on the "participate" page of www.airqualityflags.ca

When we receive it, we will contact you to confirm your school's participation in the program. You can participate as a school or as a classroom. If you any have questions, email the Air Quality Flag Program coordinator, Glynn Brothen, at glynn@airshiftgroup.com

2. Between Nov. 15 and Dec. 19, 2013, we will invite you to a webinar to introduce the program, its resources and the curriculum-linked classroom activities. Then we will support you either through a visit to your class or school or through liaison with our program coordinator.

3. During the introduction, you will learn how to:

- Access and update your school's air quality flag web page and blog.
- Fly your web-based flag each day and let your school community know what kind of air day it is.
- Set up a flag bearer schedule.
- Incorporate air quality awareness into existing day-to-day school activities.
- Access the curriculum linked materials for Grades 5 and 6.
- Each day your school page on airqualityflags.ca will tell you the AQHI reading for your location.
- Note: Up to 10 elementary schools will be selected to designate a class or individual to fly the flags on the school flag pole each day. Additional schools may participate in the program through an online format.

4. The program runs Jan. 7, 2014 to Mar. 6. Each school day, you will receive an email notification of the current Air Quality Health Index so that your class or school can fly the correct flag that day.

5. Enhance learning by using the Air Quality Health Index curriculum linked program for Grades 5 and 6, which includes five lesson plans and interactive activities focused on air quality, air stewardship and the environment.

6. In March 2014, we will contact you to set up a short in-person or telephone interview for you to share your experience participating in the program.

7. Then check out the results when they are posted at www.airqualityflags.ca at the end of March 2014 and consider checking the Air Quality Health Index on a daily basis.

8. If the program is implemented on a full provincial scale, your school will be notified and have the opportunity to participate in the future.



As a participating school, you receive:

- An air quality flag page for your school on airqualityflags.ca, where students and teachers can choose and “raise” the air quality flag for the day and write blog posts about experiences as a participating school.
- Up to 10 elementary schools will be chosen to fly flags on site. These flags would be erected each morning, and taken down each afternoon through a designated class or through individuals within your school.
- Daily updates on the AQHI for your community.
- Air Quality Health Index curriculum linked lessons for Grades 5 and 6.
- An Air Quality Flag Program poster for your classrooms and school.
- A letter for parents and families sharing information on the program.
- A list of air quality actions your school can take to help improve the air.
- Ongoing support from the Air Quality Flag Program coordinator, who can provide information and help answer questions.

How will the information gathered from this program be used?

Information gathered through the piloting of the Air Quality Flag Program in British Columbia will be analyzed, measured and shared with funders and the public with the goal of a province-wide or national air quality flag program being implemented in the future.

Have questions?

Contact:

Glynn Brothen

Air Quality Flag Program Coordinator,

AirShift Group

glynn@airshiftgroup.com

250.372.5900 ext. 1



Raise the air quality flag

Each day, your school page on airqualityflags.ca will tell you the AQHI reading for your location. You get to determine which flag to raise and tell your school community what kind of air day it is.

Use the flag bearer schedule form at the end of this handbook to assign individuals responsibility for raising the online flag or the on-campus flag each day. The flag colour is determined by the categories on the AQHI.

NOTE: The flag should be chosen once, daily, ideally in the morning.



Fly a blue flag to tell your school it's a good air day for everyone to get active outside – an AQHI of 1-3.



A grey flag means it's a good air day for most people to get active – an AQHI of 4-6.



Fly a brown flag to tell your school it's an OK air day for some, but others might feel symptoms if they are getting active – an AQHI of 7-10.



A red flag means there is a lot of air pollution today. Everyone should take it easy – an AQHI of 10+.

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Air Quality Flag daily steps

1. Go onto your schools' flag page at www.airqualityflags.ca and raise the online and/or onsite flag – choose a student to raise the flag.
2. Share a comment or answer a daily air quality and health question sent by the coordinator.
3. Share what type of air day it is to the school community through morning announcements.



Resources to support the program: hosted at airqualityflags.ca

Students

- View the **Air Quality Flag video** to learn how the program works.
- Work with your teacher and classmates to create a **flag bearer schedule**.
- Print an **Air Quality Flag poster** for your classroom or at home.
- View actions you can take to improve the air on the **air quality stewardship** page of airqualityflags.ca



Teachers

- Download the **Air Quality Health Index Learning Stations**, a curriculum-linked program for Grades 5 & 6.
- Work with students to **raise an online and/or onsite flag** each day, which corresponds with the Air Quality Health Index. Your school page will tell you the AQHI for the day.
- Know an educator in British Columbia who would be interested in this program? **Share airqualityflags.ca** with your colleagues.
- Share information on this program with parents and families. Visit the resource page on the website to **download the parents letter**.

Families

- View the **Air Quality Flag video** at home, then start a discussion about air quality, or view the **Air Quality Terminology** sheet on the airqualityflags.ca resources page.
- Did you know there is an AQHI app for your smart phone? You can **receive daily updates on the Air Quality Health Index**. Visit the app store and use the search terms "Air Quality Health Index app". The Weather Network also reports the Air Quality Health Index on its app.

The Air Quality Flag Program Coordinator is here to help: Contact Glynn Brothen, Air Quality Flag Program Coordinator, glynn@airshiftgroup.com or call 250.372.5900 ext. 1.



Air Quality and Health

What is air pollution?

Air pollution occurs when the air contains gases, dust, fumes or odour in amounts harmful to human health or amounts that could cause damage to the natural environment.

Our day to day activities can cause air pollution - things like driving vehicles, burning wood in fireplaces and using other energy in homes and at work – can all impact the amount of pollution that goes into our air. Things in nature can also impact the amount of pollution in our air, for example wind patterns, forest fires, and extreme heat events.

The Air Quality Flag program uses coloured flags that correspond with the Air Quality Health Index. It measures and reports on a combination of common air pollutants known to harm human health.

These are:

- Ozone (O₃) at ground level
- Particulate Matter (PM_{2.5}/PM₁₀)
- Nitrogen Dioxide (NO₂)

How does air pollution affect health?

Air pollution can have a negative effect on your respiratory system (lungs and airways) and on your cardiovascular system (heart and blood circulation) by:

- Making it harder to breathe.
- Irritating the eyes, throat and lungs.
- Triggering episodes of asthma and Chronic Obstructive Pulmonary Diseases (COPD); chronic bronchitis and emphysema.
- Triggering episodes of heart conditions (angina, heart attack, heart failure and heart rhythm problems).

Everyone reacts differently to air pollution. Groups that are especially sensitive (at-risk) include children, the elderly, and those with pre-existing cardiac or respiratory diseases. Diabetics also appear to be at greater risk, probably because of the relationship of diabetes with heart disease.

What can you do to protect your health and the health of your family?

You can better protect yourself and those you care about when you understand how air pollution affects your health and when you are aware what the air quality is in your community. During this pilot, check the air quality flag page for your school daily. You can also check the Air Quality Health Index any time at www.airhealth.ca



Are you at risk?

These are the most common categories of people at increased risk to poor air quality:

People with existing lung or heart conditions

People who have existing lung illnesses such as chronic obstructive pulmonary disease (COPD) which includes chronic bronchitis, emphysema and in some cases asthma, or lung cancer, and those with existing heart conditions such as angina, previous heart attack, congestive heart failure or heart rhythm problems (arrhythmia or irregular heartbeat) are sensitive to air pollution. Diabetics also appear to be at greater risk, probably because of the relationship of diabetes with heart disease. Air pollution can make it even harder for people to breathe and can make existing lung or heart-related symptoms worse.

Young children

Young children are included in the sensitive groups because they inhale more air than adults. They are more susceptible to air pollution.

The elderly

The elderly also are more likely to be affected by air pollution, perhaps due to generally weaker immune systems, or undiagnosed respiratory or cardiovascular health conditions.

Those active outdoors

People participating in sports or strenuous work outdoors breathe harder and quicker allowing more air pollution to enter the lungs.

On days when air pollution levels are highest even people not in the above groups may notice symptoms.

How can you tell if you may be sensitive to air pollution?

Exposure to air pollutants can cause a range of symptoms. People with lung or heart disease may experience increased frequency and/or severity of symptoms, and increased medication requirements.

People who are otherwise healthy may experience:

- Irritated eyes.
- Increased mucus production in the nose or throat.
- Cough or difficulty breathing especially during exercise.



Frequently asked questions

How do I keep my school informed on the air quality flag for the day?

- Encourage others to check your school's page on airqualityflags.ca
- Download the Weather Network app that reports the AQHI each day
- Morning announcements
- School newsletter
- Put a poster in your halls or on the bulletin board

How can I find out the daily AQHI report?

Each day, your school page on airqualityflags.ca will tell you the AQHI reading for your location. You get to determine which flag to raise and tell your school community what kind of air day it is. If you want to access the AQHI on your own, go to www.airhealth.ca and click on your location. Alternatively, you can follow our Twitter page [@AirQualityFlags](https://twitter.com/AirQualityFlags)

Is the air quality affected by weather?

Yes, the air quality is affected by weather. During the hot summer months and cold winter months there is more opportunity for ozone and pollutants to stay lower to the ground. Wind can have an effect on pollution as well, by spreading it or, with lack of wind, keeping it in one place.

What does the AQHI measure?

It measures and reports on a combination of common air pollutants known to harm human health. These are:

- Ozone (O₃) at ground level,
- Particulate Matter (PM_{2.5}/PM₁₀)
- Nitrogen Dioxide (NO₂).

How is the AQHI data captured?

The AQHI is determined by readings from an air quality monitor. These monitors are typically located in a residential area and capture air samples throughout the day. Reports are generated on pollution levels and, with the help of a meteorologist; an AQHI reading is determined and shared with the community.



What does it mean to be "at-risk"?

Groups of people who are "at-risk" tend to be more affected from air pollution – individuals with pre-existing respiratory (lung) or cardiovascular (heart and blood) conditions, seniors, people who are frequently active outside, and children. Children are more at risk because they are more active outside, have less developed respiratory systems, and inhale more air per kg of body weight compared to adults.

What do I do if it's a blue day?

Everyone is encouraged to enjoy their outdoor activities.

What do I do if it's a grey day?

For the general population, there is no need to modify usual outdoor activities unless you are experiencing symptoms. At risk populations might consider reducing or rescheduling strenuous outdoor activities if they are experiencing symptoms.

What do I do if it's a brown day?

The general and at-risk populations may consider reducing or rescheduling strenuous activities outside if they are experiencing symptoms.

What do I do if it's a red day?

If the number is high, there are a few different ways to protect yourself:

- You might decide to continue to be active outside but just not exert yourself as much (walk instead of running).
- You might reschedule your outdoor activities to a time when the air quality is better.
- Those experiencing symptoms may decide to visit their doctor or health care provider, or take medication that they know will help improve their breathing.

What else can I do to protect myself?

- Avoid roads with heavy vehicle traffic and areas with wood smoke.
- Maintain good overall health and stay active.



Air Quality Terminology

Air Quality: The state of the air within a specific area. “Air quality” is a neutral term: it can be good or bad (in or between).

Air Quality Health Index (AQHI): The Air Quality Health Index reports on the current state of the air and identifies the related health risk associated with it.

Air Quality Index: The Air Quality Index (AQI) reports current air quality based on a specific level of an individual air pollutant.

Air Pollution: Unwanted chemicals or other materials found in the air, at high enough concentrations to endanger the environment and people’s health. Many air pollutants occur as gases or vapours, but some are very tiny solid particles: dust, smoke or soot. Common pollutants are wood smoke, ground-level ozone and particulate matter.

Airshed: An area where the movement of air tends to be limited to the bounds of that area, as a result of specific geographical or meteorological conditions.

Ambient Air: Outside air, surrounding air, air occurring at a particular time and place outside of structures. All living beings are exposed to the ambient air.

Asthma: When people have asthma, the airways in their lungs get inflamed (red and swollen). They become extremely sensitive to dust particles and other airborne substances like pet dander. When these substances come in contact with the already inflamed and sensitive airways, the airways tighten and narrow, making it hard to breathe.

Bronchitis: Inflammation of the mucous membrane of the main airways of the lung, or the bronchial tubes.

Cardiovascular: Relating to the heart and blood vessels.

Chronic Obstructive Pulmonary Disease: COPD is a term that includes a number of lung diseases. The most common are chronic bronchitis and emphysema. Many people with COPD have both of these lung diseases. COPD makes breathing hard. It slowly damages the airways of the lungs, making them swollen and blocked and causing them to lose their elasticity or stretchiness.

Common Air Contaminants (CACs) (Also called “Criteria Air Contaminants”): Air pollutants commonly found in the atmosphere, namely carbon monoxide (CO), particulate matter (PM), sulphur oxides (SOx), nitrogen oxides (NOx), volatile organic compounds (VOCs) and ammonia (NH₃). Ground-level ozone (O₃) is often referred to with CACs because it is a byproduct of CAC interactions.

Emissions: The release of substances (pollutants) into the atmosphere from natural or human sources.

Environment: The combination of all external conditions and influences relating to the life, development, and survival of all living things.

Idling: Running the vehicle engine, instead of turning it off, when it’s sitting still or parked longer than 10 seconds (e.g., when you’re waiting for someone). Idling is a health risk, wastes fuel and money, contributes unnecessarily to engine wear, and generates needless greenhouse gas (GHG) emissions.



Nitrogen Dioxide (NO₂): A common pollutant along with particles in the air that can often be seen as a reddish-brown layer over many urban areas. It causes lung irritation and damage, and environmental impacts.

Nonpoint Source: Pollution that comes from many sources, such as motor vehicles, rather than one source, such as an industrial facility.

Ozone (O₃): A colorless gas that is formed when pollutants react with sunlight. Ozone is a major part of smog (called “ground-level ozone”), which can make people sick. Ozone is also found in the stratosphere, where it forms a protective band of gases around the earth.

Particulate Matter: (Also referred to as fine particulates and inhalable particulate matter.) Tiny solid or liquid particles that are suspended in air. Particulate matter is produced from a wide variety of sources — natural and human-caused, large and small. They are comprised of directly emitted particles, and secondary particles formed in the atmosphere through interactions of directly emitted pollutants such as sulphur oxides, nitrogen oxides, ammonia, and volatile organic compounds.

Wood and fossil-fuel burning are the two main human-caused sources. Particulate matter that is 10 microns (micrometres) in diameter or less is called PM₁₀. Of major concern are particles that are 2.5 micrometres or smaller in diameter (PM_{2.5}) because they can lodge deep in the lungs, and cause respiratory and cardiac problems.

Primary Pollutants: Air pollutants generated during processes and emitted directly from the sources as such.

Respiratory: Refers to the lungs and the act of breathing.

Smog: The word “smog” originated in the UK in the mid-20th century to refer to the unique atmospheric condition resulting from a combination of smoke and fog. Smog now refers to the yellow-brown haze that is a mixture of pollutants, mainly ground-level ozone and particulate matter (PM_{2.5}).

Sources: Sources of air pollution are identified by the activities that cause emissions. They can be natural or created through human activities. Natural sources include dust and forest fires. Human sources include fossil fuel burning and wood burning.

Pollution Sources:

Natural Sources: Sources of emissions that occur in nature without the influence of human beings. They include categories such as wildfires, plants, wildlife and marine aerosols.

Area Sources: Stationary sources which are not normally required to obtain an air discharge permit from the Ministry of Environment. They include prescribed burning, residential fuel wood use, light industrial, and other residential, commercial and institutional sources. Emissions from most of these area sources individually are small compared to emissions from point sources but can be significant when considered collectively.

Mobile Sources: Mobile sources include on-road motor vehicles primarily involved in the transportation of people and goods, including passenger cars, trucks and motorcycles, and off-road sources including aircraft, marine vessels and railways, off-road vehicles and small off-road engines such as agricultural, lawn and garden, construction, or recreational equipment.

Source: <http://www.bcairquality.ca/glossary/index.html>



Air Quality Flag Program

A pilot program in British Columbia

For more information

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