



Alberta's Air Quality Index

FACTS AT YOUR FINGERTIP

How do I find the current AQI readings?

Through Alberta Environment's website, www.gov.ab.ca/env Click on "Air" then "Air Quality Monitoring" then "Current Air Quality".

The AQI can also be accessed by phoning (780) 427-7273 (dial 310-0000 first to connect toll free).

WHAT IS THE AIR QUALITY INDEX?

The Air Quality Index (AQI) is a way of describing Alberta's outdoor air quality.

Alberta Environment continuously measures the concentrations of five major air pollutants -- carbon monoxide, fine particulate matter, nitrogen dioxide, ozone and sulphur dioxide-- and converts those readings to an AQI number every hour.

The highest AQI number for any of the substances is the AQI value for that hour for that station.

The higher the AQI number, the greater the level of pollution. A rating of 0-25 indicates **Good** air quality, 26-50 is **Fair**, 51-100 is **Poor**, and more than 100 is **Very Poor** air quality.

These categories relate directly to guidelines under Alberta's Environmental Protection and Enhancement Act (EPEA). They reflect the maximum desirable, acceptable and tolerable levels specified by the National Ambient Air Quality Objectives (NAAQO). An AQI rating of 25 for a specific air pollutant corresponds to the federal maximum **desirable** level; a rating of 50 corresponds to the federal maximum **acceptable** level; and a rating of 100 corresponds to the federal maximum **tolerable** level.

Alberta Environment operates three air quality monitoring stations in both Edmonton (central, northwest and east locations), and Calgary (central, northwest and east locations), and one each in Red Deer, and Beaverlodge. A new Alberta Environment station will monitor air quality in Lethbridge beginning in the summer of 2003.

Five airshed zones in the province also operate continuous monitoring stations, and the AQI is calculated at the Fort Saskatchewan and Fort McMurray stations.

Alberta Environment also operates a Mobile Air Monitoring Laboratory that conducts special air quality monitoring surveys around the province, and partners with the Calgary Fire Department on a mobile air monitoring unit.

Historical Background

Alberta's Air Quality Index is part of Alberta's air quality management system. In the late 1970's, a federal-provincial committee developed the Index of the Quality of the Air/Indice de qualité de l'air (IQUA). The IQUA used concentrations of carbon monoxide, dust and smoke, nitrogen dioxide, ozone and sulphur dioxide to determine air quality conditions.

With the development of more sophisticated and sensitive instrumentation, and to better represent the effects of small particles on air quality, Alberta Environment replaced the dust and smoke component of the index in 2003 with fine particulate matter (PM_{2.5}) and the index was renamed the AQI.

HOW DO I FIND THE CURRENT AQI READINGS?

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In both Edmonton and Calgary, air quality is rated as **Good** at least 90% of the time for any given year.

AQI Rating	Frequency in Alberta	Description
Good (0 - 25)	almost all the time (>90%)	Desirable range: no known harmful effects to soil, water, vegetation, animals, materials, visibility or human health. The long-term goal is for air quality to be in this range all of the time in Canada.
Fair (26 - 50)	occasional - typical when weather conditions inhibit pollutant dispersion (<10%)	Acceptable range: adequate protection against harmful effects to soil, water, vegetation, animals, materials, visibility and human health.
Poor (51 - 100)	seldom (<1%)	Tolerable range: not all aspects of human health or the environment are adequately protected from possible adverse effects. Long-term control action may be necessary, depending on the frequency, duration and circumstances of the readings.
Very Poor (greater than 100)	rare	Intolerable range: in this range, continued high readings could pose a risk to public health.

WHAT CAUSES HIGH AQI VALUES IN URBAN AREAS?

In both Edmonton and Calgary, air quality is rated as **Good** at least 90% of the time for any given year. The index will occasionally reach the **Fair** category (less than 10% of the time). Air quality in both cities is seldom **Poor** (usually less than 1% of the time), and the frequency of **Very Poor** index levels is very low.

Fair, **Poor** or **Very Poor** air quality conditions usually occur when there is a strong temperature inversion and light winds. This combination of weather conditions will often create a layer of cool, stagnant air near the ground. Air pollutants, mostly from automobiles, are trapped in this layer of stagnant air. In Edmonton these conditions usually occur with the approach of a warm front. In Calgary, strong temperature inversions are common before a chinook arrives. Forest fire events in Alberta can cause episodes of **Poor** and **Very Poor** air quality due to smoke being transported into urban centres.

Fair and **Poor** air quality can also result from summer heat. In hot, sunny weather photochemical smog can form through complex chemical reactions involving oxides of nitrogen and volatile hydrocarbons. Photochemical smog has a light brown colour and can reduce visibility. Ground-level ozone is a component of photochemical smog.

References: Guidelines for the Index of the Quality of the Air; Report EPS 1/AP/3; Environment Canada; September, 1993.

