AIR QUALITY

FORT AIR PARTNERSHIP
We Monitor the Air You Breathe

The quality of air we breathe is an important part of our health. Over the past several years, public awareness has increased greatly on issues linked to air quality. Since the 1970s, advances in technology to reduce air pollution have led to a decline in the concentration of harmful substances.

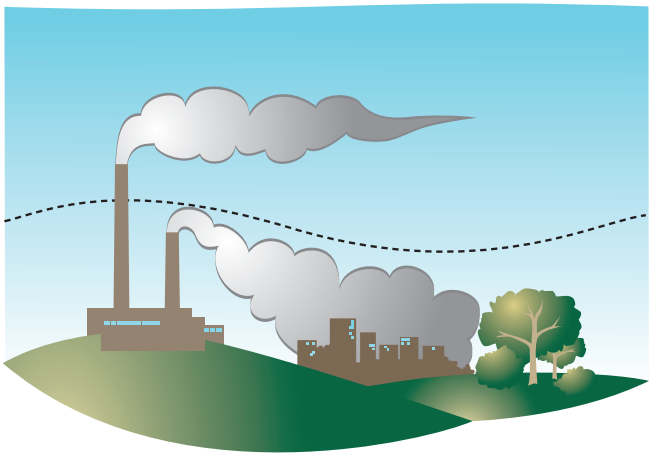
Air Pollution

Potentially harmful substances that cause air pollution come from many sources including industry, homes, vehicles and nature. All affect the quality of our air. The ability to track the quantity and types of these substances continues to improve. Currently, air quality in Alberta is monitored through a network of air monitoring stations. Data from these stations is available to the public and stored by the Government of Alberta in an air data warehouse.

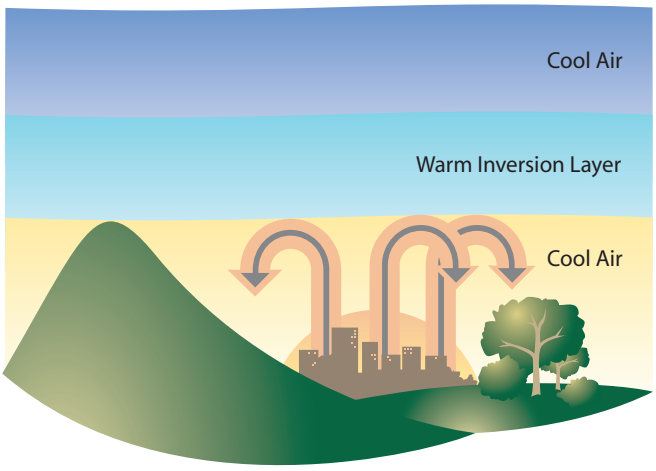
Factors that Influence Air Quality

Air quality in Alberta depends on several factors. These include the number of sources that emit harmful substances, the rate at which these substances are put into the atmosphere and the ability of the atmosphere to scatter (disperse) these substances. The dispersal of substances is largely controlled by weather patterns, local topography, and the height and temperature at which substances are emitted from their sources.

Chimney stacks and warm temperatures allow substances to rise higher in the atmosphere, and allow for greater dispersal, minimizing ground level concentrations. Land features such as mountains, hills and valleys can affect wind speed and direction, influencing and even controlling air motion. This can restrict the dispersal of substances.



In the winter, cold temperatures and stagnant air can create a build-up of substances near the ground, particularly during a weather phenomenon called temperature inversions. In other seasons or weather conditions, warm air sits near the ground and the air can rise easily and carry away pollutants. In a temperature inversion, cold air is trapped near the ground by a layer of warm air. The warm air acts like a lid, holding these substances down. During a temperature inversion, smoke from chimneys, exhaust fumes from vehicles and pollutants coming from other sources can't rise. In those conditions, carbon monoxide can reach unhealthy levels.



In the summer, hot, calm weather conditions can cause ground level ozone to form and cause photochemical smog. This smog can reduce visibility and trigger breathing difficulties for some people.

The ozone is a result of a chemical reaction between nitrogen oxides and volatile hydrocarbons that are exposed to sunlight.

From an air quality perspective, storms are a welcome weather event. Wind, rain and snow storms are sometimes called scrubbers because they help clear out and disperse substances of concern.

Alberta Ambient Air Quality Objectives

In Alberta, objectives are set for ambient air quality. These are intended to protect the environment and human health as much as possible. The objectives are established based on scientific evaluation, availability of emissions control/avoidance technology, natural and background levels of potentially harmful substances, and the impact on public health and ecosystems. The Government of Alberta works with a variety of stakeholders, including other government departments, the scientific community, environmental organizations, industry and the general public to review and set these objectives. Currently, Alberta has objectives for 48 substances.

The ambient air objectives are primarily used to:

- Report on the state of the atmospheric environment in Alberta.
- Determine whether additional industrial activity in an area should be approved.
- Establish operating conditions for approved industrial facilities.
- Assess compliance near major industrial air emission sources.

Definitions

Ambient air – air that is found outside buildings, houses and other structures.

Air pollutants – Chemical substances in the air that affect air quality at certain concentration levels.

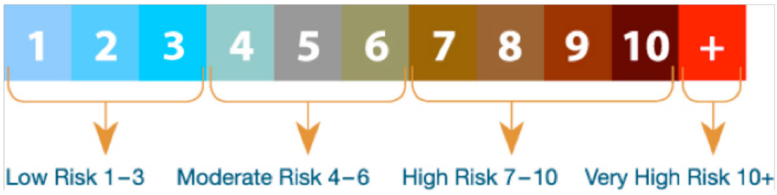
Alberta Health Quality Index (AHQI) – an information tool that uses data from specific individual air substances to calculate (daily and forecast) outdoor air quality.

Air Quality Health Index

The Air Quality Health Index (AQHI) is a public information tool that uses data from specific substances in the air to calculate (daily and forecast) outdoor air quality for more than 25 communities in Alberta.

Substances used to calculate the AQHI are ozone, oxides of nitrogen, nitrogen dioxide, respirable particulates ($PM^{2.5}$) and sulfur dioxide. The highest level for any one of these substances becomes the AQHI value for that area.

This measure of outdoor air quality helps people understand how air quality may impact their health. A scale of one to 10 is used. The lower the number, the lower the health risks. An outdoor activity recommendation corresponds to each risk category.



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

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This is one of a series of fact sheets on air quality developed by Fort Air Partnership in cooperation with the Government of Alberta. The rest of the series is available at **fortair.org**.