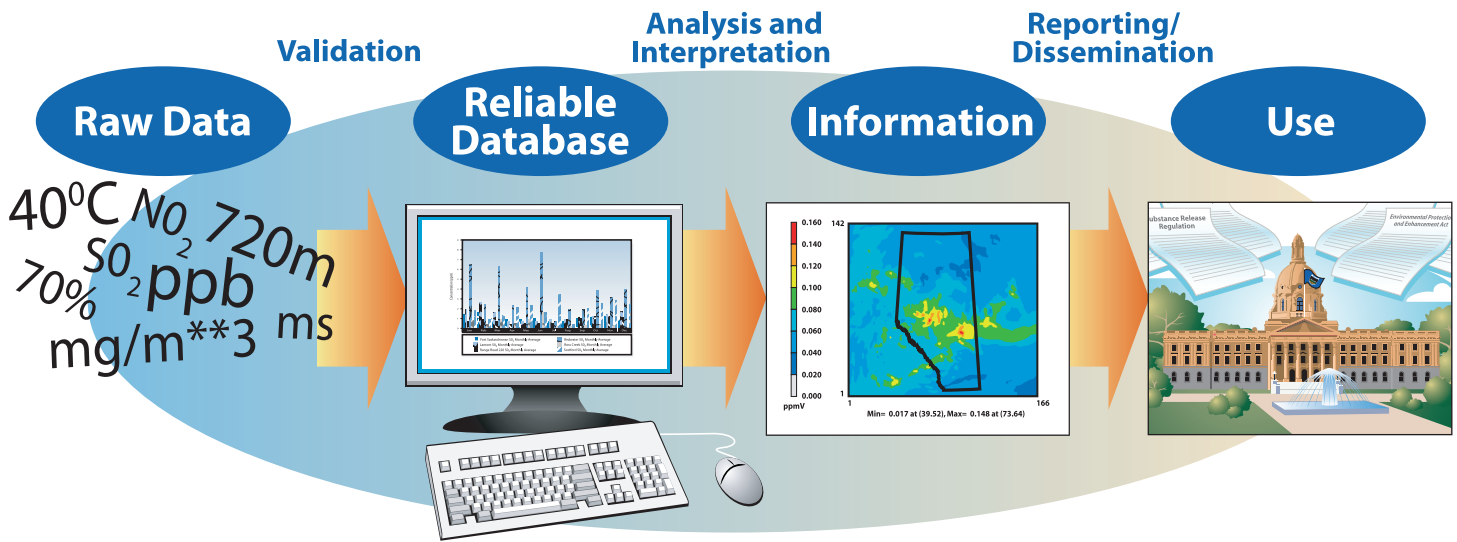# HOW AIR QUALITY MONITORING DATA IS USED

The purpose of monitoring air quality is not simply to collect data, but to provide information required by scientists, policy makers and planners to enable them to make informed decisions on managing and improving the environment.

Validation — Analysis and Interpretation — Reporting/Dissemination

Raw Data → **Reliable Database** → **Information** → **Use**

40^0C $N0_2$ 720m $S0_2$ ppb 70% mg/m**3 ms

Who Collects Air Quality Monitoring Data?

In Alberta, air quality is monitored by a network of stations operated by the Government of Alberta, Airsheds and industry. Near real time data from many of the monitoring stations across the province is posted on websites operated by Airsheds and the Government of Alberta. After the data has been validated, it is archived in an air data warehouse. This information is available to anyone from the Government of Alberta's website.

What Air Quality Data is Available?

Concentrations of pollutants are monitored and compared with the Alberta Ambient Air Quality Objectives (AAAQO). These objectives are pre-established concentrations of certain substances that are considered harmful to the environment or human health. If an AAAQO is exceeded, Airsheds report this to the Government of Alberta.

One hour average concentrations of a variety of substances are monitored. Some of these substances are ammonia, carbon monoxide, hydrogen sulphide, oxides of nitrogen, ozone, particulate matter, and sulphur dioxide. Meteorological factors such as wind speed, wind

direction and ambient temperature are also recorded to help interpret the monitoring results. Monthly average concentrations of some substances like sulphur dioxide and hydrogen sulphide are also obtained from passive monitors.

Data collected and reported by Airsheds is used by the Government of Alberta to calculate an Air Quality Health Index (AQHI). The substances used to calculate the AQHI are sulphur dioxide, hydrogen sulphide, nitric oxide, nitrogen dioxide, ozone, oxides of nitrogen and particulate matter.

AQHI ratings provide people with a basic measure of outdoor air quality and the level of health risk.

It works on a scale from one to 10 with 1-3 being low risk, 4-6 moderate, 7-10 high and 10+ very high. Current and forecast AQHI is updated through the day and posted on the websites of the Government of Alberta and many of the Airsheds.

Air quality data provided by Airsheds to the National Air Pollution Surveillance Network enables the Network to do air quality comparisons in more than 200 communities across Canada.
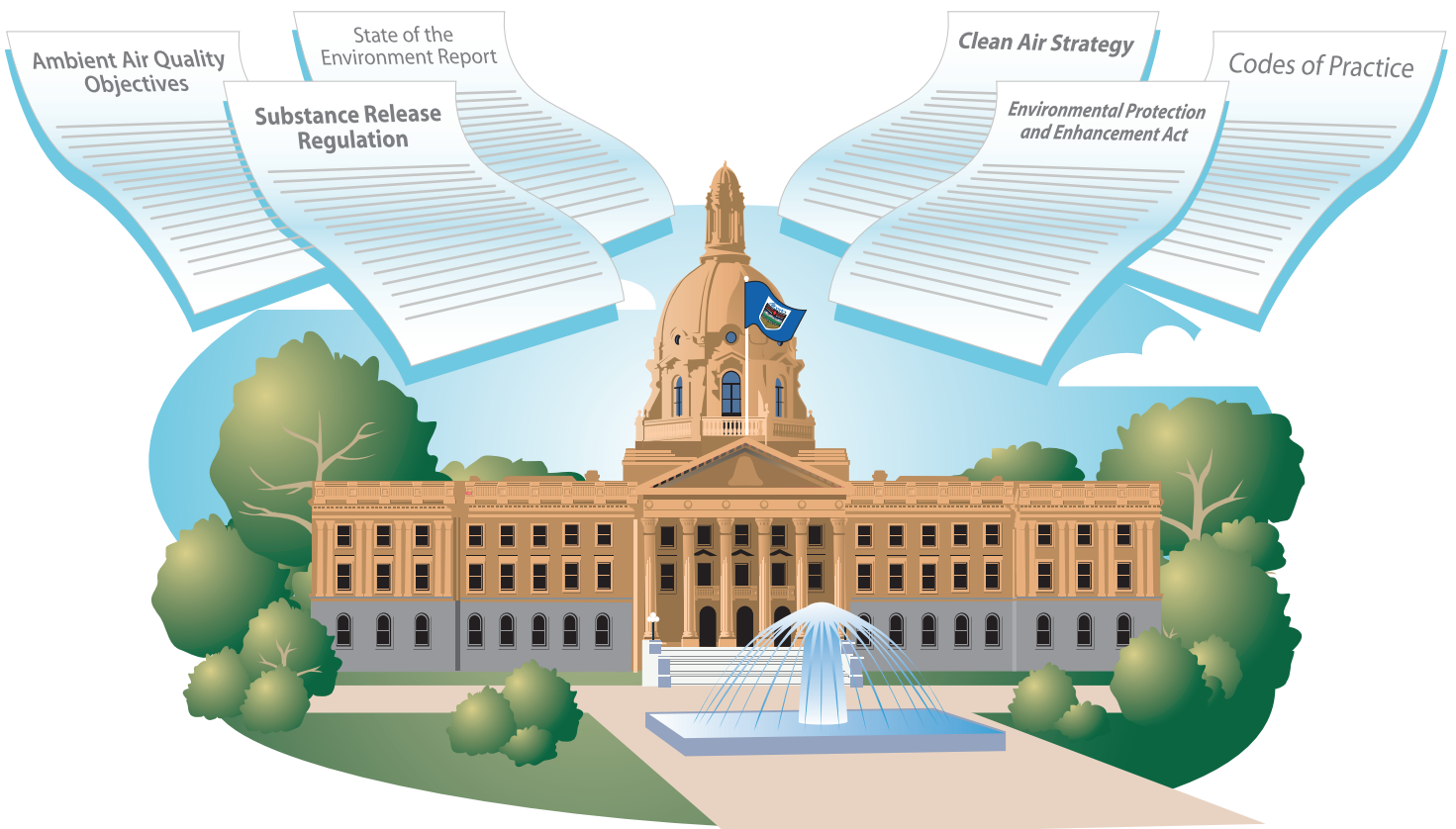
How is Data Used to Manage Air Quality?

Data from local Airsheds is used by industry, governments, researchers and consultants to evaluate ambient air quality and trends, and to:

- Assess whether additional industrial activity in an area should be approved.

- Establish operating conditions for approved industrial facilities.

- Provide information that helps decision makers develop air quality management policies.

- Ensure pollutant concentrations remain below levels that are considered safe for human exposure.

- Assess how pollutant concentrations compare with government air quality standards.

- Support policy decisions.

- Assess impacts of local emission sources on air quality.

- Evaluate long-term trends.

- Inform the public.

- Support research efforts.

- Validate the accuracy of predictive air modeling computer programs.

A primary use of the data is to ensure ambient air quality caused by industry and other sources remain below AAAQO levels.

Ambient Air Quality Objectives

State of the Environment Report

Substance Release Regulation

Clean Air Strategy

Codes of Practice

Environmental Protection and Enhancement Act

How is Air Quality Date Reported and Explained?

Validated data is analyzed and reported to governments, the public and other stakeholders by a variety of organizations.

AIRSHEDS

Airsheds are a local resource for the public to learn about air quality in their region. Airsheds regularly publish valid data results and produce information and educational materials in print and on-line to increase knowledge and awareness of air quality monitoring and data collection. A map of all of Alberta's Airsheds and contact information is available on-line.

INDUSTRY

Industry is obligated to submit monthly and annual compliance reports to the Government of Alberta. This is usually done through Airsheds. Also, individual industries and industry organizations sometimes use air quality data to develop communications materials for public consultation processes.

GOVERNMENT OF ALBERTA

The Government of Alberta uses air quality data to produce a variety of reports available to researchers, industry, policy makers and the public.

NATIONAL AIR POLLUTION SURVEILLANCE (NAPS)

The NAPS network uses air monitoring data to set national standards and policies for evaluating air pollution control strategies, identifying urban air quality trends, and to warn of emerging air pollution issues. NAPS publishes reports derived from the data and compare air quality results with national air quality objectives set out in the Canadian Environmental Protection Act.

Where Can Air Quality Data be Found?

Near real-time air quality data can be found on the Government of Alberta's website. However, circumstances such as instrument malfunctions, calibration times or power failures can render data invalid. Therefore, raw data submitted hourly from Airsheds undergoes quality assurance and control procedures before it is considered valid. All validated data is then stored in a database and made available in graphic and tabled formats. Near real-time and other local air quality data is also available from individual Airsheds.

Definitions

Alberta Ambient Air Quality Objectives (AAAQO)– standards established by the Government of Alberta to define acceptable air quality for environmental and human health.

Air Quality Health Index (AQHI) - 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.

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

National Air Pollution Surveillance (NAPS) – a joint project of provincial and federal governments to monitor and assess ambient air quality in Canadian urban centres.