

Outdoor Air Quality Sulphur Dioxide (SO₂)

How is air quality determined?

Air quality is determined by the concentrations of pollutants in the air. Air quality can vary greatly from one area or community to the next, and from one hour to the next. This is because air quality is influenced by several things, including the types and amounts of pollutants released into the air, as well as weather conditions such as wind and temperature. It is also influenced by natural geographical features such as mountains or bodies of water. For example, valleys can prevent mixing of air which can then cause pollutants to be trapped close to the ground where they can be inhaled.

Concentrations of common air pollutants, including sulphur dioxide (SO₂), are continually monitored at fixed locations in many communities in British Columbia and reported on-line as hourly average concentrations.

Air quality is also reported in the form of an Air Quality Health Index (AQHI) which provides information about current and forecasted (for 36 hours) air quality. The level of health risk is provided on a scale of 1 to 10 or higher, as well as with a label of “low”, “moderate”, “high” or “very high” health risk. Advice on how health risks can be minimized is also provided. To check the current and forecast Air Quality Health Index (AQHI), visit BC Air Quality www.bcairquality.ca/readings.

Please note that the AQHI is derived from measurements of fine particulate matter, ozone and nitrogen dioxide and therefore does not provide information on sulphur dioxide levels.

What is sulphur dioxide?

Sulphur dioxide is a highly reactive, colourless gas. It has an odour similar to the smell of a struck match. When it is released, sulphur dioxide can react with other pollutants in the air to form fine particulate matter which are small solid or liquid particles suspended in air. For more information on particulate matter, see [HealthLinkBC File #65e Particulate Matter and Outdoor Air Pollution](#).

What are the sources of sulphur dioxide in outside air?

In B.C., several industrial sources contribute to sulphur dioxide emissions in the air. The main sources are:

- oil and gas industry;
- pipeline operations;
- marine operations;
- metal smelting; and
- pulp and paper production.

Other sources include large ships and off-road equipment which burn high sulphur containing fuels. Sulphur dioxide may also be released from natural sources such as volcanic eruptions, and in low quantities, from forest fires.

Who is at the highest risk of sulphur dioxide exposure?

The people most often exposed to sulphur dioxide are workers in industrial facilities where sulphur dioxide is used or occurs as a by-product of industrial processes. People who live near

these industries and other point sources can also be exposed to sulphur dioxide.

What are the health concerns of sulphur dioxide?

If you breathe air that contains sulphur dioxide, you may absorb it into your body through your nose and lungs. Sulphur dioxide can be life-threatening if you are exposed to very high levels. These life-threatening levels rarely occur in community settings and are mainly seen in work settings where sulphur dioxide is used or directly generated.

Short-term exposure to high concentrations of sulphur dioxide can cause health concerns especially for people with asthma, chronic obstructive pulmonary disease (COPD), young children, and the elderly. Symptoms may include constriction or tightening of the airways in the lungs, coughing, wheezing, and shortness of breath, as well as irritation of the respiratory system and eyes. For these sensitive individuals, sulphur dioxide exposure can result in increased visits to emergency departments and hospital admissions for respiratory illnesses.

Long-term exposure to sulphur dioxide can also affect your health. It can reduce your ability to breathe deeply or take in as much air for each breath. The particles produced by the reaction of sulphur dioxide with other compounds in the air can penetrate deeply into the lungs. These particles can then damage the lining of the lungs as well as cause other effects in the body. Particles can worsen existing heart and

respiratory disease, including emphysema and bronchitis.

Children who have been chronically exposed to sulphur dioxide may also develop more breathing problems as they get older.

How can you reduce the risk of exposure to sulphur dioxide?

You should limit your exposure during times of high concentrations of air pollution by rescheduling exercise times, avoiding outdoor sources of sulphur dioxide, remaining indoors with windows closed, and reducing indoor sources of sulphur dioxide, including tobacco smoke, matches and unvented gas stoves.

People with medical conditions, such as asthma, chronic respiratory disease or heart disease, should continue to follow a management plan developed with their health care provider. If symptoms such as coughing, wheezing, or shortness of breath occur, you should seek medical attention.

For More Information

For more information about sulphur dioxide in your area, contact your local Ministry of Environment office or visit:

- BC Air Quality www.bcairquality.ca
- BC Lung Association <https://bc.lung.ca/protect-your-lungs/air-quality-lung-health/bc-state-air-report>



BC Centre for Disease Control
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