

Updated January 2022

## Kitimat Sulphur Dioxide (SO<sub>2</sub>) Alert Pilot Update

The Kitimat SO<sub>2</sub> Alert Pilot Study has been updated with a second tool for communicating health information. In Kitimat, SO<sub>2</sub> and the alert system has been integrated into the Air Quality Health Index (AQHI) to provide air quality health information based on SO<sub>2</sub> and other major pollutants.

### What is SO<sub>2</sub>?

Sulphur dioxide (SO<sub>2</sub>) is a colourless gas with a strong odour at higher concentrations. It is produced during the combustion of sulphur-containing fuels and industrial operations involving sulphur-containing materials. The largest sources of SO<sub>2</sub> in B.C. include the upstream oil and gas sector, metal smelting facilities, the pulp and paper sector and marine vessels.

### How does it affect my health?

Short-term exposures to elevated SO<sub>2</sub> levels can cause the air passages in the lungs to constrict or tighten, leading to breathing difficulties and tightening in the chest. Those most sensitive to the effects of SO<sub>2</sub> include persons with chronic respiratory disease such as asthma. Symptoms may worsen during vigorous exercise or hard physical labour. See [HealthLinkBC](#) for a summary of health recommendations and Health Canada's [Human Health Risk Assessment for Sulphur Dioxide](#) for more detailed information.

### What is the SO<sub>2</sub> alert system?

In January 2018, the Ministry of Environment and Climate Change Strategy (the Ministry) began running an SO<sub>2</sub> Alert System in Kitimat. Alerts are posted at [gov.bc.ca/sulphur-dioxide-alerts](https://gov.bc.ca/sulphur-dioxide-alerts) whenever the 1-hour SO<sub>2</sub> concentrations reach or exceed 36 ppb at any of three community monitoring sites in Kitimat. Members of the public can also receive email or text message alerts by subscribing to the provincial air quality subscription service at

[gov.bc.ca/airquality-subscriptionservice](https://gov.bc.ca/airquality-subscriptionservice) (select "Kitimat"). Each alert message includes information on 1-hour SO<sub>2</sub> concentrations over the past hour and associated health guidance, including advice for those most sensitive to SO<sub>2</sub> exposure.

### What are the AQHI and AQHI-Plus?

The AQHI is the most widely used public communication tool in Canada to communicate air quality information and health. It uses a coloured scale from 1 to 10+ that reflects the level of health risk associated with air quality. It is based on the observed relationship between daily mortality and concentrations (averaged over three hours) of three pollutants: nitrogen dioxide, ozone, and fine particulate matter.

The AQHI-Plus is an adjustment to AQHI that provides a mechanism to communicate short-term health impacts of pollutants not otherwise captured by the AQHI. An AQHI-Plus for PM<sub>2.5</sub>, based on hourly PM<sub>2.5</sub> concentrations, has been adopted in B.C. to better reflect the short-term variations of fine particulate matter during the wildfire season and other smoky periods of the year.

The AQHI-Plus for SO<sub>2</sub> has been developed to alert the Kitimat public to those levels of SO<sub>2</sub> that may affect both the general population and persons with chronic respiratory conditions like asthma (see Table 1 for more details). The higher of the three-pollutant AQHI and the AQHI-Plus is publicly reported at <https://www.env.gov.bc.ca/epd/bcairquality/data/aqhi.html?id=AQHI-Kitimat> and [https://weather.gc.ca/airquality/pages/bcaq-026\\_e.html](https://weather.gc.ca/airquality/pages/bcaq-026_e.html). A special note is attached to the AQHI value when additional guidance beyond the standard AQHI message is warranted due to elevated SO<sub>2</sub> concentrations.

### How long will the pilot study run?

The AQHI-Plus for SO<sub>2</sub> will be piloted in Kitimat until sufficient data is available for its conclusive evaluation. The project involves an ongoing assessment for further application. During this period, the Ministry will continue to operate the SO<sub>2</sub> alert system, and a decision on next steps will follow the project review.

### Where can I find SO<sub>2</sub> measurements for communities outside of Kitimat?

Most recent SO<sub>2</sub> data from all B.C. monitoring sites are available through a [map-based interface](#) or [quick links](#) to specific areas of the province.

### Ministry Contact

For more information, consult our website at: [gov.bc.ca/sulphur-dioxide-alerts](http://gov.bc.ca/sulphur-dioxide-alerts) or contact the Ministry at <https://www2.gov.bc.ca/gov/content/enviroment/air-land-water/air/contact-bc-air-quality>

**Table 1.** Approach for calculating AQHI-Plus for SO<sub>2</sub>, along with updated SO<sub>2</sub> alert messages. AQHI is based on measurements of PM<sub>2.5</sub>, NO<sub>2</sub> and O<sub>3</sub> at Kitimat Whitesail using three-pollutant AQHI formulation with AQHI-Plus adjustment for PM<sub>2.5</sub>. The AQHI-Plus for SO<sub>2</sub> is based on SO<sub>2</sub> measurements at Whitesail, Riverlodge and Haisla Village. Special notes are added only where additional guidance beyond the standard AQHI messages is warranted.

AQHI (based on PM <sub>2.5</sub> , NO <sub>2</sub> , O <sub>3</sub> )	1-hour SO <sub>2</sub> (ppb)	AQHI-Plus for SO <sub>2</sub> (based on 1-hr SO <sub>2</sub> )	Reported AQHI Value	Special Note
1-10+	0-35	N/A	AQHI	None
1-3	36-184	N/A	AQHI	*
4-10+	36-184	N/A	AQHI	None
1-6	≥185	7	7	**
7-10+	≥185	7	AQHI	None

\*Elevated levels of sulphur dioxide have been reported. Persons with chronic respiratory conditions such as asthma should consider reducing or rescheduling strenuous outdoor activities if experiencing symptoms. No effects are expected for the general population. For more information, visit [B.C.'s Ministry of Environment and Climate Change Strategy](#).

\*\* Elevated levels of sulphur dioxide have been reported have been reported and the AQHI has been adjusted to reflect an increased health risk for both sensitive populations and the general population. Consider reducing or rescheduling strenuous outdoor activities if experiencing symptoms. For more information, visit [B.C.'s Ministry of Environment and Climate Change Strategy](#).