

February 2020

Kitimat SO₂ Alert Pilot Update

The Kitimat SO₂ Alert Pilot Study has been updated to include a second tool for receiving air quality-health information: the Air Quality Health Index (AQHI).

What is SO₂?

Sulphur dioxide (SO₂) 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 SO₂ 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 SO₂ 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 SO₂ 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 SO₂ alert system?

In January 2018, the Ministry of Environment and Climate Change Strategy (the Ministry)

began running an SO₂ Alert System in Kitimat. Alerts are posted at www.gov.bc.ca/sulphur-dioxide-alerts when 1-hour SO₂ concentrations reach or exceed 36 ppb at any of three community monitoring sites in Kitimat. Members of the public can receive these alerts directly by e-mail message through the new provincial air quality subscription service at <https://aqss.nrs.gov.bc.ca> (select "Kitimat"). Each alert message includes information on 1-hour SO₂ concentrations over the past hour and associated health guidance, focussing on advice for those most sensitive to SO₂ exposure.

What are the AQHI and AQHI-Plus?

The AQHI is the most widely used tool in Canada to communicate with the public about air pollution and health. It is a 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 of three pollutants (nitrogen dioxide, ozone and fine particulate matter) averaged over three hours.

The AQHI-Plus provides a mechanism to include pollutants that may cause short-term health impacts not otherwise captured by the AQHI. An AQHI-Plus for PM_{2.5}, based on hourly PM_{2.5} concentrations, is being piloted in BC to better reflect the short-term variations of this pollutant during the wildfire season and other smoky periods of the year. The AQHI-Plus for

SO₂ has been developed to alert the Kitimat public to those levels of SO₂ 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: <http://www.env.gov.bc.ca/epd/bcairquality/data/aqhi.html?id=AQHI-Kitimat> and 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 SO₂ concentrations.

How long will the pilot study run?

The AQHI-Plus for SO₂ will be piloted in Kitimat

through 2020 and then re-assessed for further application. During this period, the Ministry will continue to operate the SO₂ alert system, and a decision on next steps will follow the project review.

Where can I find SO₂ measurements for communities outside of Kitimat?

Recent SO₂ data from all B.C. monitoring sites can be accessed through a [map-based interface](#) or [quick links](#) to specific areas of the province.

Ministry Contact

For more information, consult our website at: www.gov.bc.ca/sulphur-dioxide-alerts or e-mail the Ministry at: BCAirQuality@gov.bc.

Table 1. Approach for calculating AQHI-Plus for SO₂, along with updated SO₂ alert messages. The three-pollutant AQHI is based on measurements of PM_{2.5}, NO₂ and O₃ at Kitimat Whitesail. The AQHI-Plus for SO₂ is based on SO₂ 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 _{2.5} , NO ₂ and O ₃)	1-hour SO ₂ (ppb)	AQHI-Plus (based on 1-hour SO ₂)	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 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](#).