

Temporary Alberta Airshed Wildfire Bulk Reporting Protocol:

Temporary Protocol for Fine Particulate Matter Exceedance Reporting by Alberta Airsheds Experiencing Wildfire Smoke

Purpose

The Temporary Alberta Airshed Wildfire Bulk Reporting Protocol (herein, the protocol) is a protocol that is intended to manage reporting of high numbers of fine particulate matter (PM_{2.5}) exceedances generated during wide-spread and persistent poor air quality episodes as a result of wildfire smoke. The large number of exceedances of the Alberta Ambient Air Quality Objective (AAAQO) and Alberta Ambient Air Quality Guideline (AAAQG) for PM_{2.5} that occur during these episodes can result in a high volume of calls to Alberta Environmental and Dangerous Goods Emergencies (Alberta EDGE; also known as the “environmental hotline”) and can be a reporting burden for Alberta Airsheds. To ensure that resources are available to manage emerging high-risk issues at Alberta EDGE and Alberta Airsheds during prolonged wildfire smoke episodes, the protocol aims to simplify and consolidate reporting of exceedances temporarily. Public health messaging around wildfire smoke episodes is separate from the reporting of exceedances to Alberta EDGE. High-priority public health messaging around poor air quality episodes is handled by the Alberta Air Quality Notification Protocol,¹ which acts as a mechanism to provide updates on poor air quality episodes to Albertans. The Alberta Government works together with Environment and Climate Change Canada to determine when Special Air Quality Statements should be issued and takes into account information such as data from air quality monitoring stations, satellite images, forecasts of smoke movement, local reports and road cameras. Air quality advisories may also be issued by Alberta Health Services and Indigenous Services Canada.

Application of the Protocol

The protocol is a temporary measure to be implemented for Alberta Airsheds or Alberta Government operated monitoring stations experiencing wildfire smoke or if invoked by written notification during other parts of the year. The protocol is intended to reduce the volume of PM_{2.5} AAAQO and AAAQG exceedances reported to Alberta EDGE. Alberta Airsheds may² follow the protocol in either of two circumstances:

- Between the dates of April 1 and October 31³; or,
- When written⁴ notification is received from Alberta EDGE indicating that the protocol is in effect (triggers used by Alberta EDGE to initiate the protocol are discussed below).

When the protocol is in place, reporting of exceedances of parameters other than PM_{2.5} must follow the Air Monitoring Directive requirements for exceedance and performance reporting in Chapter 9⁵.

The protocol applies to all monitoring stations within an Alberta Airshed, except for any monitoring stations that have reporting requirement specifically tied to an EPEA approval (refer to Protocol Section 7), or unless otherwise authorized in writing by the Director.

1 <https://open.alberta.ca/publications/alberta-air-quality-notification-protocol-what-you-need-to-know>

2 When in effect, the protocol provides Alberta Airsheds with an opportunity to reduce their reporting burden. Alberta Airsheds are not required to follow the protocol. However, if not following the protocol, Alberta Airsheds must otherwise follow the Air Monitoring Directive requirements for exceedance and performance reporting in Chapter 9

3 Beginning for 2024, the protocol will be automatically activated between the dates of April 1 and October 31. These dates may be reviewed and adjusted as needed in future years.

4 Written notification constitutes email notification received from Alberta EDGE.

5 <https://open.alberta.ca/publications/air-monitoring-directive-2016>

When the protocol is enabled via written notification from Alberta EDGE the protocol may apply to one Alberta Airshed, several Alberta Airsheds, or all Alberta Airsheds. This will be explicitly specified in the written notification from Alberta EDGE.

Triggers for Activating the Protocol

Automatic Activation

The protocol will be automatically activated between the dates of April 1 and October 31. Historical data⁶ indicates that the period between April 1 and October 31 has the highest incidence of reported wildfires in Alberta⁷. Automatic activation of the protocol may be evaluated in the future and may be amended or adjusted based on experience and feedback.

Written Notification from Alberta EDGE

The protocol may be activated by Alberta EDGE outside of April 1 to October 31, via written notification from Alberta EDGE directly to Alberta Airsheds. The following triggers are used to determine when to manually activate the protocol. These triggers may indicate that there is wide-spread and persistent poor air quality due to high PM_{2.5} concentrations attributable to wildfire smoke, however it does not explicitly mean that the protocol is in effect.

- Alberta EDGE receiving a high call volume⁸ of wide-spread exceedances of the 1-hour PM_{2.5} AAAQG or the 24-hour PM_{2.5} AAAQO as a result of wildfire smoke.
 - o High call volumes are indicative of a wide-spread air quality episode that is taxing the resources of Alberta Airsheds, Alberta Environment and Protected Areas, or Alberta EDGE.
- A Special Air Quality Statement is issued from Environment and Climate Change Canada⁹ indicating that a routine air quality event (as defined in the Alberta Air Quality Notification Protocol) is occurring as a result of wildfire smoke. Special Air Quality statements are issued under the following circumstances:
 - o The Air Quality Health Index will be 7 or higher for 2 or more hours,
 - o When wildfire smoke is impacting an Alberta community, or
 - o Situations where reduced visibility is expected as a result of wildfire smoke.
- Special Air Quality Statements issued as a result of one of the preceding circumstances occurring as a result of wildfire smoke may be used as a trigger to activate the protocol.

Triggers for Rescinding the Protocol

Automatic Rescindment

Alberta Airsheds that follow the protocol between April 1 and October 31 must cease following the protocol effective November 1 unless Alberta EDGE has provided specific direction via written notification directly to Alberta Airsheds. Reporting of measured exceedances must resume as specified in the Alberta Air Monitoring Directive.

Written Notification from Alberta EDGE

If Alberta EDGE has activated the protocol outside of April 1 to October 31, Alberta EDGE will send written notification to Alberta Airsheds to rescind the protocol, indicating that the protocol is no longer in effect. Alberta EDGE could also rescind automatic activation of the protocol (i.e., within April 1 and October 31) through written notification, if deemed necessary. Once the protocol has been rescinded and is no longer in effect, reporting of measured exceedances must resume as specified in the Alberta Air Monitoring Directive. Rescinding the protocol is at the discretion of Alberta EDGE but will generally adhere to the following triggers. These triggers may indicate that wide-spread and persistent poor air quality due to high PM_{2.5}

⁶ <https://wildfire.alberta.ca/resources/historical-data/historical-wildfire-database.aspx>

⁷ Outside of this period, impacts from wildfire smoke are less common, with the majority of PM_{2.5} in the atmosphere resulting from anthropogenic sources. (Aklilu, Yayne-abebe; Adams, Cristen; Wentworth, Gregory R.; Mazur, Maxwell; Dabek-Zlotorzynska, Ewa. 2023. An approach to inform air quality management through receptor source apportionment and thermodynamic modelling of fine particulate matter in Red Deer, Alberta, Canada. Atmospheric Research 283, 106583)

⁸ High call volumes are situations where the volume of incoming calls related to PM_{2.5} AAAQO or AAAQG exceedances significantly limit the ability for Alberta EDGE to receive and prioritize other environmental and dangerous goods emergencies. Determination of high call volume is left to the discretion of Alberta EDGE.

⁹ In addition to Special Air Quality Statements air quality advisories can be issued by Alberta Health Services and/or Indigenous Services Canada. Air Quality Advisories contain similar information to a Special Air Quality Statement and may supplement Special Air Quality Statements.

concentrations attributable to wildfire smoke is no longer occurring, however it does not explicitly mean that the protocol has been rescinded and is no longer in effect.

- Call volumes at Alberta EDGE return to normal, or are steadily occurring at a rate that enables Alberta EDGE to appropriately respond to emerging environmental and dangerous goods emergencies at available staffing levels.
- Special Air Quality Statements issued in response to routine air quality events occurring as a result of wildfire smoke have been rescinded, or are no longer in place due to the wildfire smoke conditions ceasing to trigger the continued need for the Special Air Quality Statement.

Bulk Reporting Protocol

1. The protocol comes into effect:
 - a. Between the dates of April 1 and October 31 and applies to all Alberta Airsheds (as defined in the Alberta Air Monitoring Directive Chapter 1: Appendix A¹⁰); or,
 - b. When written¹¹ notification is received from Alberta EDGE indicating that the protocol in effect (triggers used by Alberta EDGE to initiate the protocol are discussed above). In this case, the protocol applies only to the Alberta Airshed(s) explicitly specified in the written notification received from Alberta EDGE.
2. When in effect, Alberta Airsheds are not required to report measured exceedances of the **1-hour PM_{2.5} AAAQG** for monitoring stations to which the protocol applies. The submission of the real time data to the Alberta Real-time Ambient Air Website (i.e., Alberta Air Monitoring Directive Clause RC13-S) will fulfill the immediate reporting requirement for the 1-hour PM_{2.5} AAAQG for Alberta airsheds (i.e., Alberta Air Monitoring Directive Clause RC 14-A) when the protocol is in effect.
3. When in effect, Alberta Airsheds may submit one exceedance summary¹² to Alberta EDGE encompassing a calendar month period on a monthly basis. Each report must summarize **all measured exceedances of the 24-hour PM_{2.5} AAAQO** for each monitoring station to which the protocol applies. This exceedance summary fulfills the immediate reporting requirement for Alberta airsheds (i.e., Alberta Air Monitoring Directive Clause RC 14-A) when the protocol is in effect. An exceedance summary is not required if there were no measured exceedances.
4. Alberta EDGE will generate one reference number per monitoring station and the reference number will cover a calendar month period. Each reference number will apply to all reportable 24-hour PM_{2.5} AAAQO exceedances from an individual monitoring station over each calendar month period. All reportable 24-hour PM_{2.5} AAAQO exceedances from an individual monitoring station must be reported starting from the beginning of the calendar day on which the protocol is in effect. A new reference number will be generated by EDGE per station for each calendar month until the protocol is rescinded and is no longer in effect¹³. Reference numbers will be provided by email following receipt of the monthly exceedance summary.
5. Exceedance summaries, as outlined in the protocol, must be received by the end of the month following the month of data collection¹⁴. Exceedance summaries must be emailed to Alberta EDGE at edge@gov.ab.ca. Additional reporting, as indicated in Alberta Air Monitoring Directive Clause RC 14-D, and further defined under “Written Reports” (also referred to as seven-day letters) in Section 4(1) of Alberta’s *Release Reporting Regulation*¹⁵ is not required for 24-hour PM_{2.5} AAAQO exceedances while the protocol is in effect.
6. When the protocol is rescinded and no longer in effect, reporting of measured exceedances must resume as specified in the Alberta Air Monitoring Directive. The last reporting period will conclude at the end of the calendar day the protocol is rescinded and is no longer in effect (e.g., October 31 under automatic rescindment). Exceedance

¹⁰ <https://open.alberta.ca/publications/air-monitoring-directive-2016>

¹¹ Written notification constitutes email notification received from Alberta EDGE.

¹² Note that exceedance summaries, as outlined in the protocol are distinct from the requirements for monthly reports outlined in Alberta Air Monitoring Directive Clause RC 15-O

¹³ Exceedance summaries are organized by station for ease in issuing a reference number for each station. It could take a maximum of 72 hours to receive an incident reference number from Alberta EDGE following submission of a monthly exceedance summary; please plan accordingly.

¹⁴ For example, an exceedance summary must be received by the end of May for measured exceedances in April.

¹⁵ https://open.alberta.ca/publications/1993_117

summaries for the last reporting period must be received by the end of the month following the month of data collection (e.g., by November 30 under automatic rescindment).

7. This protocol applies to monitoring stations operated by an Alberta Airshed, including those operated on behalf of an *Environmental Protection and Enhancement Act* approval holder with general requirements for air quality monitoring¹⁶. Exceptions include those monitoring stations which meet any of the following criteria:
 - a. Monitoring for PM_{2.5} which occurs as a result of direct requirements in an operating approval (i.e., an industrial compliance monitoring station). Immediate reporting of 1-hour PM_{2.5} AAAQG and 24-hour PM_{2.5} AAAQO exceedances is still required, as per the approval requirements, unless otherwise authorized in writing by the Director.
 - b. Monitoring for PM_{2.5} as required by an order (e.g., Environmental Protection Order) or requirements from any provincial agency or department other than Alberta Environment and Protected Areas.

Industrial operations are still required to immediately report any releases or exceedances of emission limits. If a PM_{2.5} AAAQO or AAAQG is exceeded in response to a release or emissions limit exceedance, the PM_{2.5} AAAQO or AAAQG exceedance must be reported immediately.

¹⁶ Examples of general requirements for air quality monitoring are clauses such as the following: "The approval holder shall operate, or cause to be operated, a regional Airshed network for the monitoring of ambient air, in a manner satisfactory to the Director.", and "The approval holder shall operate or cause to be operated the [Alberta Airshed name] [air quality monitoring network name]."

Notification Template

If the protocol is activated through written notification from Alberta EDGE, the following template is intended to be used to place the protocol into effect:

The following trigger has indicated that a wide-spread, persistent poor air quality episode is occurring as a result of wildfire smoke:

- [List trigger (e.g., Special Air Quality Statement Issued)]

As a result the Alberta Airshed Wildfire Bulk Reporting Protocol has been placed into effect under reference #[XXXX] in the following Alberta Airshed(s):

- [List applicable Alberta Airshed(s)]

Alberta Airsheds may follow the protocol for the reporting of PM_{2.5} exceedances. Reporting of all other parameters must continue to follow the Air Monitoring Directive.

For more information, please contact:

[Title of person responsible for issuing]

When the protocol is activated through written notification from Alberta EDGE, the following template is intended to be used to rescind the protocol:

The Alberta Airshed Wildfire Bulk Reporting Protocol is rescinded and is no longer in effect under reference # [XXXX] in the following Alberta Airshed(s):

- [List applicable Alberta Airshed(s)]

Alberta Airsheds must return to reporting exceedances as specified in the Air Monitoring Directive.

For more information, please contact:

[Title of person responsible for issuing]