

Fort Air Partnership: 2016 Exceedances Summary

The data Fort Air Partnership collects is compared to Alberta Ambient Air Quality Objectives (AAAQO) set by the Government of Alberta.

Exceedances are immediately reported and follow up information provided within seven days if required. If the source is likely local, industry operators nearby are notified so they can take whatever corrective action may be necessary. A complete listing of the AAAQO compounds and values is available on the Alberta Environment and Parks website.



2016 exceedances of the AAAQO for a one-hour average measurement are shown in the following table.

Parameter	Exceedances	Date(s)	Attributed Cause
Respirable Particulate PM _{2.5}	2	Jan 22	Wintertime smog
	1	Feb 8	Local industrial operations
	20	May 11, 19, 20	Forest fire smoke
	1	May 18	Local traffic
	2	Nov 11, 30	Local brush burning
	9	Jan 8, Mar 28, May 9, 18, Jun 8, Nov 17	Undetermined
Sulphur Dioxide SO ₂	51	Jan 5, 13, 16 Mar 9, 20, 21, 27, 28 Apr 4, 12, 21 May 11, Jul 15, Aug 6, 30 Oct 12, 13, 15, 19, 23, 27, 30 Nov 3, 24, 26	Local Industry

The following table shows 2016 AAAQO exceedances for a 24-hour average measurement.

Parameter	Exceedances	Date(s)	Attributed Cause
Fine Particulate PM _{2.5}	1	Jan 22	Wintertime inversion
	8	May 12, 19	Forest fire smoke
	2	May 18, Dec 1	Undetermined
Sulphur Dioxide SO ₂	9	Jan 13, Mar 20, Apr 21, 22, Oct 13, 23, 27, Nov 24, 26	Local Industry

Summary of Exceedances – Five Year Period

The following table shows AAAQO exceedances for the past five years.

Parameter Measured		2016	2015	2014	2013	2012
Ammonia (NH ₃)	1-hr	0	4	0	0	0
Benzene (C ₆ H ₆)	1-hr	0	2	5	0	1
Carbon Monoxide (CO)	1-hr	0	0	0	0	0
	8-hr	0	0	0	0	0
Ethyl Benzene (C ₆ H ₅ CH ₂ CH ₃)	1-hr	0	0	0	0	0
Ethylene (C ₂ H ₄)	1-hr	0	0	0	0	0
	3-day	0	0	0	0	0
	Annual	0	0	0	0	0
Hydrogen Sulphide (H ₂ S) ^{***}	1-hr	0	3	0	147	163
	24-hr	0	1	0	29	28
Nitrogen Dioxide (NO ₂)	1-hr	0	0	0	0	0
	24-hr	0	0	0	0	0
	Annual	0	0	0	0	0
Ozone (O ₃)	1-hr	0	3	0	0	0
Styrene (C ₆ H ₅ CH=CH ₃)	1-hr	0	0	0	0	0
Sulphur Dioxide (SO ₂) [*]	1-hr	51	34	26	6	7
	24-hr	9	6	3	2	0
	30-day	2	0	0	0	0
	Annual	0	0	0	0	0
Respirable Particulate Matter (PM _{2.5}) ^{**}	1-hr	35	144	13	15	28
	24-hr	11	27	12	11	9
Toluene (C ₆ H ₅ CH ₃)	1-hr	0	0	0	0	0
Xylenes (o-, m- and p- isomers)	1-hr	0	0	0	0	0
Total		108	224	59	210	236

* The annual increase of ambient SO₂ exceedances over the last few years is specific to the Redwater station that is adjacent to Agrium Redwater Fertilizer Operations. Agrium is aware of the issue and during its August 2017 turnaround, Agrium will be making major equipment replacements in its sulphuric acid plant. This is expected to significantly reduce these ambient air events.

** The majority of the PM_{2.5} exceedances in 2015 were caused by forest fire smoke during 3 days in July of 2015.

*** The Scotford 2 station was moved in April of 2014 because of pipeline construction beginning in May. The new location for the station, named Scotford Temporary had no nearby wetlands, hence the decrease in H₂S exceedances from 2014 to 2015.

Air Quality Health Index Summary

The Air Quality Health Index (AQHI) was reported from five FAP stations in 2016. Edmonton stations are not operated by FAP but the Edmonton AQHI (which is calculated as an average of the three stations collecting data required to calculate the AQHI in Edmonton) is included here for comparison purposes.

FAP Station Name	Hours Monitored	Low Risk %	Moderate Risk %	High Risk %	Very High Risk %
Bruderheim	5603	99.25%	0.75%	0.00%	0.00%
Elk Island	8491	98.65%	1.35%	0.00%	0.00%
Fort Saskatchewan	7827	93.96%	5.97%	0.06%	0.01%
Gibbons	5964	97.27%	2.67%	0.07%	0.00%
Lamont County	8484	96.62%	3.18%	0.20%	0.00%
Edmonton	8784	91.50%	8.39%	0.11%	0.00%

The higher the AQHI number, the greater the health risk and need to take precautions. The index describes the level of health risk associated with the AQHI number as 'low', 'moderate', 'high' or 'very high', and suggests steps people can take to reduce exposure. The following table details the occurrence of air quality events in 2016 and the number of hours with a high or very high risk AQHI rating at each station during each event.

Air Quality Event Dates	FAP Continuous Air Quality Monitoring Station										Total Hours	Air Quality Event Cause
	Bruderheim		Elk Island		Fort Sask.		Lamont County		Gibbons			
	High Risk	Very High Risk	High Risk	Very High Risk	High Risk	Very High Risk	High Risk	Very High Risk	High Risk	Very High Risk		
Jan 22							1				1	Wintertime inversion
Feb 8							1				1	Local gravel pit operations
May 9							2				2	Undetermined
May 12							3				3	Forest fire smoke
May 18, 19, 20					6		6		4		16	Forest fire smoke
Jun 8							1				1	Undetermined
Nov 11							1				1	Brush burning Elk Island Park
Nov 17							1				1	Undetermined
Nov 30							1				1	Brush burning Elk Island Park
Total Hours					6		17		4		27	