

# 2023 Air Quality Monitoring Results



## Air Quality Health Index (AQHI) Ratings

The AQHI is calculated by the Government of Alberta using data collected at FAP air monitoring stations. The AQHI is a measure of air quality as it pertains to human health. AQHI levels are categorized as low, moderate, high, or very high risk. Risk to health increases as the index level rises. Go to [our website's AQHI page](#) for more information. Seven of FAP's 10 continuous air monitoring stations monitor substances whereby the AQHI can be calculated.

FAP – 2023		Risk Level (% of time in each)			
Station Name	Hours Monitored	Low	Moderate	High	Very High
Bruderheim	8486	83.93%	13.30%	1.89%	0.88%
Elk Island	8526	86.03%	10.22%	2.78%	0.97%
Fort Saskatchewan	8406	76.21%	19.47%	3.06%	1.26%
Gibbons	8361	81.90%	14.40%	3.03%	0.67%
Lamont	8523	84.96%	11.76%	2.71%	0.57%
Redwater	8315	85.35%	10.73%	2.65%	1.27%
Thorhild County*	6624	86.22%	9.28%	2.40%	2.10%
<b>Total Hours</b>	<b>57241</b>	<b>47760</b>	<b>7350</b>	<b>1517</b>	<b>614</b>

## Hours with a High or Very High Risk AQHI Rating

FAP Continuous Air Quality Monitoring Station																
Event Dates	Bruderheim		Elk Island		Fort Sask.		Gibbons		Lamont		Redwater		Thorhild County*		Total Hours	Attributed Cause
	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	High Risk	Very High Risk	High Risk	Very High Risk		
Jan 1					1										1	Wintertime inversion
Jan 4			1												1	Wintertime inversion
Jan 9 10,11	15	3	21		23		5		12						79	Wintertime inversion
Jan 15							1								1	Wintertime inversion
Mar 19,20, 21			2		14		8				4				28	Wintertime inversion
Nov 11							1								1	Wintertime inversion
Apr 1					1										1	Regional meteorology conditions
May 16-23	12	60	32	42	34	58	37	19	29	35	20	56	19	54	507	Wildfire smoke and
May 27-28,	3		3		1		2		6						15	Wildfire smoke
June 7-9	7		20		16		11		12		5		5		76	Wildfire smoke and
Jun 10-16	4		18		24		31		29	1	40		24		171	Wildfire smoke
Jun 19			2		2				1		1				6	Wildfire smoke
Jun 29									2						2	Summer-time smog
Jul	51	12	60	26	60	22	56	22	72	13	60	29	38	48	569	Wildfire smoke and
Aug	3		4		17		18		7		20		11		80	Wildfire smoke and
Sept	65		74	15	64	26	84	15	61		67	20	60	37	588	Wildfire smoke
Jul 2											3	1			4	Structure fire
Sep 18,25													2		2	Agriculture operations
<b>Total Hours</b>	160	75	237	83	257	106	254	56	231	49	220	106	159	139	2132	

\* The FAP Keith Purves Portable station operated in Thorhild County near Newbrook from February 1 to December 31, 2023.

## Summary of Exceedances

Air quality measurements are compared continuously to 1, 24-hour and 3-day [Alberta Ambient Air Quality Objectives](#) (AAAQO). Any exceedance of an AAAQO is reported to the Alberta Government and the likely cause of the exceedance investigated. The following table details what substances exceeded an AAAQO, when they occurred and if it can be determined, the likely cause.

One Hour Exceedances			
Parameter	Exceedances	Date	Attributed Cause
PM <sub>2.5</sub>	1	January 4	Wintertime inversion
Ethylene	1	January 9	Industry coupled with wintertime inversion
PM <sub>2.5</sub>	47	January 9-11	Wintertime inversion
PM <sub>2.5</sub>	1	January 15	Wintertime inversion
Ozone	3	March 20	Regional meteorological conditions
Benzene	3	May 12-15	Under Investigation
PM <sub>2.5</sub>	393	May 16-23	Wildfire smoke
H <sub>2</sub> S	1	May 25	Undetermined
Ozone	7	May 19,21	Wildfire smoke and summertime smog
Ozone	8	May 27,28	Wildfire smoke and summertime smog
PM <sub>2.5</sub>	101	June 8-19	Wildfire smoke
Ozone	28	June 4-13	Wildfire smoke and summertime smog
Ozone	1	June 29	Summertime smog
Benzene	18	Jul 21,22,24 Aug 3, Sep 2,8,9,10,11,13	Under Investigation
H <sub>2</sub> S	1	August 6	Natural due to wetlands
H <sub>2</sub> S	2	September 25	Undetermined
Ozone	1	August 6	Summertime smog
Ozone	1	August 28	Wildfire smoke and summertime smog
PM <sub>2.5</sub>	1253	July (545 over 6 days), August (90 over 3 days) September (618 over 12 days)	Wildfire smoke
PM <sub>2.5</sub>	4	July 2	Structure fire
Styrene	1	July 9	Under Investigation
PM <sub>2.5</sub>	2	September 19, 25	Agricultural operations
H <sub>2</sub> S	3	October 29	Undetermined

24-Hour Exceedances			
Parameter	Exceedances	Date	Attributed Cause
PM <sub>2.5</sub>	1	January 4	Wintertime inversion
PM <sub>2.5</sub>	20	January 8-11	Wintertime inversion
PM <sub>2.5</sub>	4	January 14-15	Wintertime inversion
PM <sub>2.5</sub>	5	March 20	Wintertime inversion
PM <sub>2.5</sub>	2	April 1	Regional meteorological conditions
PM <sub>2.5</sub>	35	May 16-25	Wildfire smoke
PM <sub>2.5</sub>	6	June 2-3	Wildfire smoke
PM <sub>2.5</sub>	45	June 8-14	Wildfire smoke
PM <sub>2.5</sub>	3	June 16	Wildfire smoke
PM <sub>2.5</sub>	64	12 days in July	Wildfire smoke
PM <sub>2.5</sub>	41	7 days in August	Wildfire smoke
PM <sub>2.5</sub>	64	12 days in September	Wildfire smoke
H <sub>2</sub> S	1	October 29	Undetermined

3-Day Exceedances			
Parameter	Exceedances	Date	Attributed Cause
Ethylene	1	January 7-9	Industry coupled with wintertime inversion
Ethylene	2	January 8-10	Industry coupled with wintertime inversion
Ethylene	2	January 9-11	Industry coupled with wintertime inversion
Ethylene	1	January 10-12	Industry coupled with wintertime inversion

### Summary Exceedances: 2018-2023

The following table details the number of exceedances for substances measured by FAP across all stations in 2023 and the five years previous.

Parameter Measured		2023	2022	2021	2020	2019	2018
Ammonia (NH <sub>3</sub> )	1-hr	-	-	-	-	-	-
Benzene (C <sub>6</sub> H <sub>6</sub> )	1-hr	24	-	-	-	-	-
Carbon Monoxide (CO)	1-hr	-	-	-	-	-	-
	8-hr	-	-	-	-	-	-
Ethyl Benzene (C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> CH <sub>3</sub> )	1-hr	-	-	-	-	-	-
Ethylene (C <sub>2</sub> H <sub>4</sub> )	1-hr	1	-	-	-	-	-
	3-day	6	-	-	-	-	-
	Annual	-	-	-	-	-	-
Fine Particulate Matter (PM <sub>2.5</sub> )	1-hr	1745	118	393	6	119	810
	24-hr	290	53	60	19	38	117
Hydrogen Sulphide (H <sub>2</sub> S)	1-hr	7	19	16	7	9	20
	24-hr	1	1	1	1	1	4
Nitrogen Dioxide (NO <sub>2</sub> )	1-hr	-	-	-	-	-	-
	24-hr	-	-	-	-	-	-
	Annual	-	-	-	-	-	-
Ozone (O <sub>3</sub> )	1-hr	49	3	3	-	24	6
Styrene (C <sub>8</sub> H <sub>8</sub> )	1-hr	2	-	-	-	-	-
Sulphur Dioxide (SO <sub>2</sub> )	1-hr	-	-	-	-	-	-
	24-hr	-	-	-	-	-	-
	30-day	-	-	-	-	-	-
	Annual	-	-	-	-	-	-
Toluene (C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub> )	1-hr	-	-	-	-	-	-
Xylenes (o-, m- and p- isomers)	1-hr	-	-	-	-	-	-
<b>Total</b>		<b>2125</b>	<b>194</b>	<b>473</b>	<b>33</b>	<b>191</b>	<b>957</b>