

# AIR

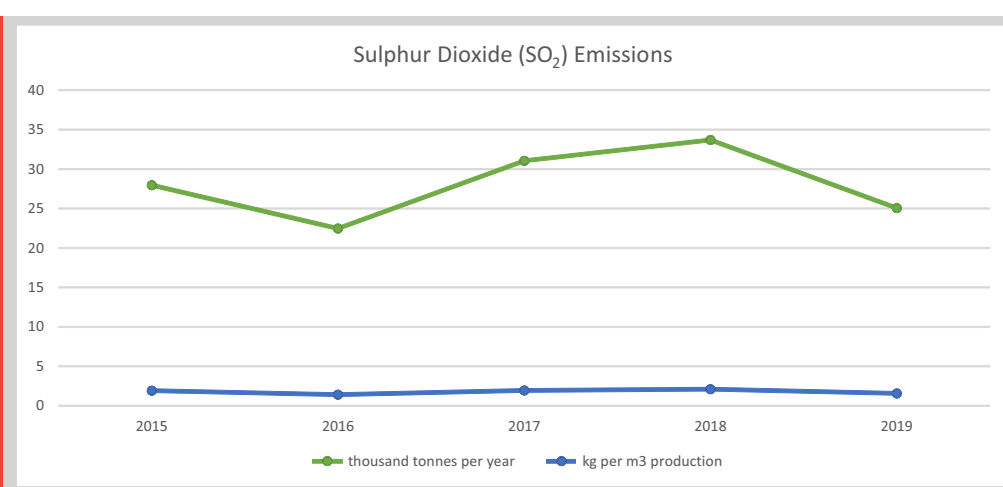


We are committed to monitoring and managing our air emissions to protect good air quality for our employees and neighbours in the region. Recognizing the importance of the local airshed for both people and the environment, we take every effort to maintain a safe, reliable and stable operation while pursuing technological advances and new processes that can improve our performance. If we experience a plant upset that could cause offsite odours or temporarily affect emission limits from our operation, we inform both the regulator and local communities of the situation and our efforts to resolve the issue.

## SULPHUR DIOXIDE (SO<sub>2</sub>) EMISSIONS

Emissions of sulphur dioxide (SO<sub>2</sub>) have decreased significantly over the last couple of years due to the start-up and successful operation of our \$1.6 billion emissions reduction facilities. This includes a flue gas desulphurization (FGD) unit that removes sulphur from the burner flue gas of two cokers. Emissions in 2019 were lower than previous years due to reduced diverting and an extended coker unit outage.

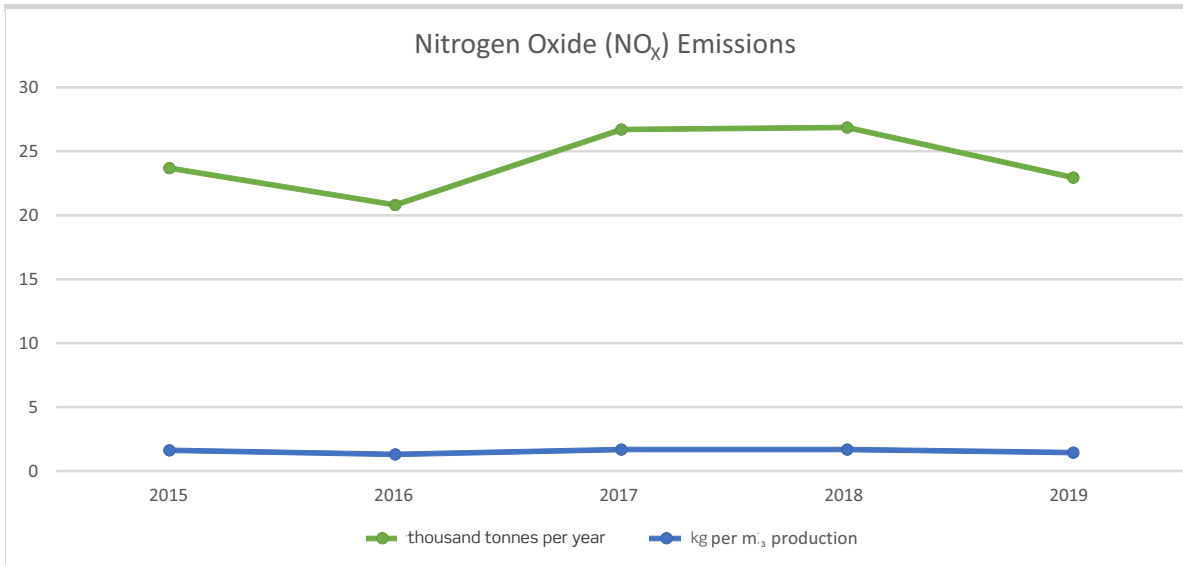
Emissions are further reduced through an additional FGD unit connected to a third coker. This unit is also linked to an on-site fertilizer plant operation by a third party that prepares a marketable product from the recovered sulphur.



## NITROGEN OXIDE (NO<sub>x</sub>) EMISSIONS

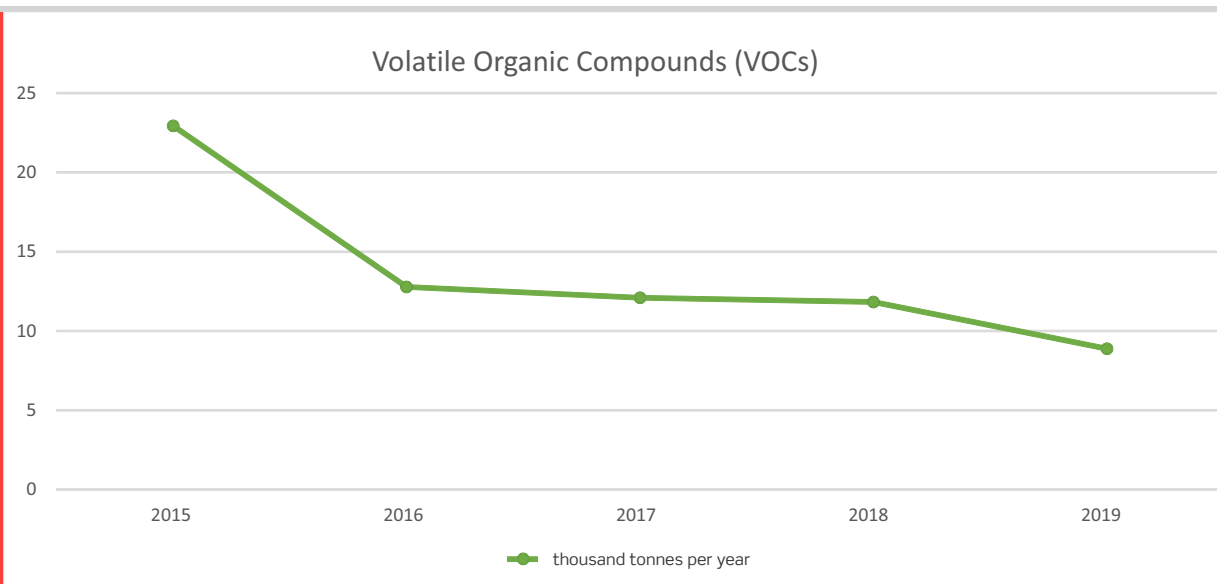
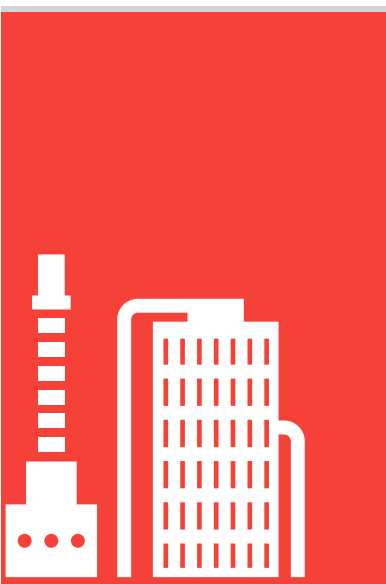
Our mining fleet meets the NO<sub>x</sub> emission standards of Environment and Climate Change Canada and, as equipment reaches the end of service life, will be replaced to meet Tier 4 specifications. Toward this, we are working with manufacturers to develop and test new emission technologies. Currently at our operation, we are evaluating two Tier 4 haulers as well as two additional haulers using different emissions mitigation components.

Overall, we minimize NO<sub>x</sub> emissions with the strategy of moving the maximum volume of material while consuming the least amount of fuel. This focuses on several areas, including fuel quality, operating and maintenance practices, mine plan efficiency, and knowledge sharing.



## VOLATILE ORGANIC COMPOUNDS (VOCs) AND FUGITIVE EMISSIONS

To reduce VOCs and fugitive emissions, we conduct annual inspections on our operating units to identify leaks and ensure timely repair. In 2014, the Government of Alberta set out standard procedures to also be used in sampling for other air quality indicators, such as VOCs. This, combined with the recently deployed LeakDAS system, provides a more accurate accounting of leak volumes and emissions measurement.



## REGIONAL AIR QUALITY

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Regional air quality is monitored independently by the Wood Buffalo Environmental Association (WBEA). Headquartered in Fort McMurray, this multi-stakeholder association operates the most integrated and intensive focus on air and terrestrial monitoring in any one area in Canada, with 17 air monitoring stations and 23 passive monitoring stations. WBEA is a working partner with the Environmental Monitoring and Science Division (EMSD) of Alberta Environment and Parks (AEP) which oversees the Oil Sands Monitoring (OSM) program.

The association comprises 40 members representing Indigenous communities, government, industry operators and environmental non-government organizations. A senior Syncrude manager is the current president of its governance committee.

WBEA informs Syncrude and other operators immediately of any ambient air exceedences recorded at their stations in the region. This triggers an investigation into possible sources that may be contributing to elevated readings. If a cause in our operations is identified, procedures are implemented to minimize air quality impacts, which can include reducing production rates. A follow-up report is typically submitted to the Alberta Energy Regulator within seven days if required. In 2019, there were no exceedences attributed to Syncrude operations based on meteorological conditions and plant performance at the time.

WBEA also coordinates regional terrestrial and forest health monitoring, through passive and active air and deposition sampling. A Traditional Knowledge Committee (TKC) helps develop and oversee community monitoring programs, such as berry quality studies.

Continuous Air Quality Health Index (AQHI) readings, air monitoring reports, overviews of projects and study results can be found on the WBEA website.

The Wood Buffalo Environmental Association operates Alberta's most extensive ambient air monitoring network.



**24** hours a day,  
**365** days a year.

## ODOURS

We recognize community concerns about regional odours. To study the issue, Syncrude participates in the multi-stakeholder Fort McKay Air Quality and Odours Advisory Committee, which is comprised of the Alberta Energy Regulator, Alberta Health, the Fort McKay First Nation, the Fort McKay Métis Local, Alberta Environment and Parks, Environment and Climate Change Canada, and industry. This group is working collaboratively through 17 recommendations from a 2016 report which includes:

- improving consistency in industrial and ambient air quality monitoring,
- assessing the long-term and cumulative health effects of emissions,
- developing a better understanding of the link between industry emissions and air quality and odours in Fort McKay, and
- improving response and communication protocols for odour complaints.

In the event of an operational upset or scheduled maintenance which could cause odours or affect offsite air quality, we notify potentially impacted communities. As well, local residents can report odour concerns through the 24-hour Alberta Energy and Environmental Response hotline at 1-800-222-6514. Government authorities then notify local industrial operators of the complaint and require them to assess their operations for possible sources of odours and take remediating action.

In 2019, there were 22 odour occurrences in the region either attributed to, or potentially attributed to, Syncrude's operation (i.e. some occurrences are included where meteorological conditions at the time were such that our operations could not be ruled out as a possible source).

Air Performance Data	2015	2016	2017	2018	2019
Sulphur dioxide (thousand tonnes per year)	27.95	22.46	31.05	33.68	25.06
Sulphur dioxide emission intensity (kg per m <sup>3</sup> production)	1.91	1.41	1.95	2.12	1.58
Sulphur dioxide emission intensity (tonnes per thousand barrels production)	0.30	0.22	0.31	0.34	0.25
Nitrogen oxides (thousand tonnes per year)	23.68	20.81	26.70	26.87	22.96
Nitrogen oxides emission intensity (kg per m <sup>3</sup> production)	1.62	1.31	1.68	1.69	1.44
Nitrogen oxides emission intensity (tonnes per thousand barrels production)	0.26	0.21	0.27	0.27	0.23
Volatile organic compounds (VOCs) (thousand tonnes per year)	22.94	12.77	12.09	11.83	8.88
Volatile organic compounds (VOCs) (kg per m <sup>3</sup> production)	1.57	0.80	0.83	0.81	0.51
Volatile organic compounds (VOCs) (tonnes per thousand barrels production)	0.25	0.13	0.13	0.13	0.08

<sup>1</sup> Syncrude reports annually to the National Pollutant Release Inventory. A comprehensive annual breakdown of substances reported, including VOCs, can be found at <https://www.ec.gc.ca/inrp-npri/> and typing "Syncrude" in the Facility Name search field.

Key Air Indicators	2015	2016	2017	2018	2019	2020
Diverter stack usage (hours per year)	20.79	207.76	1	35.01	0	< 292
Sour gas flaring (tonnes per day SO <sub>2</sub> )	21.19	3.76	20.84	7.3	5.9	< 5
Main stack sulphur dioxide (hours greater than 16.4 tonnes per hour)	0	0	0	0	0	0
Main stack sulphur dioxide (90-day rolling average >245 tonnes)	0	0	0	0	0	0
Main stack nitrogen oxides (# hours > 1.5 tonnes per hour)	0	0	0	0	0	0
Main stack opacity (# hours > 40%)	5	8	4	26	1	< 5
Ambient air exceedences H <sub>2</sub> S hourly (#)	23	84	46	2	0	0
Ambient air exceedences H <sub>2</sub> S 24-hour period (#)	3	8	4	0	0	0
Ambient air exceedences SO <sub>2</sub> hourly (#)	0	0	2	1	0	0
Ambient air exceedences SO <sub>2</sub> 24-hour period (#)	0	0	0	0	0	0
Odour complaints (# attributed to Syncrude)	7	26	39	19	22	0