

Internet Reporting

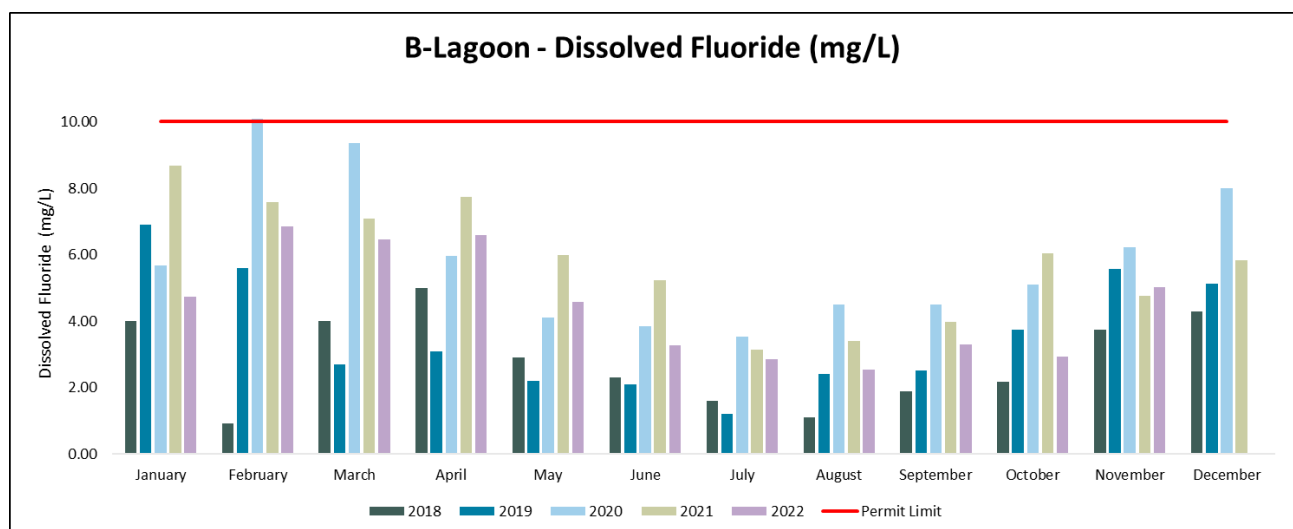
It was largely on the strength of Rio Tinto's voluntary pollution prevention (P2) planning process that the Province of British Columbia issued, in 1999, a "multimedia" environmental permit for our smelter operations. This was the first such permit ever issued in BC and establishes standards, and monitoring and reporting requirements, for a comprehensive range of emissions, effluents, and wastes. The P2 planning process is believed to have played a significant role in the more than 60 per cent reduction in environmental permit non-compliances achieved at the Kitimat smelter since 1996.

Permit reporting

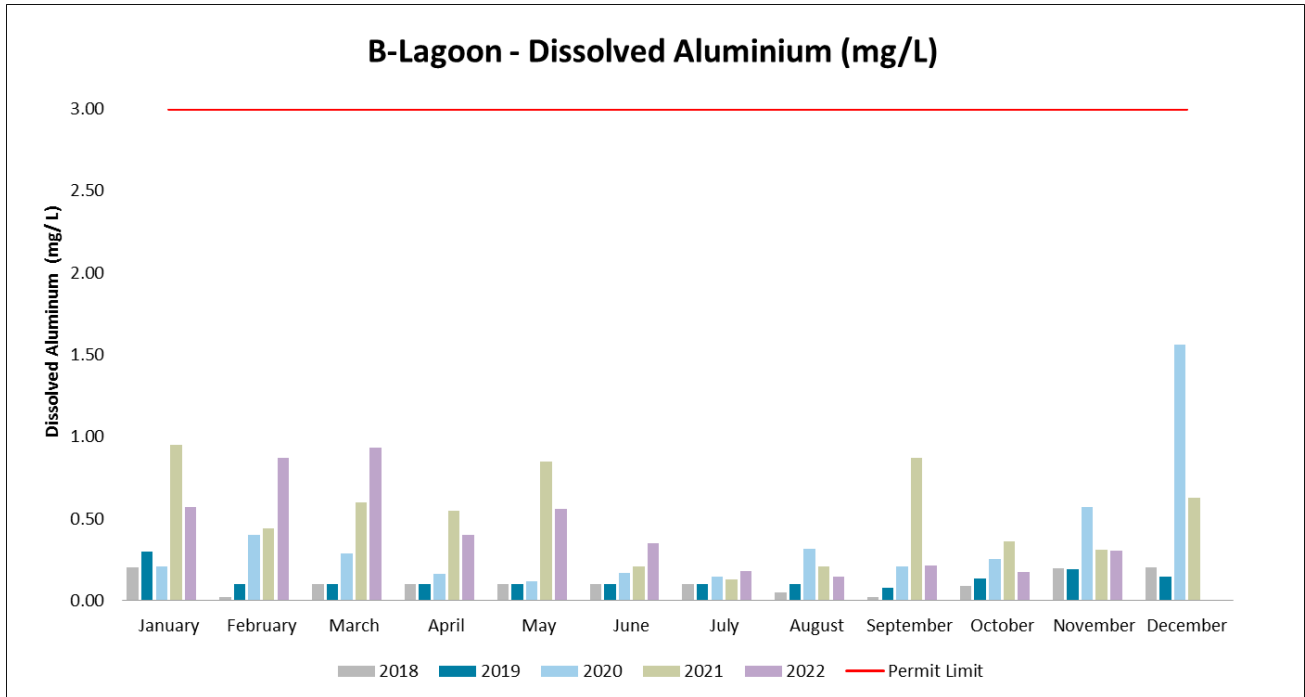
Rio Tinto's P2 Permit requires continuous reporting on several key parameters – from emissions to effluents, and other wastes. The following tables and graphs satisfy the P2 Permit clause 8.1.5 for internet reporting on the B-Lagoon, Reduction Roof vent Emissions, Sulphur dioxide emissions and emission control device upsets. Additional information on our environmental performance and improvement initiatives can be found in Rio Tinto's [annual environmental report](#).

B - Lagoon

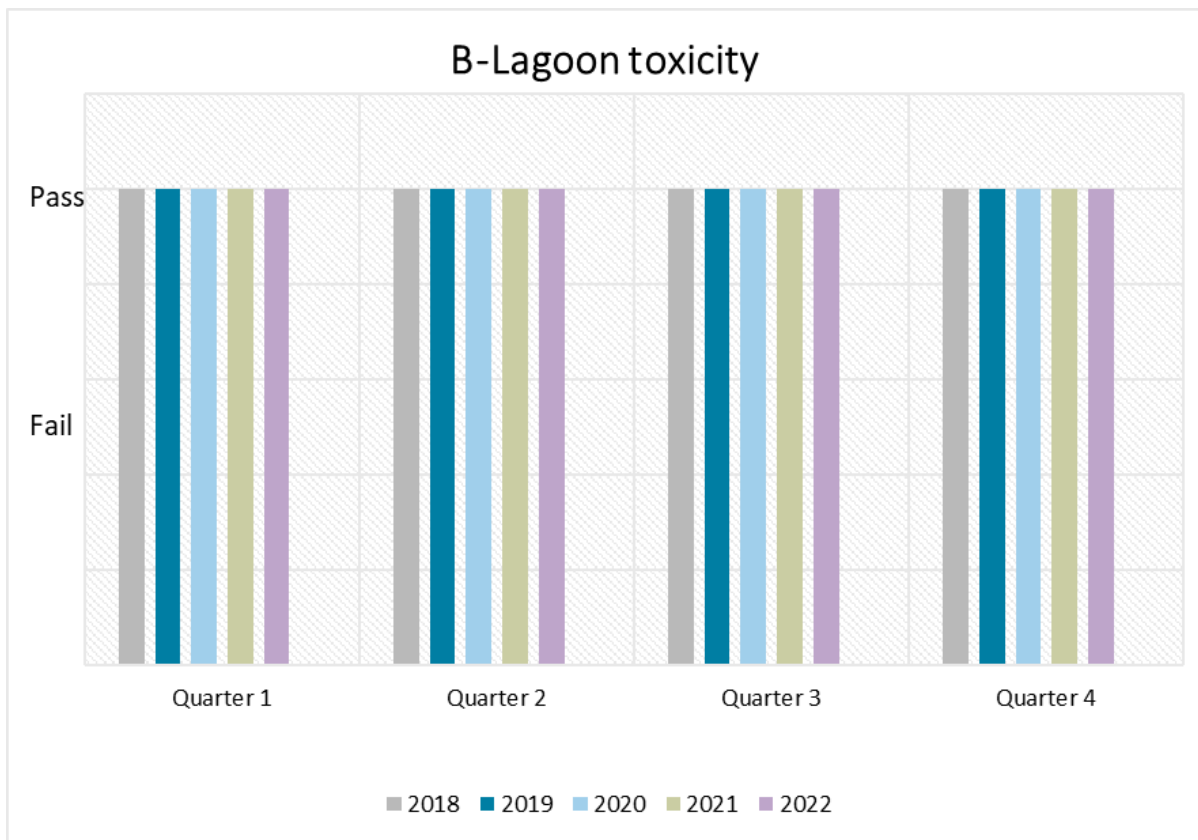
Permit section	Details
3.1 B Lagoon	<p>Dissolved fluoride originates mainly from the leaching of a legacy (no longer used) landfill, as well as from raw-material losses. Ongoing housekeeping and storm water diversion work is conducted to reduce the fluoride concentration. B lagoon is sampled daily for dissolved fluoride and the results from the daily samples for each month are averaged and shown on the below graph.</p> <p>The permit limit for this parameter is 10.0 mg/L and it is applied to the daily results.</p>



Permit section	Details
3.1 B Lagoon	<p>Dissolved aluminium originates when alumina comes into contact with precipitation, as well as from raw material losses. B lagoon is sampled daily for dissolved aluminium and the results from the daily samples for each month are averaged and shown on the below graph.</p> <p>The permit limit for this parameter is 3.0 mg/L and it is applied to the daily results.</p>

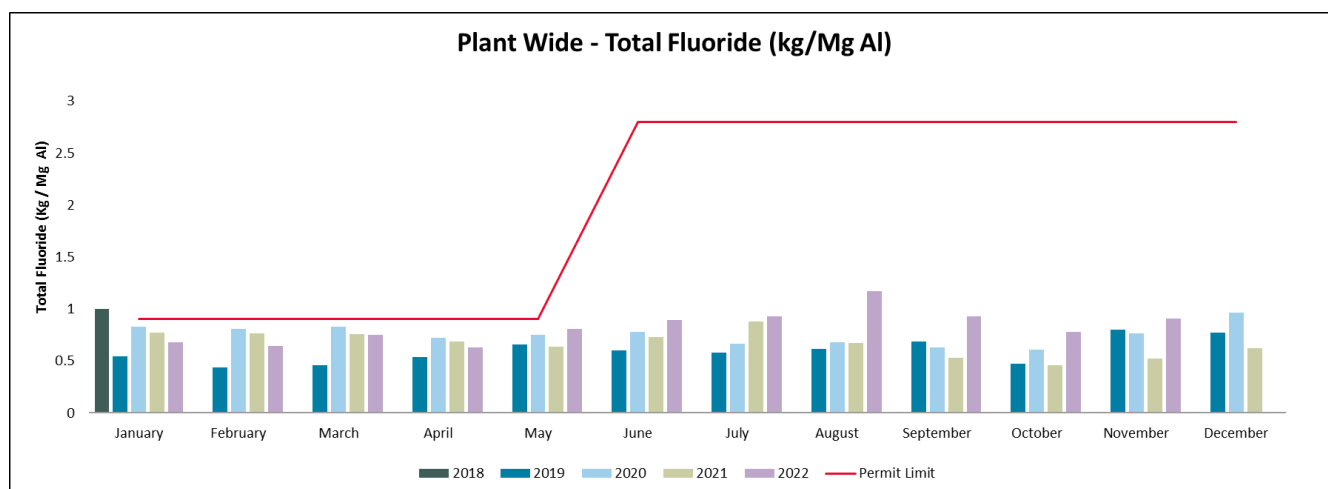


Permit section	Details
3.1 B Lagoon	The 96LC50 test measures the effect of the sampled water on rainbow trout over 96 hours. This test is completed quarterly and B lagoon and the test routinely passes with 100% survivability.

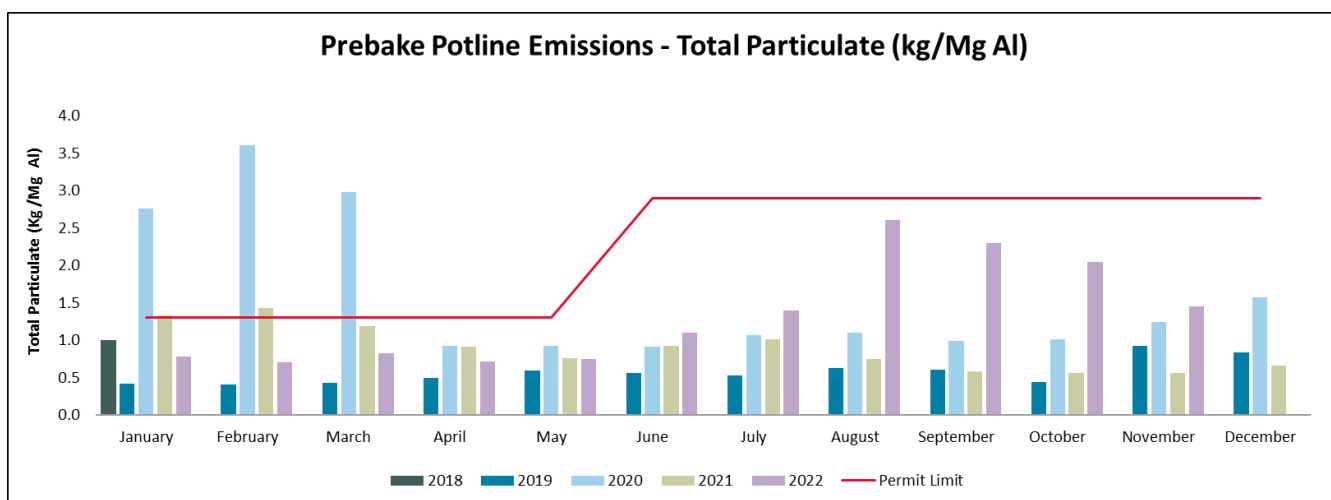


Prebake Potline Emissions

Permit section	Details
4.10 Fluoride Emissions	<p>Fluoride total is produced during the electrolytic process. Majority of the fluoride emissions are captured and treated by the two gas treatment centres, however some fugitive emissions are released through the reduction building roof vents.</p> <p>The fugitive emissions are monitored and reported on a monthly basis against a monthly plant wide fluoride total permit limit of 0.9 kg of Ft/ Mg Al is used to determine compliance. The total permit limit was temporary amended to 2.8 kg of Ft/Mg Al in June of 2022 due to the re-start of the smelter following the labour dispute. The plant wide permit limit also includes sources of fluoride total from the gas treatment centers, the pallet storage building and the fume treatment center.</p>

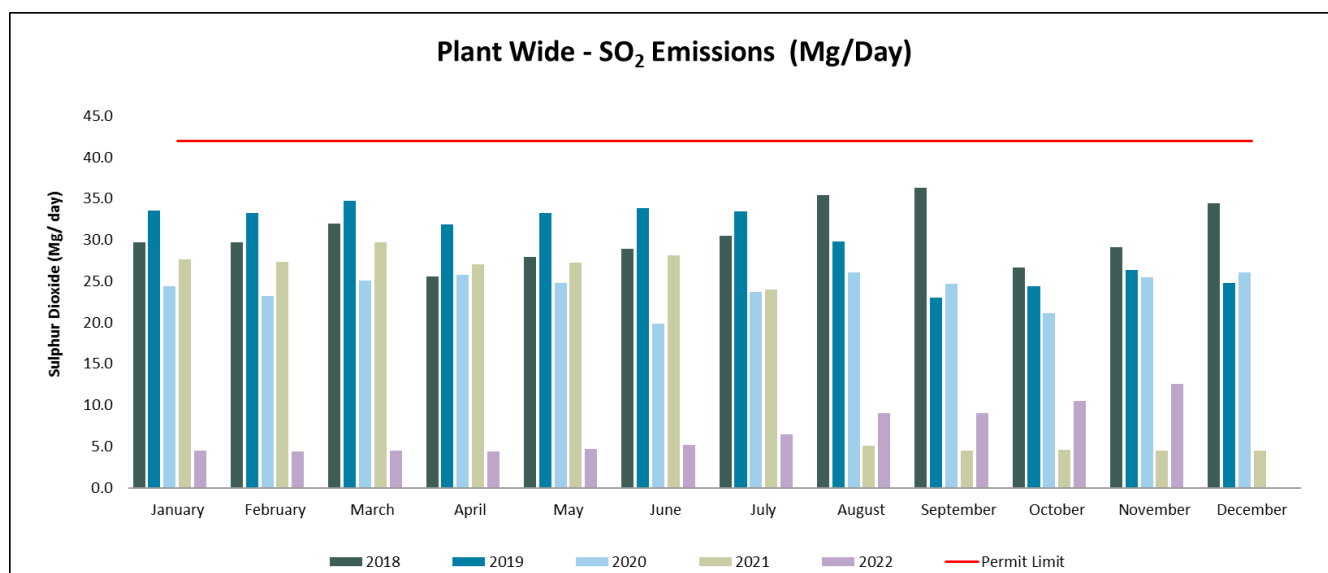


Permit section	Details
4.1.2.1 Prebake Potline Emissions	<p>Total particulate are air-borne solids that are composed mainly of alumina and are produced during the electrolytic process. Most particulate emissions are captured by the two gas treatment centres, however some fugitive particulate emissions are released through the reduction building roof vents.</p> <p>The fugitive emissions are monitored and reported on a monthly basis against a monthly plant wide total particulate permit limit of 1.3 kg of TP/ Mg Al is used to determine compliance. The total permit limit was temporary amended to 2.9 kg of PM /Mg Al in June of 2022 due to the re-start of the smelter following the labour dispute. This permit limit also includes sources of total particulate from the gas treatment centers.</p>



Plant Wide Sulphur Dioxide

Permit section	Details
4.2 SO ₂ emissions	<p>Sulphur dioxide (SO₂) originates from the green coke (a by-product of petroleum refining) used to manufacture anodes, and is released both during coke calcining, anode baking and anode consumption during the electrolytic process.</p> <p>The permit limit of 42 Mg/day and is displayed in the graph below.</p>



Permit section	Details
7.1.1.2	<p>Emission control devices are pieces of equipment that are designed to reduce contaminants emitted to the atmosphere from operations through scrubbing, filtration or incineration. Emission control devices are critical to reducing BC Works environmental footprint.</p> <p>At BC Works there are many minor emission control devices located throughout the operation as well as a number of critical devices such as the Fume Treatment Center (FTC), Gas Treatment Center (GTC), Liquid Pitch Incinerator (LPI) & Pyroscrubber. An upset or bypass of an emissions control device occurs when the operation continues to produce emissions, but the emissions control device is no longer treating the emissions as per specification for a period of time. Upsets may required in order to completed scheduled maintenance safely, when scheduled maintenance works results in an upset or bypass of an emissions control device the work must be approved prior to commencing.</p> <p>The below table is a 12 month summary for all scheduled upsets.</p>

2022: Planned Emission control device upset/bypass list occurring in 2022

Date	Equipment	Upset Type	Duration	Reason for upset
March 10	GTC East	Planned	27 m	Electrical maintenance
June 9	GTC West	Planned	2h	Airlift Commissioning
June 16	GTC East	Planned	4h 30m	Airlift installation
June 20	GTC East	Planned	6h	Airlift installation
June 30	LPI	Planned	1h 47 m	Maintenance
July 12	GTC East	Planned	6h	Airlift installation
July 12	FTC	Planned	9h 30m	Routine Maintenance
July 14	GTC East	Planned	5h 50m	Airlift installation
Aug 18	FC-3	Planned	11h 10min	Annual preventative Maintenance
Aug 19	LPI	Planned	8h 10min	Annual preventative Maintenance
Nov 08	FTC	Planned	8h 24 min	Approved for maintenance

Permit section	Details
NA	<p>This section has been added upon request of Stakeholders. Starting January 2023, a cumulative annual table for planned and unplanned upsets will be added.</p> <p>The table below is a summary for all Emergency upset/bypass since September 2022.</p>

Emergency emission control device upset/bypass list occurring since September 2022.

Date	Equipment	Upset Type	Duration	Reason for upset
06-Sep-22	LPI	Emergency	1h 41min	Unknown
07-Sep-22	LPI	Emergency	1h 56min	Unknown
09-Sep-22	DC-11	Emergency	15 days	Cartridges not operational
21-Sep-22	FTC	Emergency	57 min	Power outage
21-Sep-22	East GTC	Emergency	1h 50min	Power outage
21-Sep-22	East GTC	Emergency	50min	Power outage
21-Sep-22	West GTC	Emergency	2h 10min	Power outage
21-Sep-22	West GTC	Emergency	2h 10min	Power outage
21-Sep-22	LPI	Emergency	1h 20min	Power outage
21-Sep-22	FC-3	Emergency	1h 16min	Power outage
27-Sep-22	FC-3	Emergency	1h 30min	Loss of communication
04-Oct-22	FTC	Emergency	3h 14min	Issues with LRP-017 that prevented going back to mode 1
27-Oct-22	FTC	Emergency	6h 57min	Localized fire in the FTC ducting system
28-Oct-22	FTC	Emergency	4h 38min	Embers seen at the bottom of cooling tower and inlet plenum
29-Oct-22	FTC	Emergency	13h 2min	Embers seen at the inlet plenum
29-Oct-22	552 Pitch Incinerator	Emergency	2h 41min	Vacuum spiked causing it to trip
8-Nov-22	FTC	Emergency	4h 52min	Water lines feeding the cooling tower froze during planned maintenance
10-Nov-22	FTC	Emergency	49 min	Failure of the fluidization fan belt
11-Nov-22	FTC	Emergency	25 min	Draft pressure too low after fire move
12-Nov-22	FTC	Emergency	33 min	High temperature inlet of cooling tower
14-Nov-22	FTC	Emergency	11 min	E-stop pressed by accident