

Letter No: HILS/HKD/24-25/881

19 June 2024

To,

The Member Secretary  
State Pollution Control Board, Odisha  
"Paribesh Bhawan"  
A/118, Nilakantha Nagar  
Unit - VIII,  
BHUBANESWAR - 751012

Sub: **Environmental Statement for the financial year 2023-2024**

Dear Sir,

Please find enclosed herewith the Annual Environmental Statement in Form V for our Aluminium Smelter of M/s Hindalco Industries Limited at Hirakud for the financial year **2023-2024**.

This is for your kind information.

Thanking you,

Yours truly,

Encl.: As above

A handwritten signature in blue ink, appearing to read "Pratap Sahu".

Plant Head – Smelter Hirakud

Copy to the:

1. Deputy Director General of Forests (C), IRO, MoEF&CC, Bhubaneswar – 751023
2. Regional Director, Central Pollution Control Board, Zonal Office, Kolkata-700107
3. Regional Officer, State Pollution Control Board, Sambalpur - 768 002

Hindalco Industries Limited

Hirakud Complex, Hirakud - 768 016, District : Sambalpur, Odisha, India

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W : www.hindalco.com

Registered Office : 21st Floor, One International Center, Tower 4, Senapati Bapat Marg,  
Prabhadevi, Mumbai 400013

Corporate ID No.: L27020MH1958PLC011238

**"FORM-V"**  
(See Rule – 14)

Environmental Statement for the financial year ending the 31<sup>st</sup> March 2024.

**PART- A**

- 01 Name and Address of the owner / Occupier Of the Industry, Operation or process : Mr. Pratap Sahu  
Plant Head- Smelter  
Hindalco Industries Limited,  
Hirakud Smelter  
PO: HIRAKUD – 768016  
Dist.: Sambalpur (ODISHA)
- 02 Industry category  
Primary - ( STC code ) : 684. 1  
Secondary - ( SIC code ) : 3720
- 03 Production Capacity - Units : 2.16 LTPA (as per CTO)  
177748.62 MT (2023-24)
- 04 Year of Establishment : 1959
- 05 Date of the last Environmental Statement : 27<sup>th</sup> September 2023  
Submitted

**PART- B**

**Water and Raw Material Consumption**

01. <u>Water Consumption:</u>	(m <sup>3</sup> )	<u>2022-2023</u>	<u>2023-2024</u>
		Process & Cooling :	190801
Domestic :	194175	190150	
Total :	384976	356315	

Name of the Products	Water consumption per unit of product	
	During the Previous FY 2022-2023	During current FY 2023 – 2024
Aluminium Metal	2.19 m <sup>3</sup> per ton of aluminium	2.00 m <sup>3</sup> per ton of aluminium

02. Raw Material Consumption:

Name of the Raw Materials	Name of the Products	Consumption of the Raw materials per unit of Output (Kg/Ton)	
		During the Current Financial Year 2022 - 2023	During the Current Financial Year 2023 - 2024
Alumina	Aluminium Metal	1918.6	1914.6
Aluminium Fluoride (as F)		18.09	16.80
Net Carbon		421.1	420.3

**PART- C**

**Pollution Discharged to Environment / Unit of output.  
(Parameters as specified in the Consent Order)**

Pollutants	Quantity of Pollutants discharged (mass/day)		Concentrations of Pollutants in discharges (mass/ volume)	Percentage of Variation from prescribed standards with reasons.
(a) Water	No Discharge of untreated effluent outside the plant premises		No Discharge of untreated effluent outside the plant premises	All the Plant effluents /sewage water are being treated & recycled in Plant ETP/STP to maintain the ZLD status. The treated water is being reused for cooling and gardening purposes.
(b) Air	Total Fluoride (Kg/ MT. Al.)		PM (mg/ Nm3)	Prescribed limiting Standards as per CTO
	Stack (FTP)	Pot room Fugitive	Stack (FTP)	Stack (FTP): Total Fluoride - 0.3 Kg/ MT of Al Stack (FTP): PM - 100 mg/ Nm3 Pot room Fugitive: Total Fluoride - 0.4 Kg/ MT of Al.
*Annual avg.	0.08	0.30	12.72	All values are within the limits

## PART- D

**Hazardous Wastes Management**  
[as specified under Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016]

	Hazardous Wastes	Total Generation quantity		Total Disposal quantity	Total Storage quantity
		During FY 2022-23	During FY 2023-24	During FY 2023-24	Closing stock of FY 2023-24
	<b>(a) From Process</b>				
1	Used oil, KL	27.40	21.06	15.33	5.81
2	Waste containing oil, MT	3.28	11.35	14.19	2.32
3	Spent Pot Lining (Cathode residues), MT	3520.56	51126.37	56240.95	36117.58
4	Aluminium Dross, MT	7000.0	5341	5302	475.97
5	Aluminium Dross Residue, MT	1213.0	2304	2429.18	18.50
6	Pot Duct Cleaning Waste, MT	182.18	136	108.56	27.44
7	Rejected Refractory of the furnace, MT	393.0	343	316.18	66.26
8	Shot Blasting Dust (containing Fluoride), MT	95.0	240	240.11	0.75
9	Ladle cleaning residue, MT	37.99	52	52	0
10	Asbestos waste, MT	0	0	0	0
11	Rejected AlF <sub>3</sub> Bags, MT	3.94	6.03	6.03	0
12	Fluoride-contaminated waste (spilled waste from potline), MT	284.36	444	377.79	66.91
13	Drain cleaning sludge, MT	21.31	0	0	0
14	Floor sweeping & housekeeping waste, MT	82.17	130.50	105.18	27.01
15	Used Anode butts, MT	24099.52	24295.59	24262.82	39.70
16	Discarded container/Liners used for Hazardous chemicals, nos	326	2.19	2.19	2.42
17	Spent Ion Exchange Resin containing toxic materials, MT	0	0.09	0.155	0.08

**(b) From Pollution Control Facilities**

Hazardous Wastes	Total Generation quantity		Total Disposal quantity	Total Storage quantity
	During FY 2022-23	During FY 2023-24	During FY 2023-24	Closing stock of FY 2023-24
<b>(a) Water Pollution Control System</b>				
ETP sludge, MT	76.47	69.77	53.95	16.63
<b>(b) Air Pollution Control System</b>				
Rejected filter Bags (FTP), MT	15.53	14.7	13.54	1.36

## PART- E

### Solid Waste

Solid waste	Total Generation quantity (MT)		Total Disposal (Sold) quantity (MT)
	During FY 2022-23	During FY 2023-24	During FY 2023-24
( a ) From Process			
Process & maintenance scrap (Non-hazardous Engineering Scrap)	2267.43	3179.09	3179.09

## PART- F

Please specify the characterizations (in terms of composition and quantum) of Hazardous as well as Solid Wastes and indicate disposal practices adopted for both these categories of wastes.

### Disposal of Hazardous Wastes:

Hazardous Wastes	Physical Form	Storage Description	Disposal Practice
Used oil	Liquid	Stored in a designated place.	Sold to authorized recyclers
Waste containing oil	Solid	Stored in a designated place.	Disposed to cement plant for co-processing
Spent Pot Lining (Cathode residues)	Solid	Segregated for carbon & refractory portion and stored in covered sheds on concrete floors.	The Carbon, Refractory & Silicon carbide disposed to actual users. Mixed dust of carbon & refractory is sent to the cement plant for co-processing and the refractory portion is sent to TSDf for secured landfilling.
Aluminium Dross	Solid	Stored in covered sheds on concrete floors.	In-house recycling and partly disposed to OSPCB-authorized re-processors.
Aluminium Dross Residue	Solid	Stored in covered sheds on concrete floors.	Disposed to OSPCB-authorized recyclers.
Pot Duct Cleaning Waste	Solid	Stored in covered sheds.	Partly recycled inside the Pot and Disposed to CHWTSDf
Rejected Refractory of furnace	Solid	Stored in covered sheds.	Disposed to CHWTSDf
Shot Blasting Dust (containing Fluoride)	Solid	Stored in covered sheds	Disposed to CHWTSDf
Ladle cleaning residue	Solid	Stored in covered sheds.	Recycled inside the Pot
Rejected filter Bags (FTP)	Solid	Stored in covered sheds.	Incinerated in the pots.
Asbestos waste	Solid	Not generated	Not applicable
Rejected AlF <sub>3</sub> Bags	Solid	Stored in covered sheds.	Incinerated in the pots.
Fluoride-contaminated waste (spilled waste from potline)	Solid	Stored in covered sheds.	Disposed to CHWTSDf

Drain cleaning sludge	Solid	Stored in covered sheds.	Disposed to CHWTSDF
Floor sweeping & housekeeping waste	Solid	Stored in covered sheds.	Disposed to CHWTSDF
ETP sludge	Solid	Stored in covered sheds on concrete floors.	Disposed to CHWTSDF
Used Anode butts	Solid	Stored in covered sheds on concrete floors.	Supplied to Aditya Aluminium, Lapanga for recycling/partly supplied to actual users
Discarded container/Liners used for Hazardous chemicals	Solid	Stored in covered sheds.	Supplied to authorized recyclers
Spent Ion Exchange Resin containing toxic materials	Semi-solid	Stored in covered sheds.	Co-incineration in CPP

NB: Please refer to Annexure -I for the composition of the hazardous waste generated.

### PART- G

**Impact of the pollution abatement measures taken on conservation of natural resources and the cost of production.**

Total Environmental Expenditure:

Sr No	Head of expenses	During the current financial Year 2022- 2023 (Lac)	During the current financial Year 2023- 2024 (Lac)
3	Total expenditure	7526.16	15539.52

Note: The Environmental expenditure of both Smelter & CPP included

### PART- H

**Additional measures/investment proposal for environmental protection including abatement of pollution, and prevention of pollution.**


1. The upgradation of 250 KLD ETP to 350 KLD at the CPP side is completed.
2. Installation of two online surveillance cameras completed.
3. Installation of the additional de-dusting unit and HW storage shed in the Roding plant is completed.
4. Road Sweeping machine (4 no's) procured and commissioned in Smelter.
5. The unit has installed a captive Dross reprocessing Unit plant where dross is being recycled.
6. Three nos. of Effluent Treatment Plant (ETP)-250KLD, 350KLD & 50KLD one no. each has been installed for treating fluoride with a conventional fluoride treatment followed by double-stage Reverse Osmosis & Four nos. STP (500KLD, 100KLD,

- 400KLD, 300KLD STP) has been installed for plant & colony sewage treatment. The treated water is being completely recycled inside the plant.
7. Installed one 1 TPD Biocomputer for MSW (Bio-degradable) in Smelter.

### PART- I

#### **Any other particulars for improving the quality of the Environment.**

1. We have started supplying hazardous waste like SPL Mixed Dust/Fines, ETP Sludge, and Cotton waste to cement plants, and also exploring other wastes.
2. We are working on reducing the Energy and water footprint of Smelter through process optimization.
3. Conversion of Furnace oil to LSHS (Cleaner fuel) is in progress for cast house furnaces.
4. R22 gas-consuming ACs are being replaced by ozone-friendly gases (90 Nos of ACs replaced).
5. Battery-operated vehicle procured (36 no's) and in use for internal movement of people and material movement inside the plant.
6. Several initiatives taken to replace Single-use plastic like cloth/jute bag distribution, steel bottles, wooden/paper cutleries, etc., and conducting several awareness programs.

 (Authorized Signatory)

Composition Analysis by NABL Accredited Laboratory*							
Sl. No	Parameters	Aluminium Dross	Used anode	Spent Pot Line (SPL)			
				Carbon	Refractory	Mixed Fines	Silicon Carbide
1	Aluminium oxide, Al <sub>2</sub> O <sub>3</sub>	59.31	0.12	6.92	28.01	23.55	0.33
2	Cadmium	0	0	0	0	0	0
3	Copper, Cu <sub>2</sub> O	0.01	0	0	0.02	0.02	0
4	Chromium, Cr <sub>2</sub> O <sub>3</sub>	0	0	0	0.01	0.01	0
5	Iron, Fe <sub>2</sub> O <sub>3</sub>	2.52	0.04	0.08	1.36	2.31	0.04
6	Manganese, MnO	0	0	0	0	0.01	0
7	Nikel, NiO	0.03	0	0.01	0.02	0.02	0.06
8	Tin, SnO <sub>2</sub>	0	0.05	0	0	0	0
9	Phosphorus, P <sub>2</sub> O <sub>5</sub>	0.02	0	0.01	0.03	0.02	0
10	Zinc	0	0	0	0.01	0.01	0
11	Lead	0	0	0	0	0	0
12	Calcium	0.54	0.04	0.15	0.98	2.88	0.13
13	Magnesium	0.37	0.01	0.01	0.03	0.43	0.18
14	Sodium	3.92	0.04	2.15	0.55	6.83	0.27
15	Potassium	1.22	0	0.06	0.08	0.41	0.01
16	Chloride	3.76	0	0	0	0	0
17	Sulphate	1.98	0	0	0	0	0.5
18	Total SiO <sub>2</sub>	19.24	69.13	59.76	61.13	45.4	95.58
19	Carbon as TOC	0.38	14.38	15.44	0.66	9.1	0.32
20	Organic matter	0.65	24.79	26.61	1.13	15.68	0.55
21	Fluoride	0.22	0.08	0.12	0.27	0.25	0.14
22	Cyanide	0	0	0	0	0	0

BLQ - Below Limit Quantification, \* M/s Bureau Veritas India Pvt Ltd.



**Composition Analysis by NABL Accredited Laboratory\***

Sl. No	Parameters	Pot duct cleaning	Skimmed Coke	ETP sludge	Shot blasting	Dross residue
1	Aluminium oxide, Al <sub>2</sub> O <sub>3</sub>	52.35	26.75	31.28	31.28	58.6
2	Cadmium	0	0	0	0	0
3	Copper, Cu <sub>2</sub> O	0.01	0.01	0.01	0.01	0.02
4	Chromium, Cr <sub>2</sub> O <sub>3</sub>	0.02	0	0.03	0.03	0
5	Iron, Fe <sub>2</sub> O <sub>3</sub>	0.12	0.05	29.96	29.96	0.3
6	Manganese, MnO	0.03	0	0.05	0.05	0.01
7	Nikel, NiO	0	0.03	0.01	0.01	0
8	Tin, SnO <sub>2</sub>	0	0	0	0	0
9	Phosphorus, P <sub>2</sub> O <sub>5</sub>	0.01	0.01	0.02	0.02	0.01
10	Zinc	0	0	0	0	0
11	Lead	0	0	0	0	0
12	Calcium	0.91	4.93	1.61	1.61	0.62
13	Magnesium	0.06	0.23	0.1	0.1	0.28
14	Sodium	4.84	27.85	10.67	10.67	2.56
15	Potassium	0.21	0.28	0.2	0.2	2.02
16	Chloride	0	0	0	0	0.24
17	Sulphate	0.99	0	0.25	0.25	0.48
18	Total SiO <sub>2</sub>	20.75	32.99	12.62	12.62	28.08
19	Carbon as TOC	8.33	0.88	6.57	6.57	0.15
20	Organic matter	14.36	1.51	11.33	11.33	0.26
21	Fluoride	0.03	0.05	0.05	0.05	0.08
22	Cyanide	0	0	0	0	0

BLQ - Below Limit Quantification, \* M/s Bureau Veritas India Pvt Ltd.