



Ref.: AA/E&S/2023/ 979

Date: 12/09/2023

To

**The Regional Officer**  
State Pollution Control Board,  
Plot No.1070, Hospital Road, Modipara,  
Sambalpur – 768 002, Odisha

Sub.: Submission of Environmental Statement (Form – V) for the FY 2022 – 23.

Ref.: Environment Clearance (EC) Letter No. J-11011/136/2009-IA-I (1) dated 29<sup>th</sup> Nov. 2012 and amendments dated 14/06/2013, 14/08/2018, 20/07/2020 & 12/08/2022.

Dear Sir,

With reference to the Clause No. XIII, General Conditions of the Environmental Clearance, please find attached herewith the Annual Environment Statement for the year 2022-23 in Form-V.

We request for acknowledgement of receipt of the letter.

Thanking you,

Yours faithfully,  
For Aditya Aluminium

*Sameer Nayak*

(Sameer Nayak)

Ⓟ President & Unit Head

Copy to:

1. The Member Secretary, State Pollution Control Board, A/118, Nilakanthanagar, Bhubaneswar.
2. The Director, Eastern Regional Office, MoEFCC, A/3, Chandrasekharpur, Bhubaneswar.
3. The Regional Director, Central Pollution Control Board, Southernd Conclave, 1582 Rajdanga Main Road, Kolkata -700107

Hindalco Industries Limited

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**FORM – V**

(See rule 14)

**Environmental Statement for the financial year ending the 31<sup>st</sup> March 2023.****PART – A**

Name and address of the owner/ <b>occupier</b> of the industry operation or process.	Mr. Kailash Nath Bhandari 5, New House Road, Sector 7 Jodhpur 342004, Tel No- 0291- 2549948
Industry category	Large scale Industry (Red Category)
Production capacity	6x150 MW CPP & 0.38 MTPA Aluminium Smelter
Year of establishment	2013-14
Date of the last environmental statement submitted	15 <sup>th</sup> September 2022

**PART – B****(1) Water Consumption (m3/Day):**

Process:	} 29727.2 m3/day (avg.)
Cooling:	
Domestic:	1746.5 m3/day (avg.)

Sl. No.	Name of Products	Process water consumption per unit of product output	
		During the Previous Financial Year 2021-22	During the Current Financial Year 2022-23
1	Aluminium Metal	1.23 m3/ MT	1.76 m3/ MT
2	Power	1.88 m3/MWH	1.94 m3/MWH

**ii) Raw Material Consumption**

Sl. No.	Name of raw materials	Name of products	Consumption of raw material per Unit of output	
			During the Previous financial year 2021-22	During the current financial year 2022-23
1	Coal	Power	0.71 Kg/KWH	0.71 Kg/KWH
2	Alumina	Aluminium metal	1.932 ton / ton of metal	1.944 ton / ton of metal
3	Carbon		0.412 ton/ ton of metal	0.413 ton/ ton of metal
4	Energy (electricity)		14,339 KWH/ ton of metal	14,313 KWH/ ton of metal
5	AlF <sub>3</sub>		11.79 kg / ton of metal	11.84 kg / ton of metal



**PART – C**

**Pollution discharged to environment/unit of output.**  
(Parameter as specified in the consent issued)

1) Pollutants	Units & Parameters		Quantity of pollutants discharged (mass/day)	Concentrations of pollutants in discharges (mass/volume)	% of variation from prescribed standards with reasons
a) Water			Nil	NA	NA
b) Air	UOM		Kg/Day	mg/Nm <sup>3</sup>	Within the prescribed limits.
	CPP Unit -1	PM	569.5	42.78	
		SOx	17506.0	1305.45	
		NOx	3385.4	252.82	
	CPP Unit -2	PM	585.8	43.20	
		SOx	16393.5	1211.09	
		NOx	3545.4	262.86	
	CPP Unit -3	PM	610.4	42.27	
		SOx	19355.1	1342.38	
		NOx	3783.2	261.96	
	CPP Unit -4	PM	721.1	43.59	
		SOx	19320.0	1170.32	
		NOx	4052.6	243.86	
	CPP Unit -5	PM	477.7	42.14	
		SOx	14756.9	1300.37	
		NOx	3297.7	290.26	
	CPP Unit -6	PM	717.5	43.26	
		SOx	21361.6	1291.51	
		NOx	4577.3	275.39	
	GTC -1	PM	134.7	2.75	
		Total Fluoride	24.0	0.52	
	GTC -2	PM	136.2	2.75	
		Total Fluoride	24.6	0.53	
	FTC -1	PM	20.3	7.34	
		Total Fluoride	1.3	0.49	
	FTC -2	PM	11.8	7.14	
		Total Fluoride	0.8	0.50	

Note: All the emission values are expressed as annual average value.

## PART – D

## Hazardous Wastes

(As specified under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.)

Hazardous Waste	Waste category	UOM	Total Generated Quantity	
			During the previous financial year 2021-22	During the current financial year 2022-23
a) From Process	Used Oil	MT	54.12	69.10
	Waste containing Oil	MT	10.50	17.97
	Spent Pot lining (Cathode Residues)	MT	9910.57	3119.61
	Pot Lining Scraps and Wastes	MT	26.86	Nil
	Rejected lining of furnace(Refractory)	MT	Nil	Nil
	Shot Blasting Dust (Containing Fluoride)	MT	998.00	925.5
	Ladle Cleaning Residue	MT	149.95	196.78
	Rejected AIF3 Bags	MT	9.58	12.76
	Aluminium Dross	MT	3561.33	3424.63
	Aluminium Dross Residue*	MT	2188.0	1866.0
	Fluoride contaminated waste (Spilled waste from pot line)	MT	3873.36	4258.90
	Drain cleaning sludge	MT	0	4.15
	Floor sweeping/house-keeping waste	MT	249.99	136
	ETP sludge	MT	110.60	102
	Used anode Butts of Aditya	MT	49577.67	46521.15
	Pre-processed Used Anode Butts received from M/s Hindalco Industries Ltd, Hirakud.	MT	20041.67	21161.24
Discarded containers/ Liners used of storage	MT	12.69	15.08	



	of Hazardous Chemicals			
	Spent Resin	MT	19.28	0
b) From pollution control facilities	Tar containing waste (from FTC)	MT	12	11.6
	Rejected filter bags (GTC & FTC)	MT	67.78	65.71

\* Aluminium Dross Residue is generated during recycling of aluminium dross in the dross processing unit.

**PART – E  
(Solid Wastes)**

	Category	UOM	Total Quantity	
			During the previous financial year 2021-22	During the current financial year 2022-23
(a)From process	Fly ash and Bottom Ash Generated	MT	1519242.9	1541399.0
(b)From pollution control facility	Supplied to Cement industries	MT	1158030.3	1381751.0
(c) (1) Quantity recycled or re-utilized within the unit (2) Sold	Utilized for road making	MT	0	0
	Utilized for Dyke raising	MT	0	0
	Utilized for low lying area development/filing	MT	59041.9	65727.2
	Supplied to Bricks Manufacturing	MT	71764.5	14344.0
	Ash Utilized from Previous Stock (stored in Ash Pond (MT)	MT	257394.0 (149042 MT supplied to Dalmia Cement, Rajgangpur, 30585 MT supplied to Brick Plant & 77767 MT supplied to Road making)	140325.6 (91237.54 MT supplied to Cement Plant, 4759 MT Dyke construction, 39828 MT supplied to Road making & 4500 MT use for Internal Road Development)
(3) Disposed	Sent to Ash Pond	MT	225300.1	90781.4

## PART – F

Please specify the characterizations (in terms of composition of quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Sr. No.	Name of Hazardous Waste	UOM	Qty. of generation in FY 2022-23	Qty. of Disposal FY 2022 -23	Mode of Disposal
1	Used Oil	MT	69.10	72.23	Sold to authorize recyclers.
2	Waste containing oil	MT	17.97	17.970	Co-processing in cement Kiln
3	Spent Pot lining (Cathode Residues)	MT	3119.61	1842.37	Supplied to authorize re-Processing units i.e., SPL-Carbon Part to Green Energy Resources, Sambalpur & SPL Silicon Carbide bricks to Sunraj Transport & Contractor
4	Pot Lining Scraps and Wastes	MT	Nil	Nil	Not generated
5	Rejected lining of furnace (Refractory)	MT	Nil	Nil	Not generated
6	Shot Blasting Dust (Containing Fluoride)	MT	925.5	1072.9	Disposed in CHW-TSDF
7	Ladle Cleaning Residue	MT	196.78	199.52	Disposed in CHW-TSDF
8	Rejected Filter Bags (GTC/FTC)	MT	65.71	102.73	Burnt inside the electrolytic pots.
9	Rejected AIF3 Bags	MT	12.76	9.30	Burnt inside the electrolytic pots.
10	Aluminium Dross	MT	3424.63	2139.84	In-house recycling in dross Processing unit.
				2036.15	Sold to authorized recycler or pre-Processor.
11	Aluminium Dross Residue	MT	1866.00	1959.23	Send to recycler or Pre Processor, (1021.39 MT to M/s Shivam Metallurgical Pvt Ltd., 659.38 MT to M/s Siddhi Industries & 278.46 MT to M/s A K Enterprises
12	Fluoride contaminated waste (Spilled waste from pot line)	MT	4258.9	4254.2	Disposed in CHW-TSDF
13	Drain cleaning sludge	MT	4.15	4.15	Disposed in CHW-TSDF



**Aditya Aluminium: Environment Statement 2022-23**

14	Floor sweeping/house-keeping waste	MT	136.0	147.32	Disposed in CHW-TSDF
15	Tar Containing Waste (FTC conditioning dust)	MT	11.6	11.6	Reused in green anode making
16	ETP sludge	MT	102.0	88.08	Disposed in CHW-TSDF
17	Used anode Butts of Aditya	MT	46521.15	46118.94	Reused in Green Anode Plant for making green anode.
18	Pre-processed Used Anode Butts generated from M/s Hindalco Industries Ltd, Hirakud.	MT	21161.24	19505.26	Reused in Green Anode Plant for making green anode.
19	Discarded containers/ Liners used of storage of Hazardous Chemicals	MT	15.08	16.75	Supply to authorized party & disposal through original supplier
20	Spent Resin	MT	Nil	Nil	Not Generated
<b>Sr. No.</b>	<b>Solid Waste</b>		<b>Quantity of generation in FY 2022-23</b>	<b>Quantity of disposal FY 2022-23</b>	<b>Mode of Disposal</b>
1	Fly Ash and Bottom Ash	MT	1541399.0	1381751.0	Supplied to Cement industries
		MT		0	Utilized for road making
		MT		0	Utilized for Ash Pond dyke raising
		MT		65727.2	Utilized for low lying area development/filing inside the plant premises
		MT		14344.0	Supplied to Bricks Manufacturing
		MT		140325.6	Ash Utilized from Previous Stock (stored in Ash Pond (MT))
		MT		90781.4	Sent to Ash Pond

## PART – G

### Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production:

Pollution abatement measure taken on conservation of natural resources are as follows:

#### **A. Water Pollution Control Measures:**

1. We have implemented integrated wastewater management system first time in the country by mixing both the waste water of CPP & Smelter areas which are collected in a Guard Pond of 65,000m<sup>3</sup> capacity and then treated with a RO based ETP of 300 cum/hr capacity and the permeate water is send back to the Power Plant for reuse.
2. Separate drainage system constructed for collection of initial rain water & waste water and the guard pond of 65,000 cum capacity is constructed close to the ETP, to store waste water and storm water from Smelter and waste water from CPP.
3. The Effluent Treatment Plant (ETP) of 300 Cum/hr capacity is coupled with double Staged Reverse Osmosis system and is the latest ETP plant in the Odisha.
4. Two nos. of Sewage treatment plants (STP) established in Plant and Township separately for 600 KLD and 300 KLD respectively. The treated water from STPs used for greenbelt and gardening purposes.
5. The water consumption in power plant is reduced by adopting the Dry bottom ash collection system for PF boilers first time in Odisha and increased CoC of Cooling water which reduces the generation of wastewater.
6. Ash pond is lined with HDPE liners to prevent contamination of ground water.
7. The decanted water from the ash pond is reused in ash handling.
8. Rainwater harvesting pond capacity of 60,000 m<sup>3</sup> established inside the township for reuse in gardening/horticulture purposes
9. Rainwater recharge structures made in the township buildings/multi facility complexes.
10. Surface Run-off treatment system Tube Settler Capacity of 50 m<sup>3</sup>/Hr installed in Coal Handling Plant.



## B. Air Pollution Control Measures:

1. ESPs having two parallel gas paths of 99.9% efficiency installed in each unit of CPP to achieve the emission level within 50 mg/Nm<sup>3</sup>. One ESP path in maintenance while the plant is in operation is a unique procedure developed in Aditya Aluminium to improve overall efficiency of ESP.
2. We have installed the High Frequency Transformer Rectifier (HFTR), 3 phase transformer rectifier and improved pulse controller in suitable combination in both passes of ESPs in all 6 units of CPP.
3. Semi-dry Flue Gas De-Sulphurisation system has been successfully installed in Unit-6 of CPP for SO<sub>2</sub> emission control from Stack.
4. Tri-Flue Stacks with 275 m height installed for wider dispersion of pollutants.
5. 12 nos. of Bag filters installed in Coal Handling Plant & Ash Handling Plant for fugitive dust control.
6. Installed pipeline length of around 1500 mtr. to cover coal roads for water sprinkling to control the fugitive emission.
7. 20 nos. of Dust suppression & DFDS system installed in coal handling/conveying circuit (Excluding Coal yard) & 4 nos. of dust suppression & dry Fog System installed in ash silo areas.
8. Gas Treatment Center (GTC) with dry scrubbing system installed in Pot Line for recycling of fluoride and venting out clean air through the stack having 100 m height.
9. Hyper dense phase system for dust free alumina transfer installed in pot room, Consistent Quality of Alumina & Process optimization resulting us one of the 2nd lowest alumina consumption Smelter plant in the country.
10. Fume Treatment Center (FTC) installed and attached to ABF for recovery of Fluoride and vents out clean air to atmosphere.
11. 64 nos. of De-dusting system installed at Alumina Handling, Coke Handling, Green Anode Plant, Anode Rodding Shop, Bath Recycling Shop, Carbon Recycling Shop, Anode Baking Furnace, and other areas of Smelter for control for fugitive emission and recycling of the dust collected in the bag filters. The vacuum cleaning system installed of Green Anode Plant makes the Plant very much clean.
12. Mechanized road sweeping machine deployed for cleaning of all internal roads and shop floors to minimize fugitive dust emission from roads.
13. Performance evaluation monitoring of pollution control equipment (ESPs & Bag filters) is being carried out on annual basis through external agencies.
14. Track hopper & wagon tippler installed in CHP for coal transportation to reduced Scope -3 emission.



15. Full Body vehicle washing system installed in CPP Ash Silo area for fugitive Emission Control.
16. Wheel washing system installed in Coal Handling Plant and SPL storage area.

### **C. Solid Waste Management Practice:**

1. Maximum quantity of ash is being send to Cement Plants.
2. 100% Tarpaulin cover during transportation ash and coal is ensured.
3. Ash is being supplied to cements plant from the ash pond.
4. Low lying area development inside the plant is being as per the OSPCB guideline
5. Fly ash dispatched through BOXN Wagon in rakes to various cement manufacturing units (Dalmia Cement, Shree Cement, Ultratech, ACC, Ambuja, Nuvoco vistas etc.) for cement manufacturing. This has resulted increase in ash utilization.
6. One Bio-digester and one Bio-composter installed for management of biodegradable waste in plant and colony.
7. All Municipal Solid Waste (MSW) generated from Plant & Township segregated & collected in designated place and MSW plastic waste, paper and other incinerable materials being sent to Cement Plant for co-processing in Cement kiln.

### **D. Hazardous Waste Management Practice:**

1. All the hazardous waste is being kept inside covered storage shed with display of SOPs and MSDS and maintaining record in Form - 3 for all the hazardous waste generated and dispatch for recycling to the authorized recyclers/disposal in CHW-TSDF.
2. Exploring maximum recycling of Hazardous Waste generated from Smelter like Shot blasting dust, Skimmed coke, GTC/FTC and Other DE system used filter bags, Alf3 bags and tar containing waste etc.
3. Anode butt generated is completely recycled in Green Anode Plant for making green anode and the pre-processed used anode butt received from HiraKud Smelter is also reused in green anode making.
4. Dross generated at present is being reprocessed in the in-house dross processing unit aluminum metal is recovered, and residue generated is send to recycler or pre-Processor for recuse/recycling.
5. Manifest & TREM card system is being followed judiciously.
6. Training on HW segregation, storage & disposal also being given through external & internal trainer to employee/workmen on regular interval.



## E. Green Belt Development:

1. Thick green belt developed around the plant boundary, with a density of approx. 1000 tree/acres and more than 7,01,930 no's of trees planted within an area of 1098 acres till 2022-23. Plantation activity for FY 23-24 is under progress to achieve the density of approx. 2000 no's/acres. Total 31,100 nos of trees planted till Aug-23.
2. We have adopted the Miyawaki plantation method for green belt development & density enhancement inside plant.

### PART – H

#### Additional measures/investment proposal for environmental protection including abatement of pollution, prevention of pollution:

Areas	Investment made till 31.03.2023 (lakhs)
Water pollution control system	5452.19
Air pollution control system	80397.78
Solid Waste Management System	21030.97
Hazardous Waste Management System	1833.06
Biomedical Waste Management System	18.80
<b>Total (Lakhs)</b>	<b>108732.8</b>

1. A solar power project of 30 MW (DC) capacity (PV Based) is established inside the plant for generation of green energy (renewable).
2. Food waste is being used in Vermi-Composter in colony areas for conversion of food waste & organic wastes for generation manure and which is being used in gardening purposes.
3. Two no's of Mechanized housekeeping machine used for cleaning of internal roads to keep control on the fugitive dust emission from roads during vehicle movement.

**PART – I**

**Any other particulars for improving the quality of environment:**

1. Implemented Integrated Management System (ISO 9001 & ISO 14001) for better quality & environmental management system and control, ISO 45001 & ISO 50001 certification is also completed.
2. Environmental laboratory established for monitoring and analysis of environmental pollutants.
3. Celebrating Environmental promotional activities like World Environment Day, Van Mahotsav, National Safety Day/Week, etc.
4. Promote the principles of waste prevention, reduction, reuse, recycling, and recovery to minimize waste generation and strengthen the practices for management of wastes through "Value from Wastes Program".
5. Our Unit has been certified for the Single Use Plastic Free Plant from Confederation of Indian Industry (CII).
6. We have received CEEs National Awards for Excellence in Water Management-2022 for reduction in Water consumption.
7. Raise environmental awareness at all levels of our operations, through training and effective communication, participation, and consultation.

*Suman Nayak*  
(Authorized Signatory)