

नालको **NALCO**
ordinary people, extraordinary attitude
National Aluminium Company Limited
(A Government of India Enterprise)
CAPTIVE POWER PLANT

Ref No.: CPP/E&S/2025/

Date: 29-09-2025

To
The Member Secretary,
State Pollution Control Board, Odisha
(Department of Forest & Environment, Government of Odisha)
Paribesh Bhawan, A-118, Nilakantha Nagar, Unit - VIII,
Bhubaneswar- 751 012

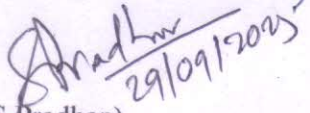
Sub: - Environment Statement for the Year 2024-25 of CPP, Nalco.

Sir,

In compliance with the statutory requirement, we hereby submit the Environment Statement of CPP, NALCO for the year 2024-25.

Thanking You.

Yours faithfully


(S Pradhan)

General Manager (E&S), CPP

एस. प्रधान/S.PRADHAN
GM (Mech.)

सिपिपि, नालको, अनुगुल
CPP, NALCO, ANGUL

Copy To:-

-Regional Officer, Angul, State Pollution Control Board Odisha,
Shed No. - 3/3, Industrial Estate, Angul.-759122

FORM-V
(See Rule 14)

Environmental Statement for the financial year ending 31st March' 2025.

PART A

i)	Name and address of the owner /occupier of the industry operation or process.	Shri Pankaj Kumar Sharma Director (Production) National Aluminium Company Limited Bhubaneswar, Odisha-7
ii)	Industry category Primary – (STC Code), Secondary – SIC Code).	Red category STC-3510 SIC-4101
iii)	Production capacity- Units	Electrical power Generation Capacity -1200 MW (10x120 MW)
iv)	Year of establishment	1981
v)	Date of the last Environmental Statement submitted	30.09.2024 Vide letter no. CPP/E&S/2024/838 dt.30/09/2024

PART-B

WATER AND RAW MATERIALS CONSUMPTION

D) WATER CONSUMPTION IN M³/DAY

Particulars /Year	2023-24 (m ³ /day)	2024-25 (m ³ /day)
Process	1355.66	1655.33
Cooling	57838.59	57025.15
Domestic	1081.61	1186.69
T.S.S. (Ind. Drain)		
T.S.S. (surface Drain)		
T.S.S. (Ash Pond)		
Zero Discharge maintained.		
SPM (STACK Emission)		
Gasous Emission		

Name of Products: Electrical Energy		Water consumption per unit of electricity generated in ltr /Kwhr	
Year	Gross Generation (MU)	Purpose	In ltr / Kwhr
2023-24	7193	Cooling	2.934
		Process	0.067
		Domestic	0.054
2024-25	7473	Cooling	2.78
		Process	0.0808
		Domestic	0.058

RAW MATERIAL CONSUMPTION

Name of Raw Material	Name of Product	Consumption of raw materials	
		During 2023-24	During 2024-25
Coal (Kg/Kwhr)	Electrical Energy	0.864	0.910
Fuel Oil (ml/Kwhr)		1.970	1.005
Water (m ³ /Kwhr)		0.003055	0.0029

PART-C

POLLUTANTS DISCHARGED TO ENVIRONMENT/UNIT OF OUTPUT.

Pollutants	Quantity of Pollutants Discharged in T/day	Concentration of Pollutants in Discharges in mg/Ltr	% of Deviation From Standards.
T.S.S. (Ind. Drain)	Nil	Nil	Nil
T.S.S. (surface Drain)	Nil	Nil	Nil
T.S.S.(Ash Pond) Zero Discharge maintained.	00	00	Nil
SPM (STACK Emission)	13	(Unit1 to 7- 87.39) (Unit 8 ,9 & 10- 39.03) Unit1-10- 77.8	Nil
Gaseous Emission		SOx- 520.32 mg/Nm3 Nox-297.13 mg/Nm3	Nil

Ambient air monitoring as per NAAQs-2009 standard.**Average of all stations:**

PM-10	(micro grams/m ³)	-	70.11
PM-2.5	(micro grams/m ³)	-	38.40
SO ₂	(micro grams/m ³)	-	23.6
NOx	(micro grams/m ³)	-	6.02
CO	(micro grams/m ³)	-	107
LEAD	(micro grams/m ³)	-	Not detected

(CAAQMS stations has been installed & hooked up to the OSPCB & CPCB server.)

Parameter	Unit	Location-1 (Roof of first aid centre)	Location-2 (Roof Canteen)	Location-3 (Roof of STP)	Location-4 (Roof of PCU at Ashpond)
PM-10	micro grams/m ³	68.42	69.94	71.28	70.83
PM-2.5	micro grams/m ³	38.22	38.29	39.46	37.66
SO ₂	micro grams/m ³	23.59	23.69	23.74	23.4
NOx	micro grams/m ³	5.85	6.06	6.16	6.02
CO	micro grams/m ³	106.23	107.88	109.75	104.4
LEAD	micro grams/m ³	0.00	0.00	0.00	0.00

INDUSTRIAL DRAIN WATER RECYCLE QUALITY:

	2023-24	2024-25
pH	7.39	7.70
T.S.S.(mg/ltr)	30	34.83

Thamizhavel

PART - D

HAZARDOUS WASTES:

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

Authorisation under Hazardous waste rules 1989 as amended thereafter

IND.IV.HW.156-6225, dated-31/03/2025

Valid up to 31/03/2026

USED OILS (Used lubricating oil + Used Transformer oil) Hazard Class – 5.1

Hazardous Wastes	Total Quantity (in KL) Generated	
	During 2023-24 (01.04.2023 31.03.2024)	to During 2024-25 (01.04.2024 to 31.03.2025)
a) From process	24.050 MT	142.73 MT
b) From pollution control Facilities.	Nil	Nil

SPENT RESINS Hazardous Class 34.2

Hazardous Wastes	Total Quantity (in MT) Generated	
	During 2023-24 (01.04.23 to 31.03.24)	During 2024-25 (01.04.24 to 31.03.25)
a). From Process	6.21 MT	7.9 m ³ / 11.58 MT
b). From Pollution Control facilities	Nil	Nil

Waste residue containing Oil: Hazardous Class 5.2

Hazardous Wastes	Total Quantity (in MT) Generated	
	During 2023-24 (01.04.23 to 31.03.24)	During 2024-25 (01.04.24 to 31.03.25)
a). From Process	39.9 Kg (Incinerated)	2.09 MT
b). From Pollution Control facilities	Nil	Nil

Oil contaminated Filter elements: Hazardous Class 3.3

Hazardous Wastes	Total Quantity (in MT) Generated	
	During 2023-24 (01.04.23 to 31.03.24)	During 2024-25 (01.04.23 to 31.03.24)
a). From Process	656.1 Kg (incinerated)	Nil
b). From Pollution Control facilities	Nil	Nil

PART - E**SOLID WASTES:**

Solid Wastes	Total Quantity in KT	
	During 2023-24	During 2024-25
a) From process (Ash)	2917.86	3332.793
b) From pollution control facilities	Nil	Nil
c) Quantity of ash reutilised within the unit	2619.412 (89.77%)	2680.824 (80.44%)

PART - F

Please specify the characteristics (in terms of concentration and quantum) of Hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

HAZARDOUS WASTES:

USED OIL (Lubricating Oil & Transformer Oil):

Physical Characteristic: - Form: Liquid, Opaque / translucent
 Contents: Hydrocarbon, Sediments and moisture

Chemical Characteristics: -

Density: 0.75 to 0.90
 Break down voltage : 35 KV to 57 KV
 (For Transformer oil)
 Water content: 20 ppm to 30 ppm

The used oil are packed in container of 205 ltr drums with tight cap & are kept on concretised storage yard under shed .The yard is connected to a oil water separator. These used oils are sold to the re-processors / re-cyclers registered with SPCB and authorised by the concerned Pollution Control Boards for reprocessing.

SPENT RESINS:

Physical Characteristics: - Form: - Granules
Chemical Characteristics: - Complex organic Compound
Resin is used for removing +ve and -ve radicals from water for making DM water.

The used resins are disposed of in an impervious lined pit made specifically for this purpose at a designate and demarcated area inside the plant.

SOLID WASTES:

ASH :

Physical characteristics:

1.	Fineness through 200 mesh	=	63 to 80%
2.	Colour	=	Greyish white
3.	Softening temperature	=	1160 °C
4.	Fusion temperature	=	1300 °C
5.	Flow temperature	=	1360 °C

Chemical composition:

SiO ₂	=	59.72%	Al ₂ O ₃	=	28.23%
Fe ₂ O ₃	=	5.37%	TiO ₂	=	2.01%
CaO	=	1.39	SO ₃	=	0.21%
Alkaline Oxide	=	1.23			

PART -G

Impact of pollution control measures on conservation of natural resources and on the cost of production.

- Amount of Water recycled through STP in FY 24-25 in ML- 63.87 ML.
- Amount of Water recycled through ETP in FY 24-25 in ML- 3047.695 ML
- During the FY 2024-25, 1,90,00,000 cubic meter of mine void overflow water was recycled back to plant and re-used in plant purpose.
- During FY 2024-25, 13,37,861 cubic meter of water from rain water harvesting system was recycled and re-used.
- During FY 2024-25 , 30,47,645 cubic meter of water from Industrial Drain water recycling system was recycled after treatment and re-used plant process.
- During FY 2024-25, 65,94,100 cubic meter of water from Ash Pond was recycled after treatment and re-used in plant purpose.
- Number of sapling plantations done in CPP in FY 2024-25- 5020 Nos.

PART – H

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

1. Augmentation of Ash Pond:

Ash Pond -I dyke-raising from 110 MRL to 113 MRL had been completed. Ash pond-IV at an area of 46 acre land had been constructed where ash was dumped only in HCSD mode only. Ash mound work over Part-A & Part-B of Ash pond-II has been completed from 107 Mrl to 115 Mrl in two phases. Now 5th phase ash mound work over ash pond-II from 115 mRL to 119 MRL is in progress.

2. Recycling of ash pond overflow water:

Recycling of Ash Pond overflow water continued for whole of the year and Zero discharge was achieved with respect to the Ash Pond Overflow water.

3. Upgradation of industrial drain water recycling system:

CPP has achieved zero discharge with respect to industrial drain water except during heavy monsoon. Up-gradation of Industrial drain recycling system (IDWRS) was carried out by replacement of 3x 500 m³/hr pumps with existing 3x400 m³/hr pumps to maintain zero discharge with respect to Industrial effluent.

Recycling system and treatment facility was working throughout the year. The recycled water is being used in ash water system and coal yard water sprinkling system.

5. Vapour absorption machine (VAM);

To adopt eco. friendly technology and to phase out ozone depleting substances (ODS). All 3 Nos. of existing chiller compressors have been replaced with Vapour Absorption Machine.

7. Conversion of existing bowl mill to MPSP System.

The coal bowl mills are being modified to MPSP (Milling Process & Service Protection) system in phased manner with a project cost of Rs 1.39 crores. This will improve the efficiency of mills and produce less mill rejects.

8. Recycling of STP water

A STP of capacity 175 m³ had been constructed inside the Plant to treat the sewage water of the Plant. The treated water is used for horticulture purposes. Also another STP of capacity 208 m³ /day had been constructed for Vidyut nagar colony is kept in closed condition after demolition of the said colony.

09. Roof top rain water harvesting:

CPP has implemented roof top rain water collection system in one of its big building at CW pump house.

10. Rain water harvesting pond:

A large water harvesting pond of size 150 mx100mx3.5 m with pumping facility has been constructed at the lowest area (near watch tower-3) at the plant for collection of surface run-off water & storm water.

11. DE system for new chp:

Dust extraction system has been installed for further reduction of fugitive dust in the crusher house



area of CHP-II and the same is in operation.

12. CAAQMS : CAAQMS stations had been installed at the four identified locations of the plant in consultation with OSPCB by March'2015. Online ambient quality data of these stations has been hooked up to the OSPCB server and CPCB server.
13. Online monitoring system: New Units(Unit-7,8,9&10) was already equipped with on line SPM,SOx,NOx&CO monitoring in the flue gas. For older Units(Unit-1,2,3,4,5&6) SPM, SOx & NOx monitors has been procured & installed by March'2015. SPM,SOx,NOx data of all the Units are hooked up to the OSPCB server and CPCB server.
14. Effluent quality monitoring system with provision of data transmission has been installed at the outlet of industrial drain recycle system(IDWRS)& the same has been hooked up to the OSPCB server and CPCB server.
15. 1010 KVA DG set was installed & commissioned at Ash-Pond for un-interrupted power supply during normal power outage to ensure zero discharge of Ash pond recycle water.
16. Seepage water Ash pond seepage water recycle pump of 3 Nos. of 300 m³/hr each has been installed at ash pond to recycle the seepage water from settling pit for re-use in plant.
17. The old inefficient reciprocating compressors of Unit #1 to 6 (Total 09 nos.) are being replaced by Elgi make energy efficient and Oil free Screw compressors.
18. Renovation and Modernization of two nos. of Air Preheaters of Unit-6 & Unit -3 were carried out to increase the efficiency of Boiler.
19. Computational Fluid Dynamics (CFD) analysis of flue gas ducts of Unit-4 was carried out to reduce the flow imbalance and to reduce the duct leakages which helps in reduction of auxiliary power consumption.
20. Chemical cleaning of condensers in Unit #4 and unit # 9 were carried out to improve station heat rate.
21. Two Nos. of 650 KVA DG set was replaced with new DG set.
23. Ash pond – IV capping work has been completed in September'2021.
24. To prevent dust blowing in summer months elaborate water sprinkling arrangement was done with the help of 300 nos. of sprinklers and 3 nos. of water tankers.
25. To further reduce the turbidity of ash slurry recycle water from Ash pond & mine void another Clariflocculator of 3000 m³/hr capacity has been installed and commissioned on 22-11- 2022 inside plant. The recycle water after treatment is being re-used for ash slurry making & other use in plant.
26. DFDS (Dry fog dust suppression system) has been installed at CHP-II crusher house on 27-07-2022

A number of Environmental Developmental activities have been taken up under ISO 14001:2015

Some of the achievements are given below.

- a. Systematic procedure has been developed for collecting and disposal of used oil. This is an action to conserve the natural resources.
- b. All Employees had been imparted awareness training on Environmental Management System adopted in our organisation.
- c. Designated concretised scraps yard & housekeeping waste yards are developed in the different location for easy handling of metallic, non-metallic and housekeeping wastes.
- d. Colour coded waste bins are provided in all the working areas for easy segregation and disposal of the waste.
- e. Systematic Coal Yard management procedure has been adopted to minimise the spontaneous fire in

the stacked coal and thereby minimise the ash generation in coal yard. This results in natural resource conservation.

- f. One impervious pit has been constructed to put discarded tube lights and other used fluorescent lamps.
- g. One wheel washing system has been installed at the coal corridor for reduction of fugitive emission during coal transportation inside the plant

PART - I

Any other particulars for improving the quality of the environment.

1. Massive afforestation has been done in and around the plant area and township area.
2. The project of ash disposal to mine void in lean slurry mode has successfully commissioned in July'2021. Ash disposal to mine void filling is going on. After completion of LSP, 100% utilisation of Ash generated from CPP is being achieved continuously since Nov' 2021.
3. High Concentration Slurry Disposal (HCSD) System had been adopted for disposal of ash in Unit-7 and 8 along with the new Units 9 & 10. By adoption of HCSD system, the water consumption for ash disposal has been reduced.
4. Side cladding of ESPs (Unit-1 to 6) with aluminum sheet has been done to reduce fugitive dust emission from ESP hoppers.
5. Ammonia dozing system has been installed at ESPs of Unit 1 to 10 and is in operation for further reduction of particulate emission at ESP outlet.
6. Two no. of new 650 KVA DG Set have been replaced in place of old DG set.
7. Mechanical waste convertor for the solid waste generated from canteen and horticulture waste has been procured and installed at Main canteen to get use ful product
8. Energy saving of 2075487 kwh was achieved through replacement of total 14039 LED fitting in place of conventional light fitting.
9. Wheel washing system has been installed in the ash silo areas to control dust nuisance due to plying of vehicles in June'2018. Work order has been awarded for installation of another Mechanized wheel washing system in Coal yard-III to control fugitive dust emission.
10. Project report has been prepared with engagement of Ms/ IISc, Bangalore for capping and stabilization of Ash pond-IV. Reclamation of ash pond-IV was completed.
11. 2 Nos. of Mercury analysers has been procured and installed at CPP for real time mercury measurement for compliance to statutory requirement.
12. Coal transport corridor project was commissioned on 1st January 2022 to receive coal through road mode.
13. Lean slurry project (LSP) was commissioned on 31.07.2021. LSP was put to continuous operation w.e.f. 22nd October 2021 after award of O&M contract. After completion of LSP, 100% utilization of Ash generated from CPP is being achieved continuously since Nov' 2021.
14. Refurbishment of 4 no of fields (1A, 2A, 1B & 2B) in Unit-6 including replacement of all collecting plates, emitting coils, shock bars etc was done for Reduction of stack emission with a cost implication of Rs. 1.90 crores to further improve stack emission.
15. 2 nos. of HDIP surveillance camera for monitoring of Stack emission has been installed in March'2022 and device ID& IP address has been communicated to SPCB for real time monitoring

(S.Pradhan)
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