



UAIL/ENV/2019-20/20

Date: 27.09.2019

The Member Secretary
State Pollution Control Board
Paribesh Bhawan, A/118,
Nilkantha Nagar, Unit- VIII,
Bhubaneswar- 751 001, Odisha.

Sub: Submission of Environmental Statement for the financial year ending 31st
March, 2019 with respect to Utkal Alumina International Ltd., Doraguda.

Dear Sir,

We are enclosing herewith the **Environmental Statement** for the financial year ending 31st March, 2019 in the prescribed FORM-V with respect to **Utkal Alumina International Limited, Doraguda, Kucheipadar, Rayagada, Odisha**, as per the Rule 14 of The Environment Protection Act, 1986 and Rules made thereof.

This is for your kind information and necessary records please.

Thanking you,

Yours faithfully,
For Utkal Alumina International Ltd.

(N. Nagesh)
+ Unit Head & President (Factory Manager)

Encl.: As above

Copy To: i) Addl. PCCF. GOI, MoEF, Eastern Region Office, Bhubaneswar, Odisha.
ii) The Member Secretary, CPCB, New Delhi.
iii) Regional Officer, SPCB, Rayagada, Odisha.

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March, 2019

PART-A

- i. Name and address of the owner/
Occupier of the industry operation or process: Mr. S. K. Mishra,
Utkal Alumina International Limited
Doraguda, Post: Kucheipadar- 765 015,
Rayagada
- ii. Industry category : Large
- iii. Production capacity : Units
Alumina Refinery - 1.7 MTPA
CPP - 3×30 MW
- iv. Year of establishment : May, 2013
- v. Date of the last environmental statement submitted. : 16th September 2018

PART- B

Water and Raw Material Consumption:

i. Water consumption in m3/d

Process: 5652.16

Cooling: 806.84

Domestic: 1992.34

Sl. No.	Name of Products	Process water consumption per unit of output	
		During the current financial year 2017-18	During the current financial year 2018-19
1	Alumina & Power Generation	1.63 KL per ton. of Hydrate Production expressed as Alumina. (Process water includes both refinery and power plant cooling and excluding domestic consumption)	1.52 KL per ton. of Hydrate Production expressed as Alumina. (Process water includes both refinery and power plant cooling and excluding domestic consumption)



[Handwritten signature]

ii. Raw material consumption

Name of raw materials*	Name of Products	Consumption of raw material per unit of output	
		During the current financial year 2017-18	During the current financial year 2018-19
Bauxite Ore	Alumina	3.19 T/T	3.18 T/T
Caustic Soda		64.83 Kg/T	47.70 Kg/T
Lime		16.71 Kg/T	23.23 Kg/T
Coal		485.77 Kg/T	431.22 Kg/T
Fuel Oil- HFO		71.64 Kg/T (For Calciner)	70.92 Kg/T (For Calciner)
Synthetic Flocculent		0.45 Kg/T of Hydrate Production as Alumina	0.515Kg/T of Hydrate Production as Alumina

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART-C

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

Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed standards with reasons.
(a) Water	No Discharge	No Discharge	Not applicable since no discharge.
(b) Air	Alumina Refinery :191.1 Kg/day CPP: 681 Kg /Day	Calciner: PM < 50 mg/Nm ³ Boiler : PM < 50 mg/Nm ³	Below than the prescribed standards.



PART D

HAZARDOUS WASTES

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

Hazardous Wastes	Total Quantity (Kg)	
	During the current financial year (2017-18)	During the current financial year (2018-19)
(a) From process		
i) Used oil (Stream 5.1)	37.26 KL	34.634 KL
ii) Contaminated cotton rags of other cleaning materials (Stream 33.2)	100 KG	90 KG
iii) Spent ion exchange resin (Stream 35.2)	Nil	Nil
iv) Empty barrels contaminated with HW (Stream 33.1)	Nil	Nil
v) Sludge containing oil during cleaning of oil storage tanks(Stream 3.2 & 3.3)	Nil	Nil
vi)Wastes or residues containing oil(Stream 5.2)	34.15 MT	6.426 MT
(b) From pollution control facilities	Nil	Nil

PART- E

SOLID WASTES:

Solid Wastes	Total Quantity	
	During the current financial year (2017-18)	During the current financial year (2018-19)
a. From process Red mud Lime grit	2049018 MT as dry basis 8717 MT	2081845T as dry basis 12869 MT
b. From Pollution Control Facility ESP Dust(Fly ash) Bottom ash	211905 MT 38040 MT	164708 MT 29066 MT
1. Quantity recycled or re- utilized within the unit. Lime grit ESP dust(Fly ash)	NIL 153899 MT	NIL 143282 MT



Bottom ash	38040 MT	29066 MT
2. Sold (supply to brick unit)		
Lime grit	4154MT	7185 MT
ESP dust	14232 MT	21426 MT
3. Disposed		
Red mud	2049018 MT as dry basis	2078176 MT as dry basis
ESP Dust	43774 MT	16168 MT
Lime grit	4563 MT	5684 MT

PART - F

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

Solid Waste:

1. Red mud: It is the residue generated during manufacture of alumina having the leachable caustic content in disposed liquor <10 gpl expressed as Na₂CO₃ in slurry condition with 40:60% water and solids. The water is being removed by pressure filter and in semi-dry condition (78% Solids) disposed in impervious pond known as the Red Mud Pond. The entire Red Mud Pond is divided into 4 parts, such as Pond A, Pond B, Pond C & Pond D. Out of these, Ponds-A & B are meant for Mud Storage, Pond C is meant for collection of Supernant Liquor (SNL) from the pressure filter and mud storage ponds A & B. Pond D is meant for fresh water emergency storage. At present Pond A (Mud Storage) and Pond C (SNL) are in operation. Pond B is under construction. The 1/3rd of the Pond-A Mud Storage Dam (Wet Zone) is lined with Clay along with 1.5 mm thick single layer HDPE liner. The other 2/3rd of the Pond-A Mud Storage Dam (Dry Zone) is lined with clay liner. The Pond-C (SNL pond) is fully lined with Clay along with 1.5 mm thick single layer HDPE liner. Pond-D is also lined with clay & 1.5mm HDPE liner & is currently having fresh water in it. The construction of Red Mud Pond is as per the design approved by SPCB, Odisha vide letter No. 19306/IND-IV-HW-931 dated 30.08.2012.


Typical characteristics of Red Mud

Red mud is alkaline in nature and is having pH of about 11 to 12. The typical chemical composition of the red mud is as given below.

PARAMETERS									
LOI (%)	TA (%)	THA (%)	T-SiO ₂ (%)	Fe ₂ O ₃ (%)	TiO ₂ (%)	CaO (%)	Na ₂ O (%)	P ₂ O ₅ (%)	V ₂ O ₅ (%)
8.10	13.58	5.14	4.88	61.33	4.09	1.14	3.60	0.17	0.11

The Mud Storage Dam also has a leachate drain under the HDPE Liner and connected to the lowest point outside the dyke in a collection pipe and the leachate water is being pumped back to the Pond-C for storage. The water and SNL so collected in Pond C is recycled and reused completely in the refinery for mud washing. In the year 18-19, total of 2081845T MT (as dry basis) Red Mud was

[Handwritten Signature]



generated and stored in the Pond-A. Total decanted water (2372115m³) was recycled back to the process.

Red mud samples were sent to reputed institutions like IIT (Bhubaneswar) for utilization in making roads, IMMT for red mud for iron recovery. About 4000 MT of red mud was sent to Rajashri Cement for Cement manufacturing & about 153.7 MT of red mud was sent to Hyderabad Industries Ltd (HIL) for utilization in making construction materials like tiles, paver blocks etc. We are working with IBM to use red mud in mine back filling.

2. Ash: It is being generated from coal fired boilers of CPP. The fly ash is being collected by ESPs and stored in ash silos and supplied to brick manufacturing units and used for filling low lying areas and balance quantity was disposed in impervious ash pond by using high concentration slurry disposal (HCSD) technology(35:65- water & solids) to save water. 100% Bottom ash was used for low lying land filling followed by mass plantation. During the FY 2018-19, out of total generated 164708 of fly ash, 143282 MT was used for land development and supply to brick manufacturing units.

Typical characteristics of Fly Ash

PARAMETERS											
CaO (%)	MgO (%)	UBC (%)	Na ₂ O (%)	K ₂ O (%)	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	SiO ₂ (%)	P ₂ O ₅ (%)	TiO ₂ (%)	SO ₃ (%)	MnO (%)
3.93	0.798	2.19	0.671	0.536	29.692	3.481	55.619	0.431	1.740	0.195	0.05

3. Lime grit: It is being generated during the preparation of Milk of Lime from quick lime. Out of total quantity 12869 MT of lime grit generated during the FY 2018-19, about 7185 MT (56%) was sold to brick manufacturing units.

Typical characteristics of Lime Grit

PARAMETERS	
Available CaO (%)	Moisture (%)
20.1	19.2

4. Batteries: 1.62 MT of Batteries was sent through Buy Back System.
5. E-Waste: 1.08 MT of e-waste was channelised to e-waste recyclers.

Hazardous Waste

5. Separate Hazardous waste storage shed has been constructed with spill containment pit facility for storage of Hazardous waste. The shed consists of internal drainage system to collect spillage of oil if any during handling of the used oil. The shed is provided with fire extinguishers and fenced to restrict unauthorized entry. All the hazardous waste is being collected and stored in the HW storage shed. The used oil was sold to authorized recyclers/reprocessors as per Hazardous and Other Wastes (management and Transboundary Movement) Rules, 2016. The major Hazardous waste generated during the year 18-19 was used oil of 34.634 KL.




PART - G

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

1. Utilization of ash has saved natural resources like land and top soil.
2. Disposal of red mud through pressure filters & ash by HCSD technology on impervious ponds has saved water consumption due to water recycle from the impervious ponds. The impervious surface of the ponds also protects from ground water contamination. Red Mud Filtration has helped in reducing water consumption as well as recovery of Alumina from Bauxite, thereby reducing Bauxite consumption & enhancing production capacity.
3. High Performance Milling System (HPS) is installed to improve coal milling system. This HPS enhance to minimize the Rejection loss and reduce the coal dust emission there by conserving natural resources.
4. Waste water is being collected and reused by adopting "ZERO" discharge principle to reduce fresh water consumption thereby conserving natural resources. By this our Fresh Water consumption has come down and specific water consumption has been reduced from 1.63 to 1.52 KL/MT of Hydrate Production.
5. Alumina dust from Bag filters and ESPs of Calciner is collected and being recycled to cooling cyclone which further reduced the FO consumption as it doesn't require preheating of alumina.
6. Rainwater from Refinery is being collected in Guard Pond through a separate storm water drain and process water is collected in another separate caustic in caustic pond. The entire water is completely reused in the process to reduce fresh water consumption. The storm water collected in the guard pond during the monsoon season is being allowed to discharge after meeting the prescribed norms as per the condition stipulated in consent to operate.

PART - H

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

1. **Flue Gas Desulphurization (FGD):** (i) Conceptual engineering completed (ii) M/s. Tata Consulting Engineers Ltd (TCE) is appointed as engineering consultant (iii) Basic engineering completed (iv) Feasibility & draft DPR has been submitted by TCE for review. (v) Technical specification for placement of order has been finalized and Notice to Issue Tender (NIT) done. Bidding under progress.
2. Blending of different mix of coal in order to optimize solid waste generation (ash) and thermal Nox is being done.
3. **Biodiversity study** is being carried out in coordination with **International Union for Conservation of Nature (IUCN)** which is a membership Union uniquely composed of government, civil society organizations & industries. **IUCN** has already carried out the Biodiversity survey for three seasons. Pre-winter season survey is due in November-2019. Biodiversity Management Plan shall be prepared post the surveys & shall be implemented based on the recommendations of IUCN.
4. A Poly-crack unit is proposed to be installed next year to treat Municipal Solid Wastes from the plant, township & peripheral areas.
5. Water sprinkling arrangements were made at Red Mud Pond -A to control fugitive dust emissions during the summer season.
6. Sewage Treatment Plants (STPs) have been provided at Plant as well as townships for treatment of domestic waste water. Treated water is being used for gardening and horticulture activities.



7. An environmental cell has been established for monitoring and implementation of safe guard measures for environmental parameters.
8. A network of drainage system has been provided to collect storm water and diverted to guard pond and reused in process.
9. The floors of process areas (caustic area) are made impervious and have been provided with drainage system with provision of sumps at various locations to collect the storm water as well as process water and connected to caustic pond for complete recirculation in process to reduce fresh water consumption and avoid ground water pollution.
10. All raw-material stack yards were made impervious to check leachate to ground.
11. An in-house nursery having capacity of more than two lac sapling has been developed to facilitate plantation, landscaping and green belt development activities. Landscaping was also developed in plant and township.
12. Greenbelts have been developed around peripheral & infrastructural areas, road sides and vacant areas covering an area of around 20 hectares by planting 50750 nos of sapling during the year 2018-19. Assessment of greenbelt is being done for survival rate and future planning.
13. State of the Art technology, Red Mud Filtration (RMF) unit is in continuous operation. This unit helps in reducing the caustic soda content in the red mud and increases 75-80% solids instead of 55-60%, which is being then disposed through the HCSD technology. This semi-dry disposal improves the life of the Red Mud Pond as well as reduce the risk of ground water contamination and the dyke failure due to earth movement as in case of wet-ponding. The semi-dry cake of the red mud is easier to handle and is proven for its utilization in Cement kilns as a resource.
14. New Technology of Gabion wall around the Red Mud pond has been adopted for interim Disposal volume availability. This helped in maintaining the plant operation level during the wet Season.

PART – I

Any other particulars for improving the quality of the environment

1. UAIL has been accredited with the IMS Certification (ISO 9001 : 2015, ISO 14001 : 2015 & BS OHSAS 18001 : 2007)
2. Remote calibration facility has been provided for CPP as per CPCB guidelines.
3. One display board has been provided at main gate to display environmental monitoring parameters.
4. Six numbers of rain water harvesting and ground water recharge pits were developed in the Nuapada Township. Rooftop Rain Water from the Township buildings is captured from the roof catchments. The water so collected is getting filtered through the filtration tank before being allowed for ground water recharge. In addition to the ground water recharging, this initiative also helps in complying with the EC and CTO conditions for Rain Water Harvesting.
5. Our unit operates on a ZLD philosophy. All the Alkaline Waste water generated from different operational areas of the refinery is being collected in a special designed RCC lined caustic pond and being reused in the same process. A separate guard pond is in operation to collect the surface runoff and utilization of the collected water in the process. pH meters have been installed at different locations of the input drainage network leading to the Guard pond to monitor and control the quality of the runoff. In order to continuously monitor the quality of the water at the outlet of the Guard pond, flow meter, IP Camera and pH meters have been installed and



connected to the central DCS. Both the IP camera and the Flow meter have also been connected to OSPCB & CPCB servers through RT-DAS and data is being transmitted on real time basis.

6. Air pollution control devices such as ESPs, dry fog system, bag filters and wet scrubbers have been installed at all suggested locations to control any dust emission.
7. Wagon tippler & dry fog system have been provided for coal unloading and closed conveying system has been provided for coal transport. All the bauxite conveying systems have been covered with water sprinkling system at transfer points.
8. High jet water spraying system have been provided at bauxite and coal stock pile areas to check fugitive emission.
9. Water sprinkling is being done on roads regularly to suppress fugitive dust emission.
10. All approach roads have been black-topped to reduce fugitive dust emissions.
11. As a responsible corporate, continuous emission monitoring system (CEMS) has been installed with RT-DAS facility to transmit the real time data to OSPCB & CPCB.
12. Four Nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been installed and the real time AAQ data is being transmitted to OSPCB server through RT-DAS.

-- 0 --



A handwritten signature in blue ink, appearing to be "H. Singh", written over a horizontal line.