

The status of Environmental Clearance accorded by Ministry of Environment and Forests, I.A. Division, New Delhi to M/s HINDALCO INDUSTRIES LIMITED, CHOTAMURI, Jharkhand for expansion of Alumina Refinery from 125000 MT/Year (nominal) Alumina Production capacity to 575000 MT per year(nominal) **For a Period October'15 to March'16.**

Your letter ref. no. J-11011/131/2005-IA.II (I) dated 20.09.05

A. SPECIFIC CONDITIONS

Sl.No	Condition	Compliance as on March'16
i)	The gaseous emissions from various units shall conform to the standards prescribed from time to time. The State Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry, its size and location. At no time the emission level should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency. Ambient Air Quality data should be regularly monitored and records maintained and report submitted to the Ministry /CPCB/Jharkhand State Pollution Control board once in six months.	a) Pollution control equipments are designed to ensure the gaseous emissions conform to the standards prescribed by statutory authority. b) Ambient Air Quality data is regularly monitored and records are maintained and sent to State Pollution Control Board regularly. Please refer Annexure – I- AAQ monitoring records.
ii)	There shall be no discharge of process effluent. As reflected in the EIA/EMP report, the process waste water generation shall increase from 528m ³ /d to 5092m ³ /d. About 802m ³ /d of waste water will be recycled. Remaining 4290m ³ /d will be recycled back to the process after treatment in the ETP. In addition, efforts shall be made to re-use wastewater from the existing plant. The domestic wastewater shall be treated in STP to meet prescribed standards. The company shall undertake water conservation measures by recycling of power plant blow downs and domestic effluent in the refinery process. The	a) Process ETP has been commissioned and operating satisfactorily. Based on present plant capacity, process effluent is being fully recycled in the plant process. Annexure - III- water quality report. b) We have initiated a series of actions to reduce fresh water consumption. These actions are primarily focusing on reducing fresh water consumption, in-process recycling of effluents and use excess condensate to replace fresh water intake. c) Domestic STP has been commissioned and operating satisfactorily. The treated water is being reused for gardening and dust suppression. d) We have installed Online Effluent (SSTP &

	storm water management shall be by use of water for sprinkling, recycling to process, ash moistening and plant keep up.	ETP) Water Quality Monitoring System. Presently the online data is connected to both sever as JSPCB sever and CPCB sever through CPCB recommended vendor Aaxis Nano Technology Pvt. Ltd sever. All related data e.g. PH, TSS, BOD & COD are being captured and monitored.
iii)	In plant control measures for checking fugitive emission from spillage/raw materials handling shall be provided. Water sprinklers shall be provided to control the fugitive emissions from the active red mud disposal areas and ash coverage in inactive areas.	<p>a) Water sprinkling system in bauxite and coal storage and handling area is installed and is being operated to mitigate fugitive dust emission.</p> <p>b) Dust suppression system in red mud disposal areas has been strengthened. Sprinkling system is being extended to additional areas as and when exposed. Sprinkling is carried out during summer and windy season.</p> <p>c) Water sprinkling is done through mobile tankers along the roads, inside & outside the periphery of the plant.</p>
iv)	The particulate emissions from the calciners shall be controlled by installation of electrostatic precipitator. The particulate emissions shall not exceed 50mg/Nm ³ . The company shall install bag filters to control the emissions from the alumina kiln. All the boiler stacks shall be provided with stack height as per the CPCB guidelines. The boiler and calciner stacks shall be equipped with continuous monitoring device to check SPM emission levels.	Pollution control devices have been commissioned along with the ESP and are connected to chimney stack in calciner & boilers complying with the CPCB guidelines. Presently the Online Continuous Emission Monitoring System installed and data is connected to both server as JSPCB server and CPCB server through CPCB recommended vendor Forbes Marshall Pvt. Ltd server.
v)	The company shall adopt dry disposal system for red mud disposal and shall provide Geo membrane lining in red mud storage area. The ground water quality shall be monitored at various depths around the red mud ponds and action plan in this regard shall be submitted to the Ministry. The company shall rehabilitate the abandoned red mud pond areas with development of green cover.	<p>a) The dry disposal of mud is being practiced already (Since June'02) in existing red mud pond.</p> <p>b) We have installed Pressure filter to get more solid (> 72%) and enhance pond life.</p> <p>c) The technology called controlled modular column (CMC) in RMP area is in progress. Job is expected will be completed by Sept'16 which will increase its life and will eliminate the requirement of new Red Mud pond for next 10 years. This technology is recommended by CBRI,</p>

		<p>Roorkee after a series of studies and soil analysis of the existing area in last one year considering all environment aspects.</p> <p>b) NGRI, Hyderabad has conducted a comprehensive study of 57 ground water sources in the 1 km radius of the RMP during pre and post monsoon season of 2006-07. The report suggests that there is no impact due to the red mud storage. The ground water quality is being monitored once in six month since June'06, during pre-monsoon and post monsoon period. Total 57 ground water points, identified by NGRI Hyderabad and JSPCB, are monitored within a radius of 1 km of the pond for salient parameters. The report suggests that there is no impact due to the red mud storage. The study was further continued during 2008-09, 2009-10 & 2011-12 and it is extended for the year 2013-14. This year 2015-16 we conducted hydro geological through ISM, Dhanbad geophysical, water level and water quality-monitoring data base, prima facie, does not indicate, contamination of groundwater from the red mud stacking or red mud ponds. The report suggests that there has been no significant change as regards fluorides, chlorides and TDS concentrations during the last 5 year period.</p> <p>c) Green belt cover of Red Mud Pond: Abandoned red mud pond pond#2 has been rehabilitated through green cover in phases starting from the year 2005. Expertise (external agency) for development of green cover by TERI a leading organization in this field has been taken. 6000 trees sapling of different species have been planted over Nine acres of abandoned Red Mud Pond #2. The survival rate is 98%.</p> <p>d) Around 15000 saplings of different species planted over abandoned RMP#2. The survival rate is 95%.</p>
vi)	As and when the new pond for red mud disposal is to be constructed, it shall be lined with geo lining to prevent leaching	New red mud pond will be provided with Geo-textile lining, as and when constructed.

	of effluent into the ground water.	
vii)	Green belt of adequate width and density shall be developed in 5 ha. of area in addition to 48.97 ha of plant area already under green belt as per the CPCB guidelines.	<p>Complied.</p> <p>a) A total of 15 acres has been covered with green belt by planting about 15000 tree saplings since June 2005 around the company premises.</p> <p>(b) Also refer specific condition(v) Approx 3000 sapling is having been planted during 2011-12 plant and township area.</p> <p>c) We have planted approx 5200 saplings of plant 2012 to 2013 of Ashok, Saagwaan, Gamhar, Chatni, Neem, Babool, Sisham, Pipal, and survival rate is 95% as measured Banyan in and around the factory premises. We have planted approx 2397 no's trees 2013-14.</p> <p>d) We have planted approx 3000 of saplings of trees in 2014-15. Trees as Ashok, Gamhar, Sisham, Jamu & Neem in and around the factory premises. This year April'15 to March'16 we have planted 2500 no's of Ashok trees. Sheesham & Neem.</p>
viii)	Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	OHS for employees are carried out regularly on routine basis at regular interval by our Medical Health Centre and records are maintained and no adverse impacts/deterioration has been evidenced.
ix)	All the recommendations of the Charter for Corporate Responsibility for Environment Protection (CREP) for the aluminium sector shall be strictly implemented.	<p>1) Dry disposal of red mud is being practiced since 2002 and the same shall be continued.</p> <p>2) Recently we have installed Pressure filter to get more solid (> 72%) and enhance pond life.</p> <p>3) The technology called controlled modular column (CMC) in RMP area is in progress. Job expected will be completed by Sept'16 which will increase its life and will eliminate the requirement of new Red Mud pond for next 10 years. This technology is recommended by CBRI, Roorkee after a series of studies and soil analysis of the existing area in last one year considering all environment aspects</p> <p>4) New Red Mud Pond will be provided with Geo-textile lining as and when constructed.</p> <p>5) Alumina calciners are provided with ESP to maintain emission of 50 mg/Nm³.</p>

		<p>6) New power plant is provided with an ESP to achieve emission less than 100mg/Nm³. A continuous online monitoring system has been installed for monitoring the emissions.</p> <p>7) Dry fly ash handling system is adopted for captive coal power plant.</p> <p>8) 100% Fly ash is being utilized for Flyash brick making and backfilling of coal mine pit at CCL Rajrappa, 45 km from Muri.</p> <p>9) We are in touch of some cement and brick making industry for more utilization of Red mud.</p> <p>10) Red mud supply to ACC cement Plant has been started since Apr'12 and supply to brick manufacturing company M/S Krishna Udyog Pvt Ltd started since Sept'14.</p>
x)	The environmental clearance for the expansion of alumina refinery and establishment of coal based co-generation proposal is subject to the condition that the company shall not undertake any construction or operation of the proposed expansion activity till the environmental clearance for the linked mining proposal is obtained.	Environmental clearance has been obtained for the new mines leases linked to this project namely Kujam 1, Kujam II & Amtipani.
B. GENERAL CONDITIONS:		
i)	The project authorities must strictly adhere to the stipulations made by the Jharkhand State Pollution Control Board and the State Government.	The stipulations made by Jharkhand State Pollution Control board/State govt. are being adhered to.
ii)	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	Complied
iii)	Adequate ambient air quality-monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO ₂ and NO _x are anticipated in consultation with the State Pollution	Complied. Please refer Annexure-I- AAQ monitoring report and Annexure -II for stack monitoring report.

	Control Board. Data on ambient air quality, fugitive emission and stack emissions shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the State Pollution Control Board/Central Pollution Control Board once in six months.	
iv)	Industrial waste water shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. The treated wastewater should be utilized for plantation purpose.	Refer specific condition (ii) (a)
v)	The overall noise levels in and around the plant area shall be kept well within the standard (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time).	Noise levels in existing plant are largely within stipulated standard. However, uses of Personal Protective equipments like ear plug/ear muffs to reduce the noise level are in practice in few areas like ball mill. Acoustic enclosures are provided in various areas to reduce sources of noise generation. Annexure - IV.
vi)	The project proponent shall also comply with the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	a) The EMP's are being implemented as committed in the EIA report. b) Company is regularly undertaking various community development programmes. The annual expenditures incurred during the period on Community Development Programs are 2004-05 (17 lakhs), 2005-06 (21 Lakhs), 2006-07 (32 Lakhs), 2007-08 (67 lakhs), 2008-09 (47 Lakhs), 2009-10 (67.7 Lakhs), 2010-11 (81.07Lakhs), 2011-12 (80 Lakhs), 2013-14 (1.0 Crore). 2014-15 ((1.0 Crore). 2015-16 (2.50 Crores) April'15 to March'16). socio-economic field has been enclosed as Annexure –V.
vii)	The project authorities will provide requisite funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the	Complied.

	State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	
viii)	The Regional Office of this Ministry at Bhubaneswar/Central Pollution Control Board/State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation should be submitted to them regularly.	Complied.
ix)	The project proponent should inform the public that the project has been accorded environmental clearance by the ministry and copies of the clearance letter are available with the State Pollution Control board/Committee and may also be seen at website of the Ministry of Environment and Forests at http://envfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office.	Informed Public through two local Hindi News Papers namely “Prabhat Khabar” & “Hindustan” dated 30 Sept’05 that the project has been accorded environmental clearance by Ministry. Copies of the same have been forwarded to Regional Office at Bhubaneswar on 31 st July’2006.
x)	The Project Authorities should inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	a) Date of financial closure & approval of project: 26 July’04. b) Date of commencing land development work: 10 Oct’05.

Annexure- 1

Ambient Air Quality Monitoring Data					
Period: October'15 to March'2016					
Sampling Station Details					
Sampling Station No.		Location			
I		Sub-Station No.1			
II		Hindalco Football Ground/Union Hall			
III		Red Mud Pond #2			
Month of Monitoring	Sampling Station No.	Air Quality			
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³
Oct'15	I	47.0	35.0	9.5	29.0
	II	54.0	37.2	11.2	32.5
	III	42.5	32.0	10.0	31.1
Nov'15	I	46.1	31.4	8.2	27.3
	II	51.2	33.3	10.1	32.2
	III	44.0	29.0	9.1	31.3
Dec'15	I	48.1	34.5	8.5	30.0
	II	53.4	35.0	10.3	33.0
	III	46.3	31.5	9.4	31.0
Jan'16	I	47.2	34.0	8.0	31.0
	II	49.0	37.0	9.6	32.5
	III	43.5	33.3	9.2	31.6
Feb'16	I	47.2	34.0	7.3	30.0
	II	49.2	37.7	8.4	32.1
	III	45.3	32.2	8.0	31.5
March'16	I	49.0	36.2	8.1	31.0
	II	52.1	38.1	9.3	34.0
	III	42.0	35.0	9.2	32.0

HINDALCO-INDUSTRIES LIMITED: MURI

EFFLUENT ANALYSIS

S.no	Parameters	Unit	Standard	Oct'15	Nov'15	Dec'15	Jan'16	Feb'16	March'16	Remarks
1	pH	-	5.5~9.0	7.1	7.8	7.6	7.2	7.0	7.1	
2	Oil & Grease	mg/l	10	2.3	1.9	1.5	1.8	1.6	2.4	
3	TSS	mg/l	100	27	19	39	26	29	25	
4	COD	mg/l	250	131	127	136	141	130	176	
5	BOD	mg/l	30	7.1	7.6	7.9	8.0	7.8	8.4	

HINDALCO INDUSTRIES LTD : MURI

Noise Monitoring Report
 Month: October' 2015
 Date: 26.10.2015

S.No	Location	Noise Level dB(A)		Remarks
		Day Time (10.00 AM)	Night time (10.30 PM)	
1	Factory Main gate	67	60	
2	ETP gate	65	58	
3	SS-1 gate	69	63	
4	Power Plant gate	68	62	

HINDALCO INDUSTRIES LTD : MURI

Noise Monitoring Report
 Month: November' 2015
 Date: 10.11.2015

S.No	Location	Noise Level dB(A)		Remarks
		Day Time (10.00 AM)	Night time (10.30 PM)	
1	Factory Main gate	64	58	
2	ETP gate	62	55	
3	SS-1 gate	66	62	
4	Power Plant gate	68	64	

HINDALCO INDUSTRIES LTD : MURI

Noise Monitoring Report
 Month: December' 2015
 Date: 21.12.2015

S.No	Location	Noise Level dB(A)		Remarks
		Day Time (10.00 AM)	Night time (10.30 PM)	
1	Factory Main gate	68	58	
2	ETP gate	60	53	
3	SS-1 gate	64	55	
4	Power Plant gate	69	61	

HINDALCO INDUSTRIES LTD : MURI

Noise Monitoring Report
 Month: January' 2016
 Date: 28.01.2016

S.No	Location	Noise Level dB(A)		Remarks
		Day Time (10.00 AM)	Night time (10.30 PM)	
1	Factory Main gate	67	58	
2	ETP gate	59	51	
3	SS-1 gate	61	54	
4	Power Plant gate	69	60	

HINDALCO INDUSTRIES LTD : MURI


Noise Monitoring Report
 Month: February' 2016
 Date: 10.02.2016

S.No	Location	Noise Level dB(A)		Remarks
		Day Time (10.00 AM)	Night time (10.30 PM)	
1	Factory Main gate	67	58	
2	ETP gate	62	54	
3	SS-1 gate	65	53	
4	Power Plant gate	69	58	

HINDALCO INDUSTRIES LTD : MURI

Noise Monitoring Report
 Month: March' 2016
 Date: 21.03.2016

S.No	Location	Noise Level dB(A)		Remarks
		Day Time (10.00 AM)	Night time (10.30 PM)	
1	Factory Main gate	66	56	
2	ETP gate	63	51	
3	SS-1 gate	69	58	
4	Power Plant gate	68	59	

	Production Details
Production FY 2015-2016	
Oct-15	28200
Nov-15	31000
Dec-15	33300
Jan-16	33800
Feb-16	31100
Mar-16	32700

Annexure-II

CALCINATION STACK			
Month	Particulate matter (mg/Nm3)	SO₂ (mg/Nm3)	NO₂ (mg/Nm3)
Oct-15	33	34	40
Nov-15	37	36	42
Dec-15	36	33	41
Jan-16	27	42	47
Feb-16	30	39	49
Mar-16	39	29	36

POWER PLANT STACK					
Month	Particulate matter (mg/Nm³)			SO₂ (mg/Nm³)	NO₂ (mg/Nm³)
	Boiler -1	Boiler -2	Boiler -3		
Oct-15	78	84	Maintenance	277/286	81/89
Nov-15	64	84	Maintenance	280/294	85/93
Dec-15	88	90	Maintenance	304/309	96/92
Jan-16	64	Maintenance	84	280/294	85/93
Feb-16	81	Maintenance	79	282/279	96/89
Mar-16	Maintenance	81	85	326/312	90/94