



Ref No: HIL/LHD/GM (Geo)/MoEF/437

Date: 28.11.2017

To,
The Additional Principal Chief Conservator of Forest (C)
Ministry of Environment, Forests and Climate Changes
Regional Office (ECZ), Ranchi-834002.

Sub: Compliance Report of EC conditions for Bagru (75.41ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga District of Jharkhand for the period Apr'17 to Sept'17.

Ref: **Environmental Clearance letter no J-11015/585/2007-IA II (M) dated 18th Sept 2011**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for Bagru (75.41ha) Bauxite Mining project of **M/s Hindalco Industries Limited**, located in Lohardaga District of Jharkhand for the period **Apr'17 to Sept'17**.

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR **M/s Hindalco Industries Limited**,

(Basudev Gangopadhyay)
GM (Geology)

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi
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CPCB, Zonal Office, Kolkata
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**Compliance of conditions laid down in Environmental Clearance
BAGRU BAUXITE MINES (75.41 Ha)**

Period: Apr'17- Sept'17

MoEF Environment Clearance ref. no. : J - 11015/585/2007 - IA.II (M) dated 04 Feb'2011

Sl No	Conditions	Compliance Status
Specific Conditions		
1	All the conditions stipulated by the State Pollution Control Board in their NOC should be effectively implemented.	Implementations of the stipulated conditions are fulfilled.
2	The environmental clearance is subject to grant of forestry clearance for diversion of 19.56 ha forestland.	The process of Forest clearance, with due submission of the compensatory afforestation land is in process. Mining was not done in forest land in past.
3	The mining operation shall be restricted to above ground water table and it should not intersect groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment & Forest and Central Ground Water Authority shall be obtained for which a detailed hydro-geological study shall be carried out.	No mining operation was being carried out during the above period and as on date. Mining is restricted to above ground water table.
4	The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations.	No natural water course and/or water resources was obstructed due to any mining operations in past. No mining operation was being carried out during the above period and as on date.
5	Top soil should be temporarily stacked with proper slope at earmarked site(s) only with adequate measures and it should not be kept unutilized for a period of more than 3 years. The top soil shall be used for land reclamation and rehabilitation of mined out areas.	Sequential backfilling and reclamation of the mined out area were exercised when mine was operational. No mining operation was being carried out during the above period and as on date.
6	The entire waste generated shall be backfilled and there shall be no external over burden dump left at the end of the mine life. The entire backfilled area shall be reclaimed by plantation. The backfilling should be carried out in such a manner that it is restored to the normal ground level. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining.	No mining operation was being carried out during the above period and as on date. The compliance to this provision was being practiced when mine was in operation and the same will continued post resumption of mining operation. Total 1475 saplings have been planted during the FY2017-18 in the Bagru plateau.

	Compliance status should be submitted to the Ministry of Environment & Forest and its Regional Office, Bhubneshwar on six monthly basis.	
7	The void left unfilled in an area of 1.76 ha shall be converted into water body. The higher benches of excavated void/mining pit shall be traced and plantation done to stabilize the slopes. The slopes of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area.	The void left unfilled area converted into water body when mine was operational. The higher benches of excavated void/mining pit are terraced and plantation was being done to stabilize the slopes which will continue in future post resumption of mining activity. No mining operation was being carried out during the above period and as on date.
8	Catch drains and siltation ponds of appropriate size shall be constructed around the working pit, sub-grade dump, and mineral dumps to arrest flow of silt and sediment directly into Chanpi Nallah, Sukri Nadi and others water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted, particularly after monsoon, and maintained properly. Garland drains settling tanks and check dams of appropriate size, gradient and length shall be constructed for both around the mine pit and sub-grade dump to prevent run off of water and flow sediments directly into Chanpi Nallah, Sukri Nadi and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall(based on 50 years date) and maximum discharge in the area adjoin the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	No mining operation was being carried out during the above period and as on date. Hence No run off was generated from mining activities. However, to collect and manage rainwater during monsoon rains, Pit sumps were made, part of mined out area were used as settling tank. Settled water were used for sprinkling of quarry, roads, green belt development, etc when mine was operational. The compliance to this provision was being practiced when mine was in operation and the same will continue post resumption of mining operation.
9	Dimension of the retaining wall at the toe of sub grade dump and OB benches within the mine to check run-off and siltation should be based on the rain fall data.	The dimensions of the retaining wall of OB dumps are based on the average rain fall. The compliance to this provision was being practiced when mine was in operation and the same will continued post resumption of mining operation.

10	Plantation shall be raise in an area of 50.11 ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around ML area, backfilled and reclaimed area, around water body, roads etc. in consultation with the local DFO/Agriculture Department. At least 1500 trees per year shall be planted with a tree density of 1000 trees per hectare.	Plantation on Bagru plateau was carried out progressively. Around 1475 saplings have been planted during the FY2017-18 in the Bagru plateau.
11	Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the AAQ parameters conform to the norms prescribed by the central Pollution Control Board in this regard.	AAQ and water quality is monitored on periodical basis. Measured AAQ parameters reported within limit.
12	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	System was in place when mine was operational and the same will continue in future post resumption of mining activity..
13	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year - pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF,its Regional Office,Bhubneshwar; Central Ground Water Authority and Central Ground Water Board.	This is being monitored in all season. (Annexure-1 &5)
14	The project authority shall obtain necessary prior approval of the competent authority for drawal of requisite quantity of water (surface water and ground water) for the project.	Rainwater harvested during rainy season was being used for sprinkling on haul roads and raising plantation. Water cess paid to State Pollution Control Board on monthly basis.
15	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining	No mining operation was being carried out during the above period and as on date.

	operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	
16	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented	No mining operation was being carried out during the above period and as on date. However, Blasting time is fixed during Lunch Time i.e. 12.00 Noon - 1.00 PM (whenever will be done post resumption of mining operation). Controlled blasting method will be practiced once the mine become operational. All efforts will be taken to mitigate impact of blasting.
17	Drills should either be operated with dust extractors or should be equipped with water injection system	No mining operation was being carried out during the above period and as on date.
18	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	The sewage water from domestic uses is collected and treated in Sewage Treatment Plant. No effluent is generated and hence, ETP is not required.
19	Consent to operate should be obtained from SPCB prior to start of production of mine.	No mining operation was being carried out during the above period and as on date. Mine will be operative post obtaining renewed Consent to Operate and other clearances as applicable.
20	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project	System is already in place.
21	The critical parameters such as RSPM(Particulate matter with size less than 10micron (i.e., PM10, , PM2.5) and NOX in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closed shall be monitored periodically. Further, quantity of discharged water shall also be monitored [TDS,DQ, PH and TSS}The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of	Being carried out. Monitoring report attached as annexure-1. The data being uploaded on company website,regularly as required.

	Environment and Forest, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	
22	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Progressive mine Closure Plan along with mining scheme has been approved by IBM. FMCP (part) also has been approved by IBM. Final Mine closure plan (FMCP) for total lease area will be prepared in due time.

GENERAL CONDITIONS

Sl No	Conditions	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	No mining operation was being carried out during the above period and as on date. We agree to comply with provision stipulated herein.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made	No mining operation was being carried out during the above period and as on date. We agree to comply with provision stipulated herein.
3	Conservation measures for protection of flora and fauna in the core and buffer zone should be drawn up in consultation with the local forest and wild life department.	Suitable conservation measures were undertaken in past when mine was operational. No mining operation was being carried out during the above period and as on date.
4	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Ambient air monitoring stations established and monitoring is being undertaken in consultation with State Pollution Control Board. Monitoring report annexed as Annexure-1.
5	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhopal and the State Pollution Control Board / Central Pollution	Monitoring report annexed as Annexure-1.

	Control Board once in six months.	
6	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	No mining operation was being carried out during the above period and as on date. We agree to comply with provision stipulated herein as complied in past.
7	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	No mining operation was being carried out during the above period and as on date. We agree to comply with provision stipulated herein post resumption of mining operation as complied in past.
8	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	No mining operation was being carried out during the above period and as on date. We agree to comply with provision stipulated herein post resumption of mining operation as complied in past.
9	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	No mining operation was being carried out during the above period and as on date. We agree to comply with provision stipulated herein post resumption of mining operation as complied in past.
10	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization	Already formed and informed. Vide annexure-3.
11	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Mining Plan along with Progressive mine Closure Plan has been approved by IBM, Ranchi. This was an operating Mine, hence provision related to Financial closure not applicable.
12	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and	Separate budget is being prepared for the purpose and expenditure is being reported to the Ministry. (Annexure-2)

	its Regional Office located at Bhubneshwar.	
13	The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Being complied with.
14	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e mail) to the Ministry of Environment and Forests, its Regional office Bhunaneshwar, the respective Zonal office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forest, Bhubaneshwar, the respective zonal office of Central Pollution Control Board and the State Pollution Control Board.	Six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e mail) are being submitted to the Ministry of Environment and Forests, its Regional office Ranchi, the respective Zonal office of Central Pollution Control Board the State Pollution Control Board and uploaded in company's website.
15	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal corporation, urban local body and the local NGO, if any, from whom and suggestions / representations if any were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	A copy of clearance letter has been sent to concerned Panchayat, Zila Parisad / Municipal corporation, urban local body and the local NGO.
16	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.	Displayed.
17	The environment statement for each financial year ending 31st March in Form V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under	Submitted.

	<p>the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.</p>	
18	<p>The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubaneswar.</p>	<p>Already done (Documents already submitted).</p>



Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
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BAGRU PLATEAU- ENVIRONMENTAL MONITORING REPORT

JULY TO SEPTEMBER 2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0111/2017-18	Date: 24 th October, 2017
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample Location: Entrance Gate Bagru Mines	
Sample collected on: 16.09.2017	

LOCATION / IDENTIFICATION: Entrance Gate Bagru Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	60.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	6.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.5
05.	Ammonia (NH ₃)	µg/m ³	400	13.2
06.	Ozone (O ₃)	µg/m ³	180	12.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.35
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	2.8
10.	Arsenic (As)	ng/m ³	06	2.40
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India
(600 m from Hotel Rukhmini Palace Turn Opp Toyota Show Room. Near J B Sawant Bus Stop)
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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0112/2017-18	Date: 24 th October, 2017
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Bagru Plateau- Office (Near Colony)	
Sample collected on: 16.09.2017	

LOCATION / IDENTIFICATION: Bagru Plateau- Office (Near Colony)				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	44.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	21.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.0
05.	Ammonia (NH ₃)	µg/m ³	400	12.5
06.	Ozone (O ₃)	µg/m ³	180	13.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.25
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.8
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0113/2017-18	Date: 24 th October, 2017
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Hisri Mines Pit Bagru Plateau	
Sample collected on: 16.09.2017	

LOCATION / IDENTIFICATION: Hisri Mines Pit Bagru Plateau				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	45.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	22.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.2
05.	Ammonia (NH ₃)	µg/m ³	400	12.5
06.	Ozone (O ₃)	µg/m ³	180	13.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.0
10.	Arsenic (As)	ng/m ³	06	2.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0114/2017-18	Date: 24 th October, 2017
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Bhusar Mines Pit Bagru Plateau	
Sample collected on: 16.09.2017	

LOCATION / IDENTIFICATION: Bhusar Mines Pit Bagru Plateau				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	53.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.5
05.	Ammonia (NH ₃)	µg/m ³	400	12.2
06.	Ozone (O ₃)	µg/m ³	180	13.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	3.0
10.	Arsenic (As)	ng/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

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Environmental Monitoring Report

JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0115/2017-18

Date: 24th October, 2017

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample Location: Hisri Mines Pit II

Sample collected on: 16.09.2017

LOCATION / IDENTIFICATION: Hisri Mines Pit – II

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	58.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.5
05.	Ammonia (NH ₃)	µg/m ³	400	11.5
06.	Ozone (O ₃)	µg/m ³	180	13.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.25
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.9
10.	Arsenic (As)	ng/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India
(600 m from Hotel Rukhmini Palace Turn Opp Toyota Show Room. Near J B Sawant Bus Stop)
Phone: 2582 0658/ 3139/ 1663/ 3154 Fax: 91-22-25823543 thane@mahabal.com



Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

At Booty, Near PHED Colony, Behind Pump House, PO – PMCC, District – Ranchi 834009,
Mobile No: +91 9431.102.102 / +91 9955.358.262,
E-mail: mahabalranchi@gmail.com

Hindalco Industries: Environmental Monitoring Report JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0116/2017-18	Date: 24 th October, 2017
Sample described by customer : SURFACE-WATER	
Client name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: SURFACE WATER	
Marks on Sample: Location: Bhusar Mines Pit	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 16.09.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
1	Colour	Hazen	<2	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.29	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	8.0	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	459	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	44	200 max	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	46	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	41	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO ₄)	mg/l	29	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.22	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	6.4	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84



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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Continuation Sheet
MEEPL/OCT0116/2017-18

Report no: MEEPL/OCT0116/2017-18				Date: 24 th October, 2017	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.15	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	12.0	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.12	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
24	Mercury (as Hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 4500-CNC & 4-39 & 4-44
26	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.1	7-8	APHA 20 th ED. Method 4500-o g.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0117/2017-18	Date: 24 th October, 2017
Sample described by customer : SURFACE-WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: SURFACE WATER	
Marks on Sample: Location: Hisri Mines Pit	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 16.09.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
1	Colour	Hazen	<2	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.31	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	8.1	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	449	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	41	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	45	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	48	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO ₄)	mg/l	34.7	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.20	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	6.6	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84



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Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2017

Continuation Sheet
MEEPL/OCT0117/2017-18

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.12	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	11.5	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.10	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
24	Mercury (as Hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 4500-CN.C & 4-39 & 4-44
26	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.3	7-8	APHA 20 th ED. Method 4500-o g.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0118/2017-18	Date: 24 th October, 2017
Sample described by customer : SURFACE-WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: SURFACE WATER	
Marks on Sample: Location: Bagru Mines Pit	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 16.09.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
1	Colour	Hazen	<2	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.31	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.8	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	411	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	46	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	41	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	47	250 max	APHA 22 nd Ed. 2012, 4500-Cl-b, 4-72
11	Sulphate (as SO ₄)	mg/l	32.9	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.20	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	6.1	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84



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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Continuation Sheet
MEEPL/OCT0118/2017-18

Report no: MEEPL/OCT0118/2017-18		Date: 24 th October, 2017			
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.12	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	11.3	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.10	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
24	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 4500-CN.C & 4-39 & 4-44
26	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.2	7-8	APHA 20 th ED. Method 4500-o g.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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E-mail: mahabalranchi@gmail.com

Hindalco Industries : Environmental Monitoring Report **JULY - SEPTEMBER 2017**

Report no: MEEPL/OCT0119/2017-18			Date: 24th October, 2017		
Sample described by customer: STP Outlet (Bagru Mines)					
Client Name: Hindalco Industries Limited					
Client Address: Lohardaga					
Postal Code: 835203					
State: Jharkhand					
Country: India					
Sample Type: Effluent Water					
Marks on Sample: Location: STP Outlet (Bagru Mines)					
Quantity: 4 liters.					
Sample collected on: 16.09.2017					
Sl. No.	Analysis	Method	Result	Unit	Limits
1.	pH	APHA 22 nd Ed. 2012, 4500-H+-B,4-92	8.7	mg/l	5.5-9.0
2.	Total Suspended Solids	APHA 22 nd EDN: 2012-2540	45	mg/l	100
3.	BOD @ 27°C	IS 3025 (Part 44): 1993, RA2003, Amd.1	11.5	mg/l	30
4.	COD	IS 3025 (Part 58): 1993, RA2006, Amd.1	39.2	mg/l	250
5.	Oil & Grease	IS 3025(PART 39): 1991 RA 2003,Ed 2.1	<5.0	mg/l	10
6.	Total Dissolved Solids	APHA 22 nd EDN 2012-2540	595	mg/l	2100
7.	Aluminium (as Al)	APHA 22 nd EDN 2012-3120B	1.0	mg/l	3
8.	Calcium (as Ca)	APHA 22 nd EDN 2012-3120B	9.2	mg/l	75
9.	Iron (as Fe)	APHA 22 nd EDN 2012-3120B	1.1	mg/l	3
10.	Temperature		24.3	°C	Shall not exceed 5°C above the receiving water temperature

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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E-mail: mahabalranchi@gmail.com

Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0120/2017-18		Date: 24th October, 2017		
Sample described as: FLUE GAS				
Name of the Industry: M/S HINDALCO INDUSTRIES LIMITED				
Address: Mines Division, Lohardaga, Jharkhand, Pin-835302				
Date & time of Sampling: 16.09.2017				
Sampling Site: Bagru Mines Office-Bagru Plateau				
A. General Information about Stack				
<ul style="list-style-type: none"> • Stack connected to: DG-Set (250 KVA) • Emission due to Burning of H.S.D • Material OF construction: M.S • Shape of Stack: Circular • Whether stack is provided with permanent platform & ladder: Yes • Capacity: 250 KVA 				
B. Physical characteristics of stack				
<ul style="list-style-type: none"> • Height of the stack (a) from ground level: 7.0 m • Diameter of the Stack at Sampling point: 0.2030m • Height of the sampling point from GL: 6.25m 				
C. Analysis/Characteristic of Stock				
<ul style="list-style-type: none"> • Fuel used: H.S.D • Fuel Consumption: 30 lt/hr 				
D. Analysis Report				
Sl. No.	PARAMETERS	PROTOCOL	RESULTS	Limits as per MoEF G.S.R.448(E)
1.	Temperature of Emission (°C)	IS 11255 Part: 3 1985 (Realf 2008)	310	---
2.	Barometric pressure (mm of Hg)	IS 11255 Part: 3 1985 (Realf 2008)	751	---
3.	Velocity of Gas (m/Sec)	IS 11255 Part: 3 1985 (Realf 2008)	7.29	---
4.	Quantity of Gas flow (Nm ³ /hr)	IS 11255 Part: 3 1985 (Realf 2008)	412	---
5.	Concentration of CO ₂ (% v/v)	IS 11255 Part: 3 1985 (Realf 2008)	4.0	5.0
6.	Concentration of CO (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2008)	0.61	--
7.	Concentration of SO ₂ (mg/Nm ³)	USEPA-6C	65.3	--
8.	Concentration of NO ₂ (gm/kw-h)	USEPA-7E	1.48	9.2
9.	Concentration of Particulate Matters (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2003)	0.21	0.3
E. Pollution Control Device				
Details of pollution control devices attached with the stack: Nil				
F. Remarks: Nil				

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2016-17

The composite cost during the year 2017-18 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha), Pakhar (8.09 Ha), Pakhar (35.12Ha), Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.87 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud(152.57 Ha), Orsa pat(196.36 Ha), Bhusar (65.31 Ha)& Bimarla Bauxite Mines (134.52 Ha).

SI No	Description	Budget (in Rupees) FY 2017-18	Actual (in Rupees) FY 2017-18 (from April'17 to Sep'2017)
1	Pollution Control & Environment monitoring	1316000.00	651832.00
2	Reclamation/ Back filing & Rehabilitation**	300000000.00	131262375.00
3	Green belt, Plantation & Water spraying arrangement	3400000.00	3373300.00
4	Rural Development	40000000.00	18500000.00

**Part of OB removed cost.



(Basudev Gangopadhyay)
Convenor (Quality & Environment)



Date: 03.04.17

Office Order

Environmental Cell has been re-constituted at Bagru Bauxite Mines (Area 75.41 Ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Hindalco Industries Limited.

1. Mr. Debananda Nayak - Sr. Mining Engineer (Coordinator)
2. Mr. Rajesh Kumar Ghosh – Sr. Officer (HR)
3. Mr. Ajay Kumar Thakur - Asst. Manager (Mech)
4. Mr. Vijay Sahoo - Mining Mate

Basudev Gangopadhyay
Convenor (Quality & Environment)

ANNEXURE-4

PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-17 to Sep-17

NAME OF THE MINES	MINING LEASE AREA (IN HA)	MINED OUT AREA (HA)	BACK FILLED AREA (HA)	PRODUCTION (In MT)	OVERBURDEN (In Cu.M)
Shrengdag Bauxite	155.81	2.57	2.00	148229.00	141538.00
Gurdari Bauxite Mines	584.19	8.10	4.70	175860.00	391707.00
Jalim & Sanai	12.14	1.25	0.50	25137.00	16365.00
Serangdag	140.06	0.00	0.00	0.00	0.00
Pakhar Buxite Mines	115.13	1.52	1.89	137420.00	166565.00
Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
Kujam-I	80.87	1.87	1.95	67925.00	108182.00
Kujam-II	157.38	3.32	3.70	132480.00	269516.00
Amtipani	190.95	4.70	3.17	102545.00	138980.00
Chiro-Kukud	152.57	1.73	1.28	41460.00	64089.00
Orsa Bauxite Mines	196.36	0.00	0.00	0.00	0.00
Hisri New	14.55	1.05	0.91	35561.00	44239.00
Bhusar	65.31	0.16	1.80	63239.00	88532.00
Bagru	75.41	0.00	0.00	0.00	0.00
Minerals & Minerals Limited					
Pakhar Buxite Mines	109.51	1.50	1.70	136490.00	152916.00
Pakhar Buxite Mines	15.58	0.20	0.00	0.00	2716.00
Bimarla Bauxite Mines	134.52	4.71	5.86	67850.00	164820.00



(Basudev Gangopadhyay)

Convenor (Quality & Environment)