

ADITYA BIRLA



Ref No: HIL/LHD/GM (Geo)/MoEF/439

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 Bhusar (65.31 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga, Jharkhand for the period Apr'17 to Sept'17.**

Ref: Environmental Clearance No-J-11015/184/2011-IA.II (M) dated 17th June 2013.

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for Bhusar (65.31 ha) Bauxite Mining project of M/s Hindalco located in Lohardaga, Jharkhand for the period **Apr'17 to Sept'17**.

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

Basudev Gangopadhyay
GM(Geology)

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi
RO, JSPCB, Ranchi
CPCB, Zonal Office, Kolkata
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Bhusar Bauxite Mines of M/s Hindalco Industries Limited

Area 65.31 Ha

Period: Apr'17- Sept'17

Environmental Clearance No-J-11015/184/2011-IA.II (M) dated 17th June 2013.

Sl No	Specific Condition	Compliance
(i)	All the conditions stipulated by the State Pollution Control Board in their NOC shall be effectively implemented.	Implementations of the stipulated conditions are fulfilled.
(ii)	Environmental clearance is subject to obtaining clearance under the wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	We understand this is not applicable.
(iii)	The mining operations shall be restricted to above ground water table and it should not intersect groundwater table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	Shallow depth mining is being done in the Bagru Plateau. The ground water table is much below the working depth. Hence, ground water not intersected due to mining activities.
(iv)	The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operations.	Agreed. No natural water course is being and will be obstructed due to mining activities.
(v)	Top soil should be stacked with proper slope at earmarked site(s) only with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Top soil was being stored temporarily and is being spread over the back filled area in the process of reclamation.
(vi)	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 back filling 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. Compliance status should be submitted to the Ministry of Environment as	The over burden generated during the mining operation temporarily stacked at earmarked dump site (s) only for the purpose of backfilling, Backfilling is in progress. The entire area will be reclaimed by suitable plantation which is under progressive stage as of now. Monitoring and management of rehabilitated area will continue until the vegetation becomes self-sustaining. Compliance status is being submitted to MoEF on six monthly bases.

	Forests and its Regional Office, Bhubaneswar on six monthly basis.	
(vii)	<p>Catch drains and siltation ponds of appropriate size should be constructed for the working pit, temporary OB dumps, if any and mineral dumps to arrest flow of silt and sediment. 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.</p> <p>Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and temporary dumps and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining 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.</p>	<p>Catch drains and siltation ponds of appropriate size are being provided. No run-off is being generated from mining activities. However to collect & manage rain water during monsoon, part of mined out area was and will be used as settling tank for the runoff. Rain water is being used for watering the mine area, roads, green belt development, sprinkling on haul roads etc and the same practice will be continue.</p> <p>Garland drain of suitable size has been provided .</p>
(viii)	Dimension of the retaining wall at the toe of temporary dumps 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.
(ix)	Plantation shall be raised in an area of 52.50 ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around MI. area, backfilled and reclaimed area, around water body, roads etc. in consultation with the local DFO/Agriculture Department at the end of life of mine. The density of the trees should be around 2500 plants per ha.	It is already in practice. Phase wise plantation of native species in consultation with forest department has been carried out within the safety zone and mined out/reclaimed pits. Total 2283 saplings have been planted during FY 2017-18 within the Bhusar lease area. Green belt development programme is in progress with progress of mining activities.

(x)	Regular water sprinkling should be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as haul road, loading and unloading point and transfer points. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Mobile water tankers had been provided for sprinkling of water in critical areas to suppress dust. AAQ parameters in Mine area monitored on regular basis. (Annexure-1).
(xi)	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.	A plan has been prepared to implement suitable conservation measures to augment ground water resources in the area (Bagru Plateau). The water reservoir, check dams, contour bunds, gullies in the mining lease area is so designed that all the rain water within the lease will be collected in the pond only. Due slope is maintained. No water allowed to flow out of the lease. Near the portion of the slopes bund is created by boulder and morrum to arrest the outflow. Plantation is done at susceptible portions to prevent soil erosion. The same practice will continue in future.
(xii)	Regular monitoring of ground water level and quality should be carried out in and around the mine lease 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 i.e. January, April-May, August, November and the data thus collected may be sent regularly to Ministry of Environment and Forests, its Regional Office, Bhubaneswar; Central Ground Water Authority and Central Ground Water Board.	Being complied. Water quality monitoring report is enclosed.
(xiii)	The project authorities should obtain prior approval of the competent authority for drawl of groundwater if any, required for the project.	Suitable arrangement for collection of water in Rain water harvesting pond is in practice. Necessary water cess is being/will be paid to Jharkhand State Pollution Control Board for Bagru group of Mines. We are not using any ground water for mining purposes.

(xiv)	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded..	Regular maintenance of vehicles are being undertaken to minimize vehicular emission. All measures are being taken to control vehicular emission. Bauxite are transported through ropeway from Bagru Hill to Lohardaga siding.
(xv)	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	Blasting time is fixed during Lunch Time i.e. 12.00 Noon -1.00 PM. Controlled blasting method is in practice. Ground vibration study has been conducted by IIT, Kharagpur. All efforts are being taken to mitigate impact of blasting.
(xvi)	Drills shall either be operated with dust extractors or equipped with water injection system.	Wet drilling is being done in the holes for dust suppression.
(xvii)	Consent to operate should be obtained from SPCB before starting/ enhanced production from the mine.	Consent to operate has been obtained before start of mining activities. CTO is valid up to Sept'2021.
(xviii)	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. Final Mine closure plan will be prepared in due time.

Sl No	General Condition	Compliance
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.	Being adhered to.
(ii)	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Being adhered to. Excavation of OB and Bauxite is given in.(Annexure-4)
(iii)	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for PM10, SO2 as NOx monitoring.	The system is already in place. Air quality monitoring report is being submitted regularly at JSPCB and MoEF.

	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.	
(iv)	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.	Suitable water spraying system is already available for Bagru group of mines. To arrest fugitive dust proper water sprinkling is being carried out on haul roads, loading and unloading and at transfer points.
(v)	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.	Noise monitoring is being done regularly. Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and ear muffs. Monitoring of noise level is being conducted at various locations of the work zone area.
(vi)	Industrial wastewater (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 03 or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop.	There is no industrial waste water. Oil and grease trap installed at suitable site.
(vii)	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.	Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and ear muffs. Monitoring of noise level is being conducted at various locations of the work zone area. Training is being provided through Group vocational training centre on safety and health aspects.
(viii)	Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Being carried out.
(ix)	A separate environmental management cell with suitable qualified personnel	Separate Environmental Management Cell (EMC) has been constituted and is functioning

	should be set up under the control of a senior Executive, who will report directly to the Head of the organization.	effectively. Copy enclosed. (Annexure-3).
(x)	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purposes. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar	The fund earmarked for environmental protection measures is being kept in separate account. Year wise expenditure is being reported to the Ministry and its Regional Office located at Ranchi. Copy (Annexure-2).
(xi)	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing requisite data/information/monitoring reports.	Agreed.
(xii)	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Pollution Control Board and 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.
(xiii)	A copy of the clearance letter will be marked to the concerned Panchayat/local NGO, if any, from whom suggestions/representation has been received while processing the proposal.	A copy of clearance letter has been sent to concerned Panchayat, ZilaParisad / Municipal corporation, urban local body and the local NGO.
(xiv)	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	It is an operational mines. Hence this is not applicable.
(xv)	State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry	Displayed.

	Centre and Collector's/Tehsildar's Office for 30 days.	
(xvi)	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 at Bhubaneswar.	Complied. Copies of relevant paper cutting are submitted earlier.



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Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

BAGRU PLATEAU- ENVIRONMENTAL MONITORING REPORT

JULY TO SEPTEMBER 2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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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



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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

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Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0114/2017-18

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: 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	$\mu\text{g}/\text{m}^3$	100	53.6
02.	Particulate Matter (size less than 2.5 μm) PM _{2.5}	$\mu\text{g}/\text{m}^3$	60	24.7
03.	Sulphur Dioxide (SO ₂)	$\mu\text{g}/\text{m}^3$	80	5.1
04.	Nitrogen Dioxide (NO ₂)	$\mu\text{g}/\text{m}^3$	80	8.5
05.	Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	400	12.2
06.	Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	180	13.1
07.	Carbon Monoxide (CO)	mg/m^3	02	0.27
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	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)	$\mu\text{g}/\text{m}^3$	05	2.4
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.35

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Hindalco Industries : Environmental Monitoring Report JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0115/2017-18	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 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

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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-Cl-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-CIG, 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-Cl-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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Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, 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

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
19	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
18	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	7.1	7-8	APHA 20 th ED. Method 4500-og.

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-Cl-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-Cl-G, 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-Cl-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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Hindalco Industries : Environmental Monitoring Report JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0119/2017-18			Date: 24 th 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.

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Hindalco Industries : Environmental Monitoring Report JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0120/2017-18			Date: 24 th 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).

Sl 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)

ADITYA BIRLA



HINDALCO

Annexure - 3

Date: 03.04.17

Office Order

Environmental Cell has been re-constituted at Bhusar Bauxite Mines (Area 65.31 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. Syed Abdul Mannan – Geologist (Coordinator)
2. Mr. Rupak Kumar Dubey - Dy.Engineer (Mech)
3. Mr. Anil Kumar singh – Mining Engineer
4. Mr. U.K. Verma - 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)