



Ref No: HIL/LHD/JP (M)/MoEF/93

Date: 23.05.2017

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 Oct'16 to March'17.**

Ref: **Environmental Clearance No-J-11015/184/2011-IA.II (M) dated 17<sup>th</sup> 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 **Oct'16 to March'17.**

Hope you will find the same in order.

Thanking You

Yours Sincerely  
FOR HINDALCO INDUSTRIES LIMITED

A handwritten signature in blue ink, appearing to read 'Bijesh'.

(Bijesh Kumar Jha)  
Agent of Mines

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi  
RO, JSPCB, Ranchi  
CPCB, Zonal Office, Kolkata  
<mef@ori.nic.in>, <mef@nic.in>, <mef.or@nic.in>, mef.or@nic.in

**Bhusar Bauxite Mines of M/s Hindalco Industries Limited**

**Area 65.31 Ha**

**Period: Oct'16-March17**

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

<b>SI No</b>	<b>Specific Condition</b>	<b>Compliance</b>
(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.	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 and is being stored temporarily and 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 generated from mining activities. However to collect &amp; 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 will be provided as &amp; when required as being done in the past.</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 ML 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 will be carried out within the safety zone and mined out/reclaimed pits. Around 7000 saplings have been planted during FY 2016-17 within the Bagru/Bhusar plateau.

(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 are 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 was in practise and the same will continue in future. 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..	For our all operating mines regular maintenance of vehicles are undertaken to minimize vehicular emission. All the transporters have been instructed to obtain PUC for their vehicles from the concerned authority and submit to the concerned Officer for verification. Now a days all the vehicles have obtained such PUC.Bauxite are transported through tarpaulin cover trucks and 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 is being done only during day time. Mitigative measures are being taken to control ground vibration.
(xvi)	Drills shall either be operated with dust extractors or equipped with water injection system.	Wet drilling is being done in the holesfor 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 shouldbe 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	Excavation of OB and Bauxite is being done as per the approved mining plan/scheme and

	mineral bauxite and waste should be made.	obtained EC capacity. (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. 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.	The system is already in place. Air quality monitoring report is being submitted regularly at JSPCB and MoEF.
(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	Being carried out.



	undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	
(ix)	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.	Separate Environmental Management Cell (EMC) has been constituted and is functioning 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	It is an operational mines. Hence this is not applicable.

	financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	
(xv)	State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's/Tehsildar's Office for 30 days.	Displayed.
(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 <a href="http://envfor.nic.in">http://envfor.nic.in</a> 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.





Annexure - 1

# Eco Ventures Pvt. Ltd.

Regd. Office: 2/37, Sarvapriya Vihar, Near IIT Gate, New Delhi-110016

Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,  
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: [ecoventures.mumbai@gmail.com](mailto:ecoventures.mumbai@gmail.com) / [ecoventures@eco-ventures.in](mailto:ecoventures@eco-ventures.in)

## **Mahabal Enviro Engineers Pvt. Ltd.**

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

### **BAGRU PLATEAU- ENVIRONMENTAL MONITORING REPORT**

**JANUARY TO MARCH 2017**

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
SENIOR EXECUTIVE





# 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

JAN. – MAR 2017

## CONTENT

<b>LOCATION</b>	
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2	Bagru Plateau- Office (Near Colony)
3	Hisri Mines Pit Bagru Plateau
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1	Bagru Crusher site
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1	Tap Water-Bagru Plateau near office.
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1	STP Outlet (Bagru Mines)
<b>GROUND WATER</b>	
1	Hisri Mines Pit
<b>STACK EMISSION MONITORING OF DG SET (FLUE GAS)</b>	
1	Bagru Mines Office-Bagru Plateau





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Hindalco Industries : Environmental Monitoring Report

JAN. – MAR 2017

<b>Report no:</b> MEEPL/APRIL0118/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample Location: <b>Entrance Gate Bagru Mines</b>	
<b>Sample collected on:</b> 23.03.2017	

LOCATION / IDENTIFICATION: Entrance Gate Bagru Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	59.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	33.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	9.4
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	14.9
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	15.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	14.3
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.40
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.65
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.1
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring Report**

**JAN. – MAR 2017**

<b>Report no:</b> MEEPL/APRIL0119/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample type:</b> AMBIENT AIR QUALITY MONITORING	
<b>Marks on Sample:</b> Location: Bagru Plateau- Office (Near Colony)	
<b>Sample collected on:</b> 23.03.2017	

LOCATION / IDENTIFICATION: Bagru Plateau- Office (Near Colony)				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	45.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	28.6
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	8.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	17.1
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	15.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	16.3
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.45
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.8
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.50
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.7
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.3

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
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Hindalco Industries : Environmental Monitoring Report

JAN. – MAR 2017

Report no: MEEPL/APRIL0120/2016-17	Date: 20 <sup>th</sup> April, 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: 23.03.2017	

LOCATION / IDENTIFICATION: Hisri Mines Pit Bagru Plateau				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	44.6
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	27.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	7.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	13.9
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	15.2
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	14.6
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.49
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.8
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.70
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.4
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JAN. - MAR 2017

<b>Report no:</b> MEEPL/APRIL0121/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample: Location: <b>Bhusar Mines Pit Bagru Plateau</b>	
<b>Sample collected on:</b> 23.03.2017	

LOCATION / IDENTIFICATION: Bhusar Mines Pit Bagru Plateau				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	55.7
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	32.3
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	9.4
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	16.1
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	14.8
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	16.4
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.41
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.5
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.1
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.5
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.38

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring Report**

**JAN. – MAR 2017**

<b>Report no: MEEPL/APRIL0122/2016-17</b>	<b>Date: 20<sup>th</sup> April, 2017</b>
<b>Sample described by customer: AMBIENT AIR QUALITY MONITORING</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample Location: <b>Hisri Mines Pit II</b>	
<b>Sample collected on: 23.03.2017</b>	

LOCATION / IDENTIFICATION: Hisri Mines Pit – II				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	58.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	6.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	15.1
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	14.7
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	15.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.48
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.7
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.1
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.8
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries : Environmental Monitoring Report

JAN. – MAR 2017

<b>Report no:</b> MEEPL/APRIL0123/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> Measurement of Noise	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Meter</b>	
Data Collection Date: 23.03.2017	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Bagru Plateau Near Office	dB (A) $L_{eq}$	75	54.7	70	41.5	23.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring Report**

**JAN. – MAR 2017**

<b>Report no:</b> MEEPL/APRIL0124/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> Measurement of Noise	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 23.03.2017	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Bagru Plateau – Near Workshop	dB (A) Leq	75	47.7	70	40.9	23.03.2017

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries : Environmental Monitoring Report

JAN. – MAR 2017

<b>Report no: MEEPL/APRIL0125/2016-17</b>	<b>Date: 20<sup>th</sup> April, 2017</b>
Sample described by customer: Measurement of Spot Noise	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 23.03.2017	

Location/Identification	Unit	Limit (day)	Result	Dates
Bagru Plateau – Bagru Crusher site	dB (A) $L_{eq}$	75	65.4	23.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring Report**

**JAN. - MAR 2017**

<b>Report no: MEEPL/APRIL0126/2016-17</b>	<b>Date: 20<sup>th</sup> April, 2017</b>
<b>Sample described by customer : DRINKING WATER-POTABILITY</b>	
<b>Client Name: Hindalco Industries Limited</b>	
<b>Client Address: Lohardaga</b>	
<b>Postal Code: 835203</b>	
<b>State: Jharkhand</b>	
<b>Country: India</b>	
<b>Sample Type: DRINKING WATER-POTABILITY</b>	
<b>Marks on Sample: Location: Bagru Plateau Near Office.</b>	
<b>Quantity: 5 L X 2 No. PVC Can</b>	
<b>Sample collected on:23.03.2017</b>	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> 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	0.2	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.2	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	75.8	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	44.6	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	58.8	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	7.1	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	6.3	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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**Hindalco Industries : Environmental Monitoring Report**

**JAN. – MAR 2017**

**Continuation Sheet**  
**MEEPL/APRIL0126/2016-17**

Report no: MEEPL/APRIL0126/2016-17				Date: 20 <sup>th</sup> April, 2017	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	1.7	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.12	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.11	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	30	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	1.9	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.19	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.02	0.02 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> Ed. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> Ed. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-S <sub>2</sub> -C 4-175 & F 4-178







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**Hindalco Industries : Environmental Monitoring Report**

**JAN. - MAR 2017**

**Continuation Sheet**  
**MEEPL/APRIL0126/2016-17**

Report no: MEEPL/APRIL0126/2016-17				Date: 20 <sup>th</sup> April, 2017	
S.No	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1.	Total Colliforms	MPN/100 mL	N.D	<1.1	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69
2.	E-Coli	MPN/100 mL	N.D	Absent	APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9-76
<b>Pesticides Residues</b>					
3.	p,p DDT	µg/L	N.D	1	US EPA 508-1995
4.	o,p DDT	µg/L	N.D	1	US EPA 508-1995
5.	p,p DDE	µg/L	N.D	1	US EPA 508-1995
6.	o,p DDE	µg/L	N.D	1	US EPA 508-1995
7.	p,p DDD	µg/L	N.D	1	US EPA 508-1995
8.	o,p DDD	µg/L	N.D	1	US EPA 508-1995
9.	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10.	α-HCH	µg/L	<0.01	0.02	US EPA 508-1995
11.	β-HCH	µg/L	N.D	0.03	US EPA 508-1995
12.	δ - HCH	µg/L	N.D	0.03	US EPA 508-1995
13.	Butachlor	µg/L	N.D	120	US EPA 508-1995
14.	Alachlor	µg/L	N.D	20	US EPA 508-1995
15.	Atrazine	µg/L	N.D	2.1	US EPA 532-2000
16.	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17.	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18.	Endosulfan Sulphate	µg/L	N.D	0.3	US EPA 508-1995
19.	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20.	Malathion	µg/L	N.D	185	US EPA 8141A -1994
21.	Methyl Parathion	µg/L	N.D	0.4	US EPA 8141A -1994
22.	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23.	Phorate	µg/L	N.D	2	US EPA 8141A -1994
24.	Chlorpyrifos	µg/L	N.D	26	US EPA 8141A -1994
25.	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26.	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
<b>Remarks: N.D- Not Detected</b>					

**Conclusion:** The Physical & Chemical Analysis report indicates that water is not contaminated.

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
SENIOR EXECUTIVE





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**Hindalco Industries : Environmental Monitoring Report**

**JAN. - MAR 2017**

<b>Report no: MEEPL/APRIL0127/2016-17</b>			<b>Date: 20<sup>th</sup> April, 2017</b>		
Sample described by customer: <b>STP Outlet (Bagru Mines)</b>					
Client Name: <b>Hindalco Industries Limited</b>					
Client Address: Lohardaga					
Postal Code: 835203					
State: Jharkhand					
Country: India					
Sample Type: <b>Effluent Water</b>					
Marks on Sample: Location: <b>STP Outlet (Bagru Mines)</b>					
Quantity: 4 liters.					
Sample collected on: 23.03.2017					
Sl. No.	Analysis	Method	Result	Unit	Limits
1	pH	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B,4-92	7.9	mg/l	5.5-9.0
2	Total Suspended Solids	APHA 22 <sup>nd</sup> EDN: 2012-2540	30.2	mg/l	100
3	BOD @ 27°C	IS 3025 (Part 44): 1993, RA2003, Amd.1	11.7	mg/l	30
4	COD	IS 3025 (Part 58): 1993, RA2006, Amd.1	35.1	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 <sup>nd</sup> EDN 2012-2540	87.5	mg/l	2100
7	Aluminium (as Al)	APHA 22 <sup>nd</sup> EDN 2012-3120B	1.0	mg/l	3
8	Calcium (as Ca)	APHA 22 <sup>nd</sup> EDN 2012-3120B	6.9	mg/l	75
9	Iron (as Fe)	APHA 22 <sup>nd</sup> EDN 2012-3120B	1.2	mg/l	3
10	Temperature		30.1	°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**

**JAN. - MAR 2017**

<b>Report no:</b> MEEPL/APRIL0128/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer : GROUND WATER</b>	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample Type:</b> GROUND WATER	
<b>Marks on Sample:</b> Location: Hisri Mines Pit	
<b>Quantity:</b> 5 L X 2 No. PVC Can	
<b>Sample collected on:</b> 26.12.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
1	Colour	Hazen	<2	5 Max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	8.3	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	428	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO <sub>3</sub> )	mg/l	46	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	41	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	47	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO <sub>4</sub> )	mg/l	32.9	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.20	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	6.1	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84



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Hindalco Industries : Environmental Monitoring Report

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Continuation Sheet  
MEEPL/APRIL0128/2016-17

Report no: MEEPL/APRIL0128/2016-17		Date: 20 <sup>th</sup> April, 2017			
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.13	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	9.5	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.08	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
24	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-CN.C & 4-39 & 4-44
26	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.3	7-8	APHA 20 <sup>th</sup> ED. Method 4500-o g.

**Conclusion:** The Physical & Chemical Analysis report indicates that water is not contaminated.

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 – RMCC, District – Ranchi 834009,  
Mobile No: +91 9431.102.102 / +91 9955.358.262,  
E-mail: mahabalranchi@gmail.com

**Hindalco Industries : Environmental Monitoring Report**

**JAN. – MAR 2017**

<b>Report no: MEEPL/APRIL0129/2016-17</b>		<b>Date: 20<sup>th</sup> April, 2017</b>		
Sample described as: <b>FLUE GAS</b>				
Name of the Industry: <b>M/S HINDALCO INDUSTRIES LIMITED</b>				
Address: Mines Division, Lohardaga, Jharkhand, Pin-835302				
<b>Date &amp; time of Sampling: 23.03.2017</b>				
<b>Sampling Site: Bagru Mines Office-Bagru Plateau</b>				
A. General Information about Stack				
<ul style="list-style-type: none"> <li>• Stack connected to: DG-Set (250 KVA)</li> <li>• Emission due to Burning of H.S.D</li> <li>• Material OF construction: M.S</li> <li>• Shape of Stack: Circular</li> <li>• Whether stack is provided with permanent platform &amp; ladder: Yes</li> <li>• Capacity. 250 KVA</li> </ul>				
B. Physical characteristics of stack				
<ul style="list-style-type: none"> <li>• Height of the stack (a) from ground level: 7.0 m</li> <li>• Diameter of the Stack at Sampling point: 0.2030m</li> <li>• Height of the sampling point from GL. 6.25m</li> </ul>				
C. Analysis/Characteristic of Stock				
<ul style="list-style-type: none"> <li>• Fuel used: H.S.D</li> <li>• Fuel Consumption: 30 lt/hr</li> </ul>				
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)	328	---
2	Barometric pressure (mm of Hg)	IS 11255 Part: 3 1985 (Realf 2008)	756	---
3	Velocity of Gas (m/Sec)	IS 11255 Part: 3 1985 (Realf 2008)	7.42	---
4	Quantity of Gas flow (Nm <sup>3</sup> /hr)	IS 11255 Part: 3 1985 (Realf 2008)	426	---
5	Concentration of CO <sub>2</sub> (% 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)	0.69	--
7	Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )	USEPA-6C	66.3	--
8	Concentration of NO <sub>2</sub> (gm/kw-h)	USEPA-7E	1.41	9.2
9	Concentration of Particulate Matters (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2003)	0.25	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





# *Eco Ventures Pvt. Ltd.*

Regd. Office: 2/37, Sarvapriya Vihar, Near IIT Gate, New Delhi-110016

Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,  
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: [ecoventures.mumbai@gmail.com](mailto:ecoventures.mumbai@gmail.com) / [ecoventures@eco-ventures.in](mailto:ecoventures@eco-ventures.in)

## **Mahabal Enviro Engineers Pvt. Ltd.**

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

### **BAGRU PLATEAU- ENVIRONMENTAL MONITORING REPORT**

**OCTOBER TO DECEMBER 2016**

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
**SENIOR EXECUTIVE**







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Hindalco Industries : Environmental Monitoring Report

OCT - DEC 2016

## CONTENT

<b>LOCATION</b>	
<b>AMBIENT AIR QUALITY</b>	
1	Bagru Plateau- Office (Near Colony)
2	Hisri Mines Pit Bagru Plateau
3	Bhusar Mines Pit Bagru Plateau
4	Entrance Gate Bagru Mines
5	Bagru Hisri Mines Pit II
<b>NOISE LEVEL</b>	
1	Bagru Plateau – Near Office
2	Bagru Plateau – Near Workshop
<b>SPOT NOISE</b>	
1	Bagru Crusher site
<b>DRINKING WATER</b>	
1	Tap Water-Bagru Plateau near office.
<b>EFFLUENT WATER ANALYSIS</b>	
1	STP Outlet (Bagru Mines)
<b>SURFACE WATER</b>	
1	Bhusar Mines Pit
<b>STACK MONITORING OF DG SETS (FLUE GAS)</b>	
1	Bagru Mines Office-Bagru Plateau



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Hindalco Industries : Environmental Monitoring Report

OCT - DEC 2016

Report no: : MEEPL/ JAN0145/2016-17	Date: 30 <sup>th</sup> January , 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: 26.12.2016	

LOCATION / IDENTIFICATION: Bagru Plateau- Office (Near Colony)				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	40.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	32.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	23.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	34.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	11.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	18.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.69
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	7.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.92
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.2
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.4

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

OCT - DEC 2016

Report no: : MEEPL/ JAN0146/2016-17	Date: 30 <sup>th</sup> January, 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: 26.12.2016	

LOCATION / IDENTIFICATION: Hisri Mines Pit Bagru Plateau				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	49.8
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	36.8
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	27.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	29.8
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	17.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	16.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.68
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	9.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	3.35
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.56
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring Report**

**OCT - DEC 2016**

Report no: : MEEPL/ JAN0147/2016-17

Date: 30<sup>th</sup> January, 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: 26.12.2016

### LOCATION / IDENTIFICATION: Bhusar Mines Pit Bagru Plateau

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 $\mu\text{m}$ ) PM <sub>10</sub>	$\mu\text{g}/\text{m}^3$	100	62.5
02.	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) PM <sub>2.5</sub>	$\mu\text{g}/\text{m}^3$	60	39.8
03.	Sulphur Dioxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	23.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	36.9
05.	Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	400	16.9
06.	Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	180	21.5
07.	Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	02	0.61
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.028
09.	Nickel (Ni)	$\text{ng}/\text{m}^3$	20	7.2
10.	Arsenic (As)	$\text{ng}/\text{m}^3$	06	2.72
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	$\mu\text{g}/\text{m}^3$	05	2.95
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

OCT - DEC 2016

Report no: : MEEPL/ JAN0148/2016-17	Date: 30 <sup>th</sup> January , 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: 26.12.2016	

LOCATION / IDENTIFICATION: Entrance Gate Bagru Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	54.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	40.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	22.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	32.6
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	21.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	16.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.52
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.82
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.4
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

OCT - DEC 2016

<b>Report no. :</b> MEEPL/ JAN0149/2016-17	<b>Date:</b> 30 <sup>th</sup> January , 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample Location: <b>Hisri Mines Pit II</b>	
<b>Sample collected on:</b> 26.12.2016	

LOCATION / IDENTIFICATION: Hisri Mines Pit – II				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	50.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	32.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	18.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	30.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	18.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	14.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.52
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	5.3
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.5
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring Report**

**OCT - DEC 2016**

<b>Report no: : MEEPL/ JAN0150/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
<b>Sample described by customer: Measurement of Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Meter</b>	
Data Collection Date: <b>26.12.2016</b>	
Analyse Date: <b>27.12.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Bagru Plateau Near Office	dB (A) L <sub>eq</sub>	75	52.3	70	40.2	27.12.2016

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring Report**

**OCT - DEC 2016**

<b>Report no. : MEEPL/ JAN0151/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
Sample described by customer: Measurement of Noise	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 26.12.2016	
Analyse Date: 27.12.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Bagru Plateau – Near Workshop	dB (A) L <sub>eq</sub>	75	42.1	70	39.8	26.12.2016

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
SENIOR EXECUTIVE







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**Hindalco Industries : Environmental Monitoring Report**

**OCT – DEC 2016**

<b>Report no: : MEEPL/ JAN0152/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
Sample described by customer: Measurement of Spot Noise	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 26.12.2016	
Analyse Date: 27.12.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Bagru Plateau Bagru Crusher site	dB (A) $L_{eq}$	75	67.5	26.12.2017

**For Mahabal Enviro Engineers Pvt. Ltd.**

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**Hindalco Industries : Environmental Monitoring Report**

**OCT – DEC 2016**

<b>Report no. : MEEPL/ JAN0153/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
<b>Sample described by customer : DRINKING WATER-POTABILITY</b>	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample Type:</b> DRINKING WATER-POTABILITY	
<b>Marks on Sample: Location:</b> Bagru Plateau near office.	
<b>Quantity:</b> 5 L X 2 No. PVC Can	
<b>Sample collected on:</b> 26.12.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> 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	0.3	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.5	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	86.9	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	56.9	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	70.5	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	9.2	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	6.2	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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# Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring Report**

**OCT – DEC 2016**

**Continuation Sheet**  
**MEEPL/JAN0153/2016-17**

Report no: : MEEPL/ JAN0153/2016-17				Date: 30 <sup>th</sup> January , 2017	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	1.2	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.17	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.13	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	36	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	4.5	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.19	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.0010	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.02	0.02 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003; ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-S2-C 4-175 & F 4-178

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Hindalco Industries : Environmental Monitoring Report

OCT - DEC 2016

Continuation Sheet  
MEEPL/JAN0153/2016-17

Report no: : MEEPL/ JAN0153/2016-17				Date: 30 <sup>th</sup> January , 2017	
S.No	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1.	Total Colliforms	MPN/100 mL	N.D	<1.1	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69
2.	E-Coli	MPN/100 mL	N.D	Absent	APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9- 76
<b>Pesticides Residues</b>					
3.	p,p DDT	µg/L	N.D	1	US EPA 508-1995
4.	o,p DDT	µg/L	N.D	1	US EPA 508-1995
5.	p,p DDE	µg/L	N.D	1	US EPA 508-1995
6.	o,p DDE	µg/L	N.D	1	US EPA 508-1995
7.	p,p DDD	µg/L	N.D	1	US EPA 508-1995
8.	o,p DDD	µg/L	N.D	1	US EPA 508-1995
9.	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10.	α-HCH	µg/L	<0.01	0.02	US EPA 508-1995
11.	β-HCH	µg/L	N.D	0.03	US EPA 508-1995
12.	δ - HCH	µg/L	N.D	0.03	US EPA 508-1995
13.	Butachlor	µg/L	N.D	120	US EPA 508-1995
14.	Alachlor	µg/L	N.D	20	US EPA 508-1995
15.	Atrazine	µg/L	N.D	2.1	US EPA 532-2000
16.	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17.	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18.	Endosulfan Sulphate	µg/L	N.D	0.3	US EPA 508-1995
19.	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20.	Malathion	µg/L	N.D	185	US EPA 8141A -1994
21.	Methyl Parathion	µg/L	N.D	0.4	US EPA 8141A -1994
22.	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23.	Phorate	µg/L	N.D	2	US EPA 8141A -1994
24.	Chlorpyrifos	µg/L	N.D	26	US EPA 8141A -1994
25.	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26.	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

**Conclusion:** The Physical & Chemical Analysis report indicates that water is not contaminated.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE







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**Hindalco Industries : Environmental Monitoring Report**

**OCT - DEC 2016**

<b>Report no. : MEEPL/ JAN0154/2016-17</b>			<b>Date: 30<sup>th</sup> January , 2017</b>		
Sample described by customer: <b>STP Outlet (Bagru Mines)</b>					
Client Name: <b>Hindalco Industries Limited</b>					
Client Address: Lohardaga					
Postal Code: 835203					
State: Jharkhand					
Country: India					
Sample Type: <b>Effluent Water</b>					
Marks on Sample: Location: <b>STP Outlet (Bagru Mines)</b>					
Quantity: 4 liters.					
Sample collected on: 26.12.2016					
Sl. No.	Analysis	Method	Result	Unit	Limits
1	pH	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B,4-92	7.2	mg/l	5.5-9.0
2	Total Suspended Solids	APHA 22 <sup>nd</sup> EDN: 2012-2540	32.5	mg/l	100
3	BOD @ 27°C	IS 3025 (Part 44): 1993, RA2003, Amd.1	16.8	mg/l	30
4	COD	IS 3025 (Part 58): 1993, RA2006, Amd.1	42.5	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 <sup>nd</sup> EDN 2012-2540	92.5	mg/l	2100
7	Aluminium (as Al)	APHA 22 <sup>nd</sup> EDN 2012-3120B	1.2	mg/l	3
8	Calcium (as Ca)	APHA 22 <sup>nd</sup> EDN 2012-3120B	7.10	mg/l	75
9	Iron (as Fe)	APHA 22 <sup>nd</sup> EDN 2012-3120B	2.5	mg/l	3
10	Temperature		27.5	°C	Shall not exceed 5°C above the receiving water temperature

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
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**Hindalco Industries : Environmental Monitoring Report**

**OCT – DEC 2016**

<b>Report no. : MEEPL/ JAN0155/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
<b>Sample described by customer : SURFACE-WATER</b>	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample Type:</b> SURFACE WATER	
<b>Marks on Sample: Location:</b> Bhusar Mines Pit	
<b>Quantity:</b> 5 L X 2 No. PVC Can	
<b>Sample collected on:</b> 26.12.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
1	Colour	Hazen	<2	5 Max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	8.3	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	428	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO <sub>3</sub> )	mg/l	46	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
9	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	41	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	47	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-b, 4-72
11	Sulphate (as SO <sub>4</sub> )	mg/l	32.9	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.20	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	6.1	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84



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Hindalco Industries : Environmental Monitoring Report

OCT - DEC 2016

Continuation Sheet  
MEEPL/JAN0155/2016-17

Report no: : MEEPL/ JAN0155/2016-17		Date: 30 <sup>th</sup> January , 2017			
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.18	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	12.9	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.16	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
24	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CN.C & 4-39 & 4-44
26	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.2	7-8	APHA 20 <sup>th</sup> ED. Method 4500-o g.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring Report**

**OCT - DEC 2016**

<b>Report no: : MEEPL/ JAN0156/2016-17</b>		<b>Date: 30<sup>th</sup> January , 2017</b>		
Sample described as: <b>FLUE GAS</b>				
Name of the Industry: <b>M/S HINDALCO INDUSTRIES LIMITED</b>				
Address: Mines Division, Lohardaga, Jharkhand, Pin-835302				
Date & time of Sampling: 26.12.2016				
Sampling Site: <b>Bagru Mines Office-Bagru Plateau</b>				
A. General Information about Stack <ul style="list-style-type: none"> <li>Stack connected to: DG-Set (250 KVA)</li> <li>Emission due to Burning of H.S.D</li> <li>Material OF construction: M.S</li> <li>Shape of Stack: Circular</li> <li>Whether stack is provided with permanent platform &amp; ladder: Yes</li> <li>Capacity. 250 KVA</li> </ul>				
B. Physical characteristics of stack <ul style="list-style-type: none"> <li>Height of the stack (a) from ground level: 7.0 m</li> <li>Diameter of the Stack at Sampling point: 0.2030m</li> <li>Height of the sampling point from GL. 6.25m</li> </ul>				
C. Analysis/Characteristic of Stock <ul style="list-style-type: none"> <li>Fuel used: H.S.D</li> <li>Fuel Consumption: 30 lt/hr</li> </ul>				
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)	330	---
2	Barometric pressure (mm of Hg)	IS 11255 Part: 3 1985 (Realf 2008)	752	---
3	Velocity of Gas (m/Sec)	IS 11255 Part: 3 1985 (Realf 2008)	8.2	---
4	Quantity of Gas flow (Nm <sup>3</sup> /hr)	IS 11255 Part: 3 1985 (Realf 2008)	458	---
5	Concentration of CO <sub>2</sub> (% v/v)	IS 11255 Part: 3 1985 (Realf 2008)	3.9	5.0
6	Concentration of CO (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2008)	0.32	--
7	Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )	USEPA-6C	63.5	--
8	Concentration of NO <sub>2</sub> (gm/kw-h)	USEPA-7E	1.20	9.2
9	Concentration of Particulate Matters (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2003)	0.25	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 2016-17 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 (80.97 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud, Orsa pat(196.36 Ha), Bhusar (65.31 Ha)& Bimarla Bauxite Mines (134.52 Ha).

SI No	Description	Budget (in Rupees) FY 2016-17	Actual (in Rupees) FY 2016-17 (from April'16 to Sep'2016)	Actual (in Rupees) FY 2016-17 (from April'16 to March'2017)
1	Pollution Control & Environment monitoring	1540000.00	574975.50	1674221.50
2	Reclamation/ Back filing & Rehabilitation**	40000000.00	33837173.00	74355537.00
3	Green belt, Plantation & Water spraying arrangement	2100000.00	2051751.00	6821323.50
4	Rural Development	20000000.00	10244807.32	21404308.19

\*\*Part of OB removed cost.



(B.K. Mahapatra)

Convenor (Quality & Environment)

HINDALCO INDUSTRIES LIMITED  
MINES DIVISION, COURT ROAD,  
PO&DIST-LOHARDAGA (JHARKHAND)

---

Date: 05.09.16

### 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)
3. Mr. Anil Kumar singh (Mining Engineer)
4. Mr. Shashank kumar Singh (Junior Engineer)
5. Mr. U.K Veram (Mining Mate)

  
(B.K. Mahapatra)  
Convenor (Quality & Environment)



PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-16 to March-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	5.87	5.10	258487.00	413395.00
Gurdari Bauxite Mines	584.19	12.94	10.63	324200.00	428811.00
Jalim & Sanai	12.14	1.04	0.45	44624.00	36500.00
Serangdag	140.06	0.00	0.00	0.00	0.00
Pakhar Buxite Mines	115.13	3.90	3.40	282190.00	370111.00
Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
Kujam-I	80.87	4.52	4.05	148770.00	272334.00
Kujam-II	157.38	8.30	7.85	294830.00	572328.00
Amtipani	190.95	6.61	5.91	149450.00	282375.00
Chiro-Kukud	152.57	3.09	2.03	87570.00	154928.20
Orsa Bauxite Mines	196.36	0.00	0.00	0.00	0.00
Hisri New	14.55	1.77	1.27	98608.00	90560
Bhusar	65.31	0.68	1.38	171961.00	51545.00
Bagru	75.41	0.00	0.00	0.00	0.00
<b>Minerals &amp; Minerals Limited</b>					
Pakhar Buxite Mines	109.51	3.78	3.28	277220.00	414676.00
Pakhar Buxite Mines	15.58	0.00	0.00	0.00	0.00
Bimarla Bauxite Mines	134.53	5.47	2.61	112730.00	135260.64



(B.K. Mahapatra)  
Convener (Quality & Environment)

## Monitored water level (FY 2016-17)

Location (Mines)	Elevation (Mtr)	Well type	Monsoon (July-Sep)		Post Monsoon (November)		Winter (January)		Pre Monsoon (April-May)	
			Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML
Bagru Plateau (Hisri new, Bagru & Bhusar )	905	Open Well		21.32			22.70		27.30	29.10
	910	Open Well		24.38			24.56		26.50	27.40
	915	Open Well		29.00			28.43		29.90	31.35
	903	Open Well		22.81			33.15		35.15	35.70
	909	Open Well		20.15			28.72		30.15	30.25
	1000	Open Well		24.93			22.65		25.15	25.85
Pakhar Gr. Of Mines (115.13,109.507,15.58,8.	1083	Hand Pump	35.35			31.60		34.2		35.45
	1027	Open Well		25.80			28.40		30.15	31.35
	1094	Hand Pump	41.74			39.55		42.60		42.85
	1081	Hand Pump	39.60			31.30		41.10		42.10
	1055	Hand Pump	33.00			27.50		35.50		35.65
	1066	Hand Pump	27.75			26.25		29.10		30.10
Gurdari	1045	Hand Pump	29.30			27.70		29.90		30.50
	1061	Hand Pump	28.30			24.90		25.20		25.90
	1059	Hand Pump	38.10			36.15		35.15		36.25
	1075	Hand Pump	27.90			26.75		28.40		29.65
	1075	Hand Pump	28.30			29.30		30.20		30.15
	1040	Open Well		33.90			21.85		35.15	36.65
Kujam I, Kujam II & Amtipani Mines	1041	Open Well		33.65			24.80		36.25	39.35
	1064	Hand Pump	31.50			28.60		36.10		42.00
	1052	Hand Pump	22.35				21.05		24.60	23.50
	1148	Hand Pump	33.40			28.30		34.20		37.45
Chiro Kukud	1151	Hand Pump	37.60			31.80		36.20		36.00
	1084	Hand Pump	34.20			33.15		35.60		39.50

  
 (B.K. Mahapatra)  
 Convenor (Quality & Environment)