



Ref No: HIL/LHD/GM (GEO)/MoEF/283

Date: 25.11.2018

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 April'18 to Sept'18.**

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 **April'18 to Sept'18**.

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: April'18- Sep'18**

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

<b>Sl No</b>	<b>Specific Condition</b>	<b>Compliance</b>
(i)	All the conditions stipulated by State Pollution Control Board in their NOC shall be effectively implemented.	Implementations of stipulated conditions in NOC are fulfilled post which consent to operate has been obtained from time to time. Existing consent to operate is valid upto 30.09.2021 and implementation of conditions are being full filled with progress of mining.
(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. Ground water table is much below working depth and lies at depth of 90-120 mts from mining horizon. Hence, ground water not intersected due to mining activities.  EC also acknowledge the mine working will not intersect ground water.
(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 is being spread over back filled area in process of reclamation. Entire top soil generated earlier has been used for reclamation purpose.
(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	Over burden generated during mining operation temporarily stacked at earmarked dump site (s) only for purpose of backfilling. Backfilling is in progress. The entire area is being reclaimed by suitable plantation which is under progressive stage as of now. Monitoring and management of rehabilitated area is continuous until vegetation becomes self-sustaining. There shall be no external dump left at the end of mine life. Compliance status is being submitted to MoEF on six monthly bases.

	status should be submitted to the Ministry of Environment as 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 &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 mine area, roads, green belt development, sprinkling on haul roads etc and same practice will be continue.</p> <p>Garland drain of suitable size has been provided.</p> <p>Sump of adequate capacity is being provided and maintained as required</p> <p>Rainwater harvesting pond is provided within lease area.</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.	Dimensions of the retaining wall of OB dumps are based on 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.	<p>It is already in practice. Phase wise plantation of native species in consultation with forest department has been carried out within safety zone and mined out/reclaimed pits.</p> <p>As on date approx 33.086 Ha area is covered with plantation. Total 5175 saplings have been planted during above period within the Bhusar mine lease area.</p> <p>Green belt development programme is in progress with progress of mining activities.</p>

(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 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.	<p>A plan has been prepared to implement suitable conservation measures to augment ground water resources in area (Bagru Plateau).</p> <p>The water reservoir, check dams, contour bunds, gullies in mining lease area is so designed that all the rain water within lease will be collected in pond only. Due slope is maintained. No water allowed to flow out of lease. Near the portion of the slopes bund is created by boulder and morrum to arrest outflow.</p> <p>Plantation is done at susceptible portions to prevent soil erosion. The same practice will continue in future.</p>
(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.	<p>Ground water table is at depth of 90-120 mts</p> <p>We are not using ground water for any mining purpose.</p> <p>Drinking water quality report attached.</p>

(xiii)	The project authorities should obtain prior approval of the competent authority for drawl of groundwater if any, required for the project.	<p>Suitable arrangement for collection of water in rain water harvesting pond is in practice.</p> <p>Water is drawn from rain water harvesting pond being used for sprinkling on haul roads and to raising plantation.</p> <p>We are not using any ground water for mining purposes.</p>
(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.	<p>Regular maintenance of vehicles are being undertaken to minimize vehicular emission.</p> <p>All measures are being taken to control vehicular emission.</p> <p>Bauxite is transported through ropeway from Bagru Hill to Lohardaga siding.</p>
(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	<p>Blasting time is fixed during lunch time i.e. 1.00 PM -2.00 PM.</p> <p>Controlled blasting method is in practice. Ground vibration study has been conducted by IIT, Kharagpur.</p> <p>All efforts are being taken to mitigate impact of blasting.</p>
(xvi)	Drills shall either be operated with dust extractors or equipped with water injection system.	Wet drilling is being done in 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. Current 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. Based on present resource estimate, and peak rated production capacity mentioned in EC, tentative balance life is around 4-5 years. However, after completion of further detailed exploration, resources estimate vis-à-vis balance life of the mine may change based on final resource estimate, EC capacity and cut-off grade at that point of time.

SI 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.	Bauxite production is within the limit specified in EC. Excavation & bauxite production are in line with calendar plan. (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. 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 been provided with PPEs such as ear plug and ear muffs.  Monitoring of noise level is being conducted at various locations of 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 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	Year wise expenditure is being reported to the Ministry and its Regional Office located at Ranchi. Copy enclosed (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. Now Regional office is at Ranchi.
(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 status of compliance of 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, Zila Parisad / 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 mine. Hence provisional related to financial closure is not applicable.
(xv)	State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Colleator'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.





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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**

**APRIL TO JUNE 2018**

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

**Vijay Pandey**  
**SENIOR EXECUTIVE**



**Branch Office:**

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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

<b>Report no:</b> MEEPL/JULY0149/2018-19	<b>Date:</b> 14 <sup>th</sup> July, 2018
<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> 02.06.2018	

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>	<b>100</b>	<b>53.2</b>
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	<b>60</b>	<b>26.0</b>
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	<b>80</b>	<b>4.0</b>
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	<b>80</b>	<b>5.7</b>
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	<b>400</b>	<b>9.1</b>
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	<b>180</b>	<b>11.5</b>
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	<b>02</b>	<b>0.21</b>
08.	Lead (Pb)	µg/m <sup>3</sup>	<b>1.0</b>	<b>0.02</b>
09.	Nickel (Ni)	ng/m <sup>3</sup>	<b>20</b>	<b>2.6</b>
10.	Arsenic (As)	ng/m <sup>3</sup>	<b>06</b>	<b>2.2</b>
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	<b>05</b>	<b>2.0</b>
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	<b>01</b>	<b>0.30</b>

For Mahabal Enviro Engineers Pvt. Ltd.

**Vijay Pandey**  
SENIOR EXECUTIVE





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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

<b>Report no:</b> MEEPL/JULY0150/2018-19	<b>Date:</b> 14 <sup>th</sup> July, 2018
<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 Mines – Near Colony	
<b>Sample collected on:</b> 02.06.2018	

### LOCATION / IDENTIFICATION: Bagru Mines – 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	50.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	23.9
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.4
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	6.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	11.4
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.21
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.8
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.3
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

<b>Report no:</b> MEEPL/JULY0151/2018-19	<b>Date:</b> 14 <sup>th</sup> July, 2018
<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: Hisri Mines Pit Bagru Plateau	
<b>Sample collected on:</b> 03.06.2018	

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	68.8
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	34.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.2
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	10.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	12.3
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.28
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.3
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.2
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	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

Report no: MEEPL/JULY0152/2018-19

Date: 14<sup>th</sup> July, 2018

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 – I**

Sample collected on: 02.06.2018

### LOCATION / IDENTIFICATION: Bhusar Mines Pit – I

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	72.3
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	38.4
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.8
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	9.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	11.3
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.25
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.4
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.0
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	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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APRIL – JUNE 2018

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<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>Bhusar Mines Pit – II</b>	
<b>Sample collected on:</b> 02.06.2018	

LOCATION / IDENTIFICATION: Bhusar 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	64.7
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	31.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.7
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.1
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	10.2
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	11.7
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.30
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.1
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.0
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.3
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





# Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

<b>Report no:</b> MEEPL/JULY0154/2018-19	<b>Date:</b> 14 <sup>th</sup> July, 2018
<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: 02.06.2018	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result
Bagru Plateau Near Office	dB (A) $L_{eq}$	75	64.5	70	52.8

For Mahabal Enviro Engineers Pvt. Ltd.

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Environmental Monitoring Report

APRIL – JUNE 2018

<b>Report no:</b> MEEPL/JULY0155/2018-19	<b>Date:</b> 14 <sup>th</sup> July, 2018
<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: 02.06.2018	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result
Bagru Plateau – Near Workshop	dB (A) $L_{eq}$	75	<b>61.3</b>	70	<b>50.9</b>

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

<b>Report no:</b> MEEPL/JULY0156/2018-19	<b>Date:</b> 14 <sup>th</sup> July, 2018
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: 02.06.2018	

Location/Identification	Unit	Limit (day)	Result
Bagru Plateau – Bagru Crusher site	dB (A) $L_{eq}$	75	<b>72.0</b>

For Mahabal Enviro Engineers Pvt. Ltd.

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APRIL - JUNE 2018

<b>Report no: MEEPL/JULY0157/2018-19</b>			<b>Date: 14<sup>th</sup> July, 2018</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>					
<b>Quantity: 4 liters.</b>					
<b>Sample collected on: 02.06.2018</b>					
Sl. No.	Analysis	Method	Result	Unit	Limits
1.	pH	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B,4-92	<b>8.0</b>	mg/l	5.5-9.0
2.	<b>Total Suspended Solids</b>	APHA 22 <sup>nd</sup> EDN: 2012-2540	<b>59</b>	mg/l	100
3.	<b>BOD @ 27°C</b>	IS 3025 (Part 44): 1993, RA2003, Amd.1	<b>7.4</b>	mg/l	30
4.	<b>COD</b>	IS 3025 (Part 58): 1993, RA2006, Amd.1	<b>29.5</b>	mg/l	250
5.	<b>Oil &amp; Grease</b>	IS 3025(PART 39): 1991 RA 2003,Ed 2.1	<b>&lt;5.0</b>	mg/l	10
6.	<b>Total Dissolved Solids</b>	APHA 22 <sup>ND</sup> EDN 2012-2540	<b>1178</b>	mg/l	2100
7.	<b>Aluminium (as Al)</b>	APHA 22 <sup>nd</sup> EDN 2012-3120B	<b>1.0</b>	mg/l	3
8.	<b>Calcium (as Ca)</b>	APHA 22 <sup>nd</sup> EDN 2012-3120B	<b>8.7</b>	mg/l	75
9.	<b>Iron (as Fe)</b>	APHA 22 <sup>nd</sup> EDN 2012-3120B	<b>1.0</b>	mg/l	3
10.	<b>Temperature</b>		<b>23.9</b>	°C	Shall not exceed 5°C above the receiving water temperature

For Mahabal Enviro Engineers Pvt. Ltd.

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APRIL – JUNE 2018

<b>Report no: MEEPL/JULY0158/2018-19</b>			<b>Date: 14<sup>th</sup> July, 2018</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: 02.06.2018</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)	269	---
2.	Barometric pressure (mm of Hg)	IS 11255 Part: 3 1985 (Realf 2008)	750	---
3.	Velocity of Gas (m/Sec)	IS 11255 Part: 3 1985 (Realf 2008)	7.32	---
4.	Quantity of Gas flow (Nm <sup>3</sup> /hr)	IS 11255 Part: 3 1985 (Realf 2008)	463	---
5.	Concentration of CO <sub>2</sub> (% v/v)	IS 11255 Part: 3 1985 (Realf 2008)	3.5	5.0
6.	Concentration of CO (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2008)	0.61	--
7.	Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )	USEPA-6C	62.5	--
8.	Concentration of NO <sub>2</sub> (gm/kw-h)	USEPA-7E	1.31	9.2
9.	Concentration of Particulate Matters (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2003)	0.17	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.

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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

<b>Report no:</b> MEEPL/JULY0159/2018-19	<b>Date:</b> 14 <sup>th</sup> July, 2018
<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:</b> Location: Bagru Plateau Near Office.	
<b>Quantity:</b> 5 L X 2 No. PVC Can	
<b>Sample collected on:</b> 02.06.2018	

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	--	7.3	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-CI-G, 4-69
7	Total Dissolved Solids	mg/l	81	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	48.1	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	52.5	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	7.3	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	6.0	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190





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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

## Continuation Sheet MEEPL/JULY0159/2018-19

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	1.5	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	0.10	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	1.8	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	0.17	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-S2-C 4-175 & F 4-178





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Hindalco Industries :

Environmental Monitoring Report

APRIL – JUNE 2018

Continuation Sheet  
MEEPL/JULY0159/2018-19

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.

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Environmental Monitoring Report

APRIL – JUNE 2018

<b>Report no:</b> MEEPL/JULY0160/2018-19	<b>Date:</b> 14 <sup>th</sup> July, 2018
<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:</b> Location: Hisri Mines Pit	
<b>Quantity:</b> 5 L X 2 No. PVC Can	
<b>Sample collected on:</b> 03.06.2018	

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	--	8.0	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	442	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO <sub>3</sub> )	mg/l	49	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	47	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	43	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO <sub>4</sub> )	mg/l	37.3	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	6.7	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84





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## Continuation Sheet MEEPL/JULY0160/2018-19

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.15	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	9.9	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





# 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**

**JULY TO SEPTEMBER 2018**

**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 2018

## CONTENT

LOCATION	
<b>AMBIENT AIR QUALITY</b>	
1	Entrance Gate Bagru Mines
2	Bagru mines - Near Colony
3	Hisri Mines Pit Bagru Plateau
4	Bhusar Mines Pit – I Bagru Plateau
5	Bhusar Mines Pit – II Bagru Plateau
<b>EFFLUENT WATER ANALYSIS</b>	
1	STP Outlet (Bagru Mines)
<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

JULY – SEPTEMBER 2018

<b>Report no:</b> MEEPL/OCT0134/2018-19	<b>Date:</b> 10 <sup>th</sup> October, 2018
<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> 04.09.2018	

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	50
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	23
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	7.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	10.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.20
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.2
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2018

<b>Report no:</b> MEEPL/OCT0135/2018-19	<b>Date:</b> 10 <sup>th</sup> October, 2018
<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 Mines – Near Colony	
<b>Sample collected on:</b> 04.09.2018	

### LOCATION / IDENTIFICATION: Bagru Mines – 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	57
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	21
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.6
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	6.8
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	11.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.23
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.1
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.6
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.3
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

JULY – SEPTEMBER 2018

<b>Report no:</b> MEEPL/OCT0136/2018-19	<b>Date:</b> 10 <sup>th</sup> October, 2018
<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: Hisri Mines Pit Bagru Plateau	
<b>Sample collected on:</b> 05.09.2018	

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	61.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	10.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.21
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.0
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	2.4
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2018

Report no: MEEPL/OCT0137/2018-19

Date: 10<sup>th</sup> October, 2018

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 – I**

Sample collected on: 04.09.2018

### LOCATION / IDENTIFICATION: Bhusar Mines Pit – I

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	65
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	33
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.6
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.9
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	9.0
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.22
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.0
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	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
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E-mail: [mahabalanranchi@gmail.com](mailto:mahabalanranchi@gmail.com)

Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2018

<b>Report no:</b> MEEPL/OCT0138/2018-19	<b>Date:</b> 10 <sup>th</sup> October, 2018
<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>Bhusar Mines Pit – II</b>	
<b>Sample collected on:</b> 04.09.2018	

LOCATION / IDENTIFICATION: Bhusar 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>	<b>100</b>	<b>58</b>
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	<b>60</b>	<b>27</b>
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	<b>80</b>	<b>2.2</b>
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	<b>80</b>	<b>3.9</b>
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	<b>400</b>	<b>7.1</b>
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	<b>180</b>	<b>9.3</b>
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	<b>02</b>	<b>0.27</b>
08.	Lead (Pb)	µg/m <sup>3</sup>	<b>1.0</b>	<b>0.03</b>
09.	Nickel (Ni)	ng/m <sup>3</sup>	<b>20</b>	<b>2.3</b>
10.	Arsenic (As)	ng/m <sup>3</sup>	<b>06</b>	<b>2.1</b>
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	<b>05</b>	<b>2.3</b>
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	<b>01</b>	<b>0.30</b>

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries :

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JULY – SEPTEMBER 2018

<b>Report no: MEEPL/OCT0139/2018-19</b>			<b>Date: 10<sup>th</sup> October, 2018</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>					
<b>Quantity: 4 liters.</b>					
<b>Sample collected on: 04.09.2018</b>					
Sl. No.	Analysis	Method	Result	Unit	Limits
1.	pH	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B,4-92	<b>7.7</b>	mg/l	5.5-9.0
2.	<b>Total Suspended Solids</b>	APHA 22 <sup>nd</sup> EDN: 2012-2540	<b>64</b>	mg/l	100
3.	<b>BOD @ 27°C</b>	IS 3025 (Part 44): 1993, RA2003, Amd.1	<b>7.1</b>	mg/l	30
4.	<b>COD</b>	IS 3025 (Part 58): 1993, RA2006, Amd.1	<b>25</b>	mg/l	250
5.	<b>Oil &amp; Grease</b>	IS 3025(PART 39): 1991 RA 2003,Ed 2.1	<b>&lt;5.0</b>	mg/l	10
6.	<b>Total Dissolved Solids</b>	APHA 22 <sup>ND</sup> EDN 2012-2540	<b>1257</b>	mg/l	2100
7.	<b>Aluminium (as Al)</b>	APHA 22 <sup>nd</sup> EDN 2012-3120B	<b>1.0</b>	mg/l	3
8.	<b>Calcium (as Ca)</b>	APHA 22 <sup>nd</sup> EDN 2012-3120B	<b>8.1</b>	mg/l	75
9.	<b>Iron (as Fe)</b>	APHA 22 <sup>nd</sup> EDN 2012-3120B	<b>1.0</b>	mg/l	3
10.	<b>Temperature</b>		<b>26.3</b>	°C	Shall not exceed 5°C above the receiving water temperature

For Mahabal Enviro Engineers Pvt. Ltd.

**Vijay Pandey**  
**SENIOR EXECUTIVE**





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Hindalco Industries :

Environmental Monitoring Report

JULY – SEPTEMBER 2018

<b>Report no: MEEPL/OCT0140/2018-19</b>		<b>Date: 10<sup>th</sup> October, 2018</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: 04.09.2018</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)	274	---
2.	Barometric pressure (mm of Hg)	IS 11255 Part: 3 1985 (Realf 2008)	750	---
3.	Velocity of Gas (m/Sec)	IS 11255 Part: 3 1985 (Realf 2008)	7.11	---
4.	Quantity of Gas flow (Nm <sup>3</sup> /hr)	IS 11255 Part: 3 1985 (Realf 2008)	445	---
5.	Concentration of CO <sub>2</sub> (% v/v)	IS 11255 Part: 3 1985 (Realf 2008)	3.2	5.0
6.	Concentration of CO (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2008)	0.66	--
7.	Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )	USEPA-6C	64.1	--
8.	Concentration of NO <sub>2</sub> (gm/kw-h)	USEPA-7E	1.27	9.2
9.	Concentration of Particulate Matters (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2003)	0.14	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



Annexure-2

**BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING April'18 to Sept'18**

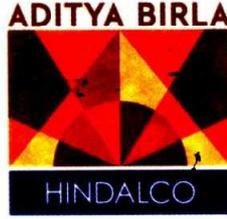
The composite cost during **April'18 to Sept'18** for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely 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 (80.97 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 2018-19	Actual (in Rupees) (from April'18 to Sep'2018)
1	Pollution Control & Environment monitoring	1521000	8,82,300.00
2	Reclamation/ Back filing & Rehabilitation**	29200000	1,49,78,461.39
3	Green belt, Plantation & Water spraying arrangement	4500256	25,38,864.95
4	Rural Development	26025236	1,32,42,312.42

\*\*Part of OB removed cost.



(Basudev Gangopadhyay)  
Convenor (Quality & Environment)



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

Sl No	Name of the Mines	Mining lease area (ha)	Production capacity(mt)*	Lease Period *	Production (MT)	Mined out area (ha)	Back filled area (ha)	Over burden (Cu.M)
1	Bagru bauxite Mine	75.41	85000	22-01-1974 to 31-03-2030	nil	nil	nil	nil
2	Bhusar Bauxite Mine	65.31	280000	11-07-1981 to 31-03-2030	106353	0.168	1.711	112376
3	Hisri (New) Bauxite Mine	14.55	100000	19-07-1981 to 31-03-2030	38172	0.742	0.467	29252
4	Kujam - I Bauxite Mine	80.87	150000	13-03-2006 to 12-03-2056	60550	1.64	1.37	40287
5	Kujam - II Bauxite Mine	157.38	300000	24-03-2006 to 23-03-2056	114325	4.68	3.78	122769
6	Amtipani Bauxite Mine	190.95	150000	13-03-2006 to 12-03-2056	83810	12	8	96051
7	Gurdari Bauxite Mine	584.19	325000	23-03-1985 to 22-03-2035	173295	4.6	8.59	251277
8	Shrengdag A Bauxite Mine	155.81	260000	16-10-1974 to 31-03-2030	108900	1.21	1.62	162637
9	Shrengdag B Bauxite Mine	140.07	100000	04-10-1978 to 31-03-2030	36100	1.21	0.72	46930
10	Jalim & Sanai Bauxite Mine	12.14	50000	16-10-1974 to 31-03-2030	18600	0.36	0.12	49104
11	Orsapat Bauxite Mine	196.36	200000	17-07-1986 to 16-07-2036	1470	0	0	2185

12	Chiro Kukud bauxite Mine	152.57	100000	29-01-1985 to 28-01-2035	1970	0.113	0	13168	
13	Pakhar (8.09)	8.09	80000	16-05-1973 to 31-03-2030	nil	nil	nil	nil	
14	Pakhar (35.12)	35.12	200000	17-04-1975 to 31-03-2030	nil	nil	nil	nil	
15	Pakhar (115.13)	115.13	300000	19-07-1996 to 31-03-2030	111995	1.01	0.65	70700	
<b>Minerals &amp; Minerals Limited</b>									
16	Pakhar (15.58)	15.58	60000	28-04-1965 to 31-03-2030	27475	0.35	0.15	26250	
17	Pakhar (109.507)	109.507	280000	26-07-2008 to 25-07-2058	151240	1.05	0.5	78750	
18	Bimarla Bauxite Mine	134.526	300000	18-07-2009 to 17-07-2059	89315	3.108	1.61	203116	

**\*Static information about the mines included in the above table**



**Basudev Gangopadhyay**

**Convenor (Quality & Environment)**