

# MINERALS & MINERALS LIMITED

Regd. Office- Court Road, P.O. & Distt.-Lohardaga, Jharkhand-835302

Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref. :

M&M/LHD/ENV/MoEF/532

Date .....

Date: 28.05.2020

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 Bimarla (134.37 ha) Bauxite Mining project of M/s Minerals & Minerals Limited located in Gumla, Jharkhand for the period October'19 to March'20.

**Ref:** Environmental Clearance letter no J-11015/87/2009-IA.II (M) dated 24<sup>th</sup> Sep, 2013

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Bimarla (134.37 ha)** Bauxite Mining project of **M/s Minerals & Minerals Limited** located in Gumla, Jharkhand for the period October'19 to March'20.

The lease detail is as below.

Lease area (ha)	Production Capacity (MT)	Lease Period
134.37	300000	18.07.2009 to 17.07.2059

Hope you will find the same in order.

Thanking You

Yours Sincerely

FOR Minerals & Minerals Limited



(Basudev Gangopadhyay)

GM (Geology & Environment)

Enclosure: - As Above

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**Bimarla Bauxite Mines (Area 134.526 Ha)**  
**Environmental Clearance –Vide letter no-J-11015/87/2009-IA.II (M) dated 24<sup>th</sup>**  
**Sep, 2013**  
**Compliance Status, Period: October'19-March'20**

SN	Specific Condition	Compliance
1	The project proponent shall obtain Consent to Establish and Consent to Operate from the Jharkhand State Pollution Control Board and effectively implement all the conditions stipulated therein.	Consent to Establish and consent to operate obtained. Implementations of Stipulated conditions are being complied. The Consent to operate is valid till 30 Sep 2024.
2	Implementations of conditions laid down in the letter of the State Department of Forests vide dated 11.05.2012 with regard to permission for transportation of ore through the forest land.	Implementations of conditions as laid down in the letter are being complied with.
3	Necessary wildlife clearance as may be applicable to this project should be obtained. Measures for conservation of flora and fauna observed in the study area shall be undertaken. Wildlife Conservation Plan shall be implemented in consultation with the State Forests and Wildlife Department.	<p>We understand Wildlife Clearance is not applicable to this project.</p> <p>Safeguard Measures already implemented and being implemented as suggested by forest department are as follows:</p> <ol style="list-style-type: none"> <li>1. Minimum level of Noise during Mining.</li> <li>2. Permanent pillars are established within in the mine lease area at 7.5m from the forest boundary</li> <li>3. Daily water sprinkling on haul road.</li> <li>4. Transportation is carried out during day time only.</li> <li>5. Maintenance of mineral transportation road is being done regularly.</li> <li>6. Social activities are being undertaken in nearby areas etc.</li> </ol>
4	Adequate measures for control of air pollution in the area shall be taken and it shall be ensured that the pollution levels do not exceed the prescribed limits.	<p>Measures for control of air pollution in the area are being taken. Important measures are as follows.</p> <ol style="list-style-type: none"> <li>1. Water sprinkling on haul roads and at places of source of pollution.</li> </ol>

		<p>2. Control blasting practice.</p> <p>3. Wet drilling is in practice.</p> <p>Monitoring report attached Annexure 1.</p>
5	No working shall be undertaken in the forest area for which forestry clearance has not been obtained.	Lease area is devoid of any forest land.
6	Necessary prior clearance, as applicable shall be obtained from CGWA for working below groundwater table.	<p>Mining is confined to above ground water table level only and it is not intersecting ground water table.</p> <p>We undertake that no mining is/was carried out below ground water table and the same status will be maintained in future also.</p>
7	The Company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter-alia provide for (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders.	<p>Policies towards Corporate Environment Responsibility is in place. The latest Corporate environment policy enumerating corporate responsibilities is attached as Annexure 5. Company has implemented a system in line with the above policies which addresses following points. (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company.</p>
8	The mining operations shall be restricted to above the groundwater table and it should not intersect the groundwater table, In case of working below the groundwater table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydrogeological study shall be carried out.	Mining is confined to above ground water table level only. Mining will not intersect the ground water table. Proper care is being taken in this regard.

9	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. The first order streams and the seasonal nallahs originating from the mining lease area shall be protected	No natural watercourse and/or water resource is being and will be obstructed due to any mining operations. All waterbodies and sources available in mining lease area is protected.
10	The top soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long; The topsoil shall be used for land reclamation and plantation.	Top soil is being stacked separately for reclamation and rehabilitation of mined out areas with progress of mining.
11	Monitoring and management of rehabilitated areas should continue until vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office, Bhubaneswar on six monthly basis.	This Mine started production since 2015-16. Concurrent Backfilling has already been started and it is as per the approved mining plan. The status of backfilling is attached as Annexure-4.
12	Catch drains and siltation ponds of appropriate size shall be constructed around the working pit, sub-grade dump, soil and mineral dumps to arrest flow of silt and sediment directly into the agricultural fields and the water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de silted, particularly after monsoon, and maintained properly, Garland drains settling tanks and check dams of appropriate size, gradient and length shall be constructed for both around the mine pit and sub-grade dump to prevent run off of water and flow sediments directly into the agricultural fields and the water bodies 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	<p>No run-off is generated from mining activities. However, to collect &amp; manage rain water during monsoon, part of mined out area is used as settling tank for the runoff. Rain water stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary.</p> <p>Catch drains, Garland drains of appropriate size have been constructed both around the mine pit to prevent run off of water and flow of sediments directly into the agricultural field and water bodies.</p> <p>Sump of adequate capacity is being provided and maintained as required.</p> <p>No active external dump exists as on date.</p>



	proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and de silted at regular intervals.	
13	Dimension of the retaining wall at the toe of sub-grade dump and OB benches within the mine to check run-off and siltation should be based on the rain fall data.	There is no external OB dump as of now.
14	The plantation is proposed over an area of 24 ha with 2500 samplings per ha.	Total 3600 saplings have been planted in and around mine area in FY 2019-20. Total 2.66 Ha areas has been planted till date. Green belt development programme is in progress with progress of mining activities.
15	Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Regular water sprinkling is being carried out on haul road and critical areas. Ambient Air Quality parameters conform to the norms. Report is attached as Annexure 1
16	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.	Suitable conservation measures to augment ground water is being taken as directed in CGWB NOC Viz. Constructing 01 no of water harvesting pond etc.  Backfilling and drainage system in mine is maintained in such way that no mine water is discharged outside mine lease area and it is getting recharged in mined out pit only.

17	<p>Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.</p>	<p>We are not using ground water for any mining purpose. There is no chance of intersection of ground water table during mining operation at present and in future.</p> <p>Piezometer has been installed to regular monitoring of ground water table.</p> <p>Monitoring report of water quality is attached as Annexure 1</p>
18	<p>Monitoring of the springs shall be carried out for the quality and quantity of water regularly so as to ensure that there is no adverse impact- on the same due to the project. Records in this regards shall be maintained.</p>	<p>Monitoring of surface water in nearby areas carried out. Report is attached as Annexure 1</p>
19	<p>It shall be ensured that there is no change in the hydrology of the area due to the project.</p>	<p>Agreed, no change is noted as of now.</p>
20	<p>Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.</p>	<p>Suitable conservation measures to augment ground water is being taken as directed in CGWB NOC Viz. Constructing 01 no of water harvesting pond etc. This will continue with progress of mining operations.</p>
21	<p>Appropriate mitigative measures shall be taken to prevent pollution of the all the water bodies, in consultation with the State Pollution Control Board</p>	<p>We are not discharging any water outside mine lease area, all waters are collected in sump. Suitable measures such as, contour bunds are being taken to prevent water pollution. Drains are provided. All precautions are being taken to</p>

		ensure that water does not flow outside mine lease areas. There is no contamination of water due to mining activities.
22	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall be covered with a tarpaulin and shall not be overloaded.	Regular maintenance of vehicles are undertaken to minimize vehicular emission. Measures are being taken to control emission. The vehicles are being covered with tarpaulin while transportation of mineral.
23	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting time is fixed during Lunch Time i.e. 1.00 PM -2.00 PM. Controlled blasting method is in practice. All efforts are being taken to mitigate impact of blasting.
24	Drills shall either be operated with dust extractors or equipped with water injection system.	Wet drilling is in practice.
25	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Two nos. of water tanker have been provided for sprinkling of water on haul roads and active mining areas to arrest fugitive dust. Water spraying at loading, unloading, etc is also being done regularly.
26	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	As of now there is no colony within the lease hold. Suitable measures will be taken if required in future. There is no effluent generated from this mine.
27	The project authorities should undertake sample survey to generate data on pre project community health status within a radius of 1 km from proposed mine.	As a part of Community Health status check we regularly conduct medical camp in nearby areas since inception of Mine.
28	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should	Pre-placement medical examination conducted. Periodical medical examination are being carried out in due time.

	be drawn and followed accordingly.	
29	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Safe drinking water and medical facilities already provided. Other applicable infrastructure will be constructed phase wise. Workers employed are localities only who resides in nearby areas.
30	The critical parameters such as RSPM (Particulate matter with size less than 10µm i.e. PM <sub>10</sub> ) and NO <sub>x</sub> in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)). The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. 3-20012/1/2006-IA.11 (M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry <a href="http://www.envfor.nican">www„envfor.nican</a> shall also be referred in this regard for its compliance.	Monitoring data is uploaded in website and displayed at mines Report is enclosed as Annexure 1
31	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.	Will be complied in due time. Progressive mine closure plan approved along Scheme of Mining. FMCP for total lease area will be prepared and submitted in due time as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same. Based on the present resource estimate, and peak rated production capacity mentioned in EC, tentative

		balance life is around 11 yrs., Resources estimate vis-à-vis balance life of mine may change based on final resource estimate, EC capacity and cut-off grade at that point of time.
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SN	General Conditions	Compliance
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Noted.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	<p>Calendar plan including excavation, quantum of mineral bauxite and waste is being done as per IBM approved mining scheme.</p> <p>Report is attached herewith as Annexure 4.</p>
3	Conservation measures for protection of flora and fauna in the core and buffer zone should be drawn up in consultation with the local forest and wildlife department.	<p>Safeguard Measures Conservation measures for protection of flora and fauna being implemented and as follows:</p> <ol style="list-style-type: none"> <li>1. Minimum level of Noise during Mining.</li> <li>2. Permanent pillars are established within in the mine lease area at 7.5m from the forest boundary</li> <li>3. Daily water sprinkling on haul road.</li> <li>4. Transportation is carried out during day time only.</li> <li>5. Maintenance of mineral transportation road is being done regularly.</li> <li>6. Social activities is being undertaken in nearby areas etc.</li> </ol>



4	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM10) and 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.	We have already established four ambient air quality monitoring stations in core zone as well as buffer zone. Monitoring is being carried out and reported to concern authorities. Report is attached as Annexure 1
5	Data on ambient air quality [(RSPM (Particulate matter with size less than 10micron i.e., PM10) and NOx] should be regularly submitted to the Ministry including its Regional office located at: Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	Monitoring is being carried out and reported to concern authorities. Report is attached as Annexure-1.
6	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Suitable water spraying arrangement is being done to control fugitive dust emissions from loading, unloading and transfer points as applicable.
7	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Measures are being taken for control of noise level. PPE's provided to workers.
8	Industrial waste water (workshop and waste water from the Mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31' December, 1993 or as	There is no industrial waste water generation from workshop within mine lease area. We are not discharging any waste water outside mine lease area,

	amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	
9	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Personal protective equipment's have been provided to workers.  Safety training is being provided to persons working in mine.  Occupational health surveillance program of the workers is being carried out.
10	A separate environmental management cell with suitable qualified personnel directly to the Head of the Organization.	Separate environment management cell with suitable qualified persons is already formulated as Annexure-3.
11	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	The fund earmarked for environmental protection measures is being budgeted separately.  Annual expenditure is being reported to the Ministry as Annexure-2.
12	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.	Date of start of land development is 21.05.2015 (Opening notice sent to concerned offices) The provision related to financial closure is not applicable as it is an operational mine.  Now Regional office is at Ranchi.
13	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated	Agreed. Currently, the Regional Office is located at Ranchi.

	<p>conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.</p>	
14	<p>The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board</p>	<p>Six monthly compliance is being submitted timely to the Ministry of Environment and Forests, its Regional Office Ranchi, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board and also uploaded in Hindalco's website.</p>
15	<p>The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.</p>	<p>Displayed.</p>
16	<p>The environmental statement for each financial year ending 31 March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the</p>	<p>Is being complied.</p>

	Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.	
17	The project authorities should advertise at least in two local newspapers of the 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. Relevant paper cutting duly submitted.



# Eco Ventures Pvt. Ltd.

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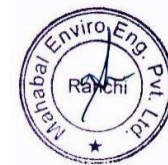
**Mahabal Enviro Engineers Pvt. Ltd.**  
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,  
District – Ranchi 834009

## **KORLE-BIMARLA BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT**

OCTOBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
**SENIOR EXECUTIVE**







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## CONTENT

LOCATION – BIMARLA BAUXITE MINE	
<b>AMBIENT AIR QUALITY – CORE ZONE</b>	
1	Near Weigh Bridge
2	Near Quarry No. 1B
3	Nav Prathmik Vidyalaya Barang Path
4	Near Mine Entry Gate
<b>AMBIENT AIR QUALITY – BUFFER ZONE</b>	
1	Near Korle Village
2	Near Barang Village
3	Near Ghaghra Village
4	Near Bimarla Village
<b>DRINKING WATER</b>	
	Near Canteen





# Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0130/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
<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>Near Weigh Bridge</b>	
Sample collected on: 17.10.2019	

LOCATION / IDENTIFICATION: Near Weigh Bridge				
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	67.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	34.4
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	4.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	7.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.9
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	1.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
**SENIOR EXECUTIVE**





# Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0131/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
<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: Near Quarry No 1B	
Sample collected on: 17.10.2019	

LOCATION / IDENTIFICATION: Near Quarry No 1B				
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	59.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	31.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.3
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.8
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	6.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.18
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.4
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.0
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.8
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.28

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0132/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
<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: Nav Prathmik Vidyalaya Barang Path	
Sample collected on: 17.10.2019	

LOCATION / IDENTIFICATION: Nav Prathmik Vidyalaya Barang Path				
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	41.7
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	18.3
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	1.9
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	3.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	4.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.13
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.01
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





# Mahabal Enviro Engineers Pvt. Ltd.

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OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0133/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
<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>Near Mine Entry Gate</b>	
Sample collected on: 17.10.2019	

LOCATION / IDENTIFICATION: Near Mine Entry Gate				
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	57.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29.6
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	2.7
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.18
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.9
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	1.4
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.25

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Environmental Monitoring Report

OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0134/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
<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>Near Korle Village</b>	
Sample collected on: 17.10.2019	

LOCATION / IDENTIFICATION: Near Korle Village				
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	39.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	21.4
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.7
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.3
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	3.0
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.12
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.4
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.7
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.17

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Environmental Monitoring Report

OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0135/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
<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: Near Barang Village	
Sample collected on: 17.10.2019	

LOCATION / IDENTIFICATION: Near Barang Village				
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	32.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	15.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.0
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	1.8
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	2.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.3
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.13
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	0.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.1
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.19

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0136/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
<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: Near Ghaghra Village	
Sample collected on: 17.10.2019	

LOCATION / IDENTIFICATION: Near Ghaghra Village				
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	27.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	13.7
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	1.7
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	3.8
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.11
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.21

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Environmental Monitoring Report

OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0137/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
<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>Near Bimarla Village</b>	
Sample collected on: 17.10.2019	

LOCATION / IDENTIFICATION: Near Bimarla Village				
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	38.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	20.4
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.2
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	3.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.10
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	0.92
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.1
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.84
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.14

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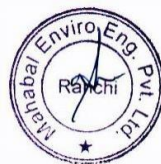
Hindalco Industries: Bimarla

Environmental Monitoring Report

OCTOBER 2019

<b>Report No.:</b> MEEPL/NOV0179/2019-20	<b>Date:</b> 11 <sup>th</sup> November, 2019
Sample described by customer : <b>DRINKING WATER-POTABILITY</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: <b>DRINKING WATER-POTABILITY</b>	
Marks on Sample: Location: <b>Near Canteen</b>	
Sample collected on: <b>17.10.2019</b>	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	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	--	7.2	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	274	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	35	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	21	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	10.9	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	9.0	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190







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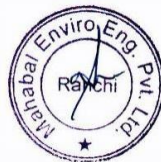
Environmental Monitoring Report

OCTOBER 2019

## Continuation Sheet

MEEPL/NOV0179/2019-20

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	0.99	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.02	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.01	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	14.3	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	2.0	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	0.05	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, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.01	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: Bimarla

Environmental Monitoring Report

OCTOBER 2019

## Continuation Sheet MEEPL/NOV0179/2019-20

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 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	0.01	US EPA 508-1995
11	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	Σ-HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
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	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	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	30	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 the water is not contaminated and potable

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

Vijay Pandey

**SENIOR EXECUTIVE**





# Eco Ventures Pvt. Ltd.

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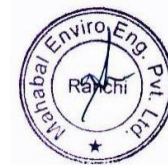
**Mahabal Enviro Engineers Pvt. Ltd.**  
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,  
District – Ranchi 834009

## **KORLE-BIMARLA BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT**

**NOVEMBER 2019**

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

Vijay Pandey  
**SENIOR EXECUTIVE**





**Branch Office:**

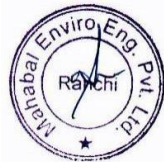
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3	Nav Prathmik Vidyalaya Barang Path
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2	Near Barang Village
3	Near Ghaghra Village
4	Near Bimarla Village
<b>SURFACE WATER ANALYSIS</b>	
1	Bimarla Bauxite Mines





# Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

<b>Report No.:</b> MEEPL/DEC0260/2019-20	<b>Date:</b> 27 <sup>th</sup> December, 2019
<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>Near Weigh Bridge</b>	
Sample collected on: 16.11.2019	

LOCATION / IDENTIFICATION: Near Weigh Bridge				
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	80.6
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	42.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	8.3
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.9
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	7.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.34
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.0
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: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

<b>Report No.:</b> MEEPL/DEC0261/2019-20	<b>Date:</b> 27 <sup>th</sup> December, 2019
<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: Near Quarry No 1B	
Sample collected on: 16.11.2019	

LOCATION / IDENTIFICATION: Near Quarry No 1B				
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	64.4
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	35.0
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.2
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	6.6
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.26
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.8
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.0
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.5
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.30

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Hindalco Industries: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

<b>Report No.:</b> MEEPL/DEC0262/2019-20	<b>Date:</b> 27 <sup>th</sup> December, 2019
<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: Nav Prathmik Vidyalaya Barang Path	
Sample collected on: 16.11.2019	

LOCATION / IDENTIFICATION: Nav Prathmik Vidyalaya Barang Path				
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	50.3
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	26.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.8
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	3.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.19
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.01
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.22

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Hindalco Industries: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

Report No.: MEEPL/DEC0263/2019-20

Date: 27<sup>th</sup> December, 2019

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: Near Mine Entry Gate

Sample collected on: 16.11.2019

### LOCATION / IDENTIFICATION: Near Mine Entry Gate

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	65.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	37.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.3
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	6.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.25
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	2.5
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	1.4
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.28

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Hindalco Industries: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

Report No.: MEEPL/DEC0264/2019-20

Date: 27<sup>th</sup> December, 2019

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: **Near Korle Village**

Sample collected on: 16.11.2019

### LOCATION / IDENTIFICATION: Near Korle Village

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	27.0
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	3.8
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.21
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.4
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.7
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

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Hindalco Industries: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

<b>Report No.:</b> MEEPL/DEC0265/2019-20	<b>Date:</b> 27 <sup>th</sup> December, 2019
<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: Near Barang Village	
Sample collected on: 16.11.2019	

LOCATION / IDENTIFICATION: Near Barang Village				
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	44.7
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	20.9
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.8
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.0
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.8
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	0.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.1
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.22

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Hindalco Industries: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

<b>Report No.:</b> MEEPL/DEC0266/2019-20	<b>Date:</b> 27 <sup>th</sup> December, 2019
<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: Near Ghaghra Village	
Sample collected on: 16.11.2019	

LOCATION / IDENTIFICATION: Near Ghaghra Village				
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	39.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	23.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.3
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.18
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.21

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Hindalco Industries: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

Report No.: MEEPL/DEC0267/2019-20

Date: 27<sup>th</sup> December, 2019

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: Near Bimarla Village

Sample collected on: 16.11.2019

### LOCATION / IDENTIFICATION: Near Bimarla Village

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	46.6
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	25.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.8
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	3.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.17
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.0
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.89
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.16

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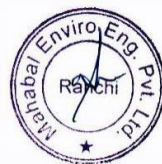
Hindalco Industries: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

<b>Report No.:</b> MEEPL/DEC0336/2019-20	<b>Date:</b> 27 <sup>th</sup> December, 2019
<b>Sample described by customer :</b> SURFACE WATER	
<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> Bimarla Bauxite Mine	
<b>Sample collected on:</b> 16.11.2019	

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	0.20	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.0	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	412	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO <sub>3</sub> )	mg/l	39	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	28	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	33	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO <sub>4</sub> )	mg/l	24.5	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.16	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: Bimarla

Environmental Monitoring Report

NOVEMBER 2019

## Continuation Sheet MEEPL/DEC0336/2019-20

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	8.1	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.06	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	7.4	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





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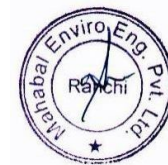
**Mahabal Enviro Engineers Pvt. Ltd.**  
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,  
District – Ranchi 834009

## **KORLE-BIMARLA BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT**

**DECEMBER 2019**

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

Vijay Pandey  
**SENIOR EXECUTIVE**





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## CONTENT

LOCATION – BIMARLA BAUXITE MINE	
<b>AMBIENT AIR QUALITY – CORE ZONE</b>	
1	Near Weigh Bridge
2	Near Quarry No. 1B
3	Nav Prathmik Vidyalaya Barang Path
4	Near Mine Entry Gate
<b>AMBIENT AIR QUALITY – BUFFER ZONE</b>	
1	Near Korle Village
2	Near Barang Village
3	Near Ghaghra Village
4	Near Bimarla Village







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Hindalco Industries: Bimarla

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0180/2019-20 Date: 27<sup>th</sup> January, 2020

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: Near Weigh Bridge

Sample collected on: 14.12.2019

### LOCATION / IDENTIFICATION: Near Weigh Bridge

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	84.3
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	39.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	9.0
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	13.0
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.7
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.39
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.5
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.0
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: Bimarla

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0181/2019-20 Date: 27<sup>th</sup> January, 2020

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: Near Quarry No 1B  
Sample collected on: 14.12.2019

### LOCATION / IDENTIFICATION: Near Quarry No 1B

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	70.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	37.4
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.8
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	6.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.30
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.5
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.1
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.5
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
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Hindalco Industries: Bimarla

Environmental Monitoring Report

DECEMBER 2019

<b>Report No.:</b> MEEPL/JAN/0182/2019-20	<b>Date:</b> 27 <sup>th</sup> January, 2020
<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: Nav Prathmik Vidyalaya Barang Path	
Sample collected on: 14.12.2019	

LOCATION / IDENTIFICATION: Nav Prathmik Vidyalaya Barang Path				
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	52.7
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29.4
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.7
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.2
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.25
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.01
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

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Hindalco Industries: Bimarla

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0183/2019-20 Date: 27<sup>th</sup> January, 2020

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: Near Mine Entry Gate

Sample collected on: 14.12.2019

### LOCATION / IDENTIFICATION: Near Mine Entry Gate

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	68.3
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	35.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	6.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.3
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.29
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	1.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.4
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

DECEMBER 2019

<b>Report No.:</b> MEEPL/JAN/0184/2019-20	<b>Date:</b> 27 <sup>th</sup> January, 2020
<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>Near Korle Village</b>	
Sample collected on: 14.12.2019	

LOCATION / IDENTIFICATION: Near Korle Village				
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	29.0
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.3
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.7
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	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.4
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.7
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
**SENIOR EXECUTIVE**





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Hindalco Industries: Bimarla

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0185/2019-20 Date: 27<sup>th</sup> January, 2020

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: Near Barang Village

Sample collected on: 14.12.2019

### LOCATION / IDENTIFICATION: Near Barang Village

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	49.2
02.	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) PM <sub>2.5</sub>	$\mu\text{g}/\text{m}^3$	60	23.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	3.8
04.	Nitrogen Dioxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	2.6
05.	Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	400	5.3
06.	Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	180	5.5
07.	Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	02	0.24
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.02
09.	Nickel (Ni)	$\text{ng}/\text{m}^3$	20	0.9
10.	Arsenic (As)	$\text{ng}/\text{m}^3$	06	1.2
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	$\mu\text{g}/\text{m}^3$	05	1.3
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries: Bimarla

Environmental Monitoring Report

DECEMBER 2019

<b>Report No.:</b> MEEPL/JAN/0186/2019-20	<b>Date:</b> 27 <sup>th</sup> January, 2020
<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: Near Ghaghra Village	
Sample collected on: 14.12.2019	

LOCATION / IDENTIFICATION: Near Ghaghra Village				
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	41.4
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	25.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.8
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.0
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	5.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.21
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

DECEMBER 2019

<b>Report No.:</b> MEEPL/JAN/0187/2019-20	<b>Date:</b> 27 <sup>th</sup> January, 2020
<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>Near Bimarla Village</b>	
Sample collected on: 14.12.2019	

LOCATION / IDENTIFICATION: Near Bimarla Village				
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	49.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	26.5
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	2.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	3.8
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	6.3
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	1.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.0
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.82
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.16

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
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**Mahabal Enviro Engineers Pvt. Ltd.**  
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,  
District – Ranchi 834009

## **KORLE-BIMARLA BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT**

JANUARY 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
**SENIOR EXECUTIVE**





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## CONTENT

LOCATION – BIMARLA BAUXITE MINE	
<b>A.</b>	<b>AMBIENT AIR QUALITY – CORE ZONE</b>
1	Near Weigh Bridge
2	Near Quarry No. 1B
3	Nav Prathmik Vidyalaya Barang Path
4	Near Mine Entry Gate
<b>B.</b>	<b>AMBIENT AIR QUALITY – BUFFER ZONE</b>
1	Near Korle Village
2	Near Barang Village
3	Near Ghaghra Village
4	Near Bimarla Village
<b>C.</b>	<b>SURFACE WATER ANALYSIS</b>
1	Bimarla Bauxite Mines
<b>D.</b>	<b>AMBIENT NOISE MONITORING</b>
1	Bimarla Bauxite Mines
<b>E.</b>	<b>SPOT NOISE MONITORING</b>
1	Bimarla Bauxite Mine – Near Dumper





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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0280/2019-20 Date: 15<sup>th</sup> February, 2020

### 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: **Near Weigh Bridge**  
Sample collected on: 14.01.2020

### LOCATION / IDENTIFICATION: Near Weigh Bridge

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	88.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	43.9
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	9.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	6.3
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	7.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.41
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.3
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.28

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





# Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0281/2019-20 Date: 15<sup>th</sup> February, 2020

### 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: Near Quarry No 1B  
Sample collected on: 14.01.2020

### LOCATION / IDENTIFICATION: Near Quarry No 1B

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	73.5
02.	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) PM <sub>2.5</sub>	$\mu\text{g}/\text{m}^3$	60	37.9
03.	Sulphur Dioxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	6.3
04.	Nitrogen Dioxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	4.1
05.	Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	400	6.5
06.	Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	180	7.4
07.	Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	02	0.33
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.02
09.	Nickel (Ni)	$\text{ng}/\text{m}^3$	20	1.4
10.	Arsenic (As)	$\text{ng}/\text{m}^3$	06	1.1
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	$\mu\text{g}/\text{m}^3$	05	1.5
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0282/2019-20 Date: 15<sup>th</sup> February, 2020

### 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: Nav Prathmik Vidyalaya Barang Path  
Sample collected on: 14.01.2020

### LOCATION / IDENTIFICATION: Nav Prathmik Vidyalaya Barang Path

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	57.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	30.3
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	2.9
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.6
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.26
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.01
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0283/2019-20

Date: 15<sup>th</sup> February, 2020

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: Near Mine Entry Gate

Sample collected on: 14.01.2020

### LOCATION / IDENTIFICATION: Near Mine Entry Gate

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	72.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	37.3
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	6.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.33
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.3
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.3
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.23

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0284/2019-20

Date: 15<sup>th</sup> February, 2020

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: **Near Korle Village**

Sample collected on: 14.01.2020

### LOCATION / IDENTIFICATION: Near Korle Village

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	59.3
02.	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) PM <sub>2.5</sub>	$\mu\text{g}/\text{m}^3$	60	30.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	4.7
04.	Nitrogen Dioxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	3.4
05.	Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	400	5.4
06.	Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	180	7.7
07.	Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	02	0.29
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.02
09.	Nickel (Ni)	$\text{ng}/\text{m}^3$	20	1.0
10.	Arsenic (As)	$\text{ng}/\text{m}^3$	06	1.4
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	$\mu\text{g}/\text{m}^3$	05	0.7
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.23

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

**Report No.:** MEEPL/FEB/0285/2019-20 **Date:** 15<sup>th</sup> February, 2020

**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: Near Barang Village

Sample collected on: 14.01.2020

**LOCATION / IDENTIFICATION:** Near Barang Village

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	53.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	26.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.3
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.7
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	5.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.30
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	0.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.2
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.3
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.22

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

Vijay Pandey

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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0286/2019-20

Date: 15<sup>th</sup> February, 2020

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: Near Ghaghra Village

Sample collected on: 14.01.2020

### LOCATION / IDENTIFICATION: Near Ghaghra Village

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	27.3
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.1
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.24
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.21

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0287/2019-20

Date: 15<sup>th</sup> February, 2020

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: **Near Bimarla Village**

Sample collected on: 14.01.2020

### LOCATION / IDENTIFICATION: Near Bimarla Village

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 $\mu\text{m}$ ) $\text{PM}_{10}$	$\mu\text{g}/\text{m}^3$	100	53.9
02.	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	60	27.1
03.	Sulphur Dioxide ( $\text{SO}_2$ )	$\mu\text{g}/\text{m}^3$	80	4.3
04.	Nitrogen Dioxide ( $\text{NO}_2$ )	$\mu\text{g}/\text{m}^3$	80	2.8
05.	Ammonia ( $\text{NH}_3$ )	$\mu\text{g}/\text{m}^3$	400	4.5
06.	Ozone ( $\text{O}_3$ )	$\mu\text{g}/\text{m}^3$	180	6.6
07.	Carbon Monoxide ( $\text{CO}$ )	$\text{mg}/\text{m}^3$	02	0.27
08.	Lead ( $\text{Pb}$ )	$\mu\text{g}/\text{m}^3$	1.0	0.03
09.	Nickel ( $\text{Ni}$ )	$\text{ng}/\text{m}^3$	20	1.2
10.	Arsenic ( $\text{As}$ )	$\text{ng}/\text{m}^3$	06	1.0
11.	Benzene ( $\text{C}_6\text{H}_6$ )	$\mu\text{g}/\text{m}^3$	05	0.8
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.18

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

<b>Report No.:</b> MEEPL/FEB/0288/2019-20	<b>Date:</b> 15 <sup>th</sup> February, 2020
<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> Bimarla Bauxite Mine	
<b>Sample collected on:</b> 14.01.2020	

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	0.24	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.1	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	393	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO <sub>3</sub> )	mg/l	28	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	30	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	35	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO <sub>4</sub> )	mg/l	26.2	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.18	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	5.9	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84





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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

**Continuation Sheet**  
*MEEPL/FEB/0288/2019-20*

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	8.5	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.06	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**





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Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

<b>Report No.:</b> MEEPL/FEB/0289/2019-20	<b>Date:</b> 15 <sup>th</sup> February, 2020
<b>Sample described by customer :</b> 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 Metter	
<b>Data Collection Date:</b> 14.01.2020	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result
Bimarla Bauxite Mine	dB (A) $L_{eq}$	75	64.1	70	52.6

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](mailto:mahabalranchi@gmail.com)

Hindalco Industries: Bimarla

Environmental Monitoring Report

JANUARY 2020

**Report No.:** MEEPL/FEB/0290/2019-20 **Date:** 15<sup>th</sup> February, 2020

Sample described by customer: Measurement of Noise

Client Name: **Hindalco Industries Limited**

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Description: **Measurement of Spot Noise**

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 14.01.2020

Location/Identification	Unit	Limit (day)	Result
Bimarla Mine – Near Dumper	dB (A) $L_{eq}$	75	71.3

**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)

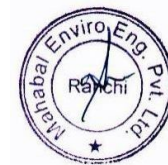
**Mahabal Enviro Engineers Pvt. Ltd.**  
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,  
District – Ranchi 834009

## **KORLE-BIMARLA BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT**

**FEBRUARY 2020**

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

Vijay Pandey  
**SENIOR EXECUTIVE**





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E-mail: [mahabalranchi@gmail.com](mailto:mahabalranchi@gmail.com)

Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

## CONTENT

	LOCATION – BIMARLA BAUXITE MINE
<b>A.</b>	<b>AMBIENT AIR QUALITY – CORE ZONE</b>
1	Near Weigh Bridge
2	Near Quarry No. 1B
3	Nav Prathmik Vidyalaya Barang Path
4	Near Mine Entry Gate
<b>B.</b>	<b>AMBIENT AIR QUALITY – BUFFER ZONE</b>
1	Near Korle Village
2	Near Barang Village
3	Near Ghaghra Village
4	Near Bimarla Village







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Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

<b>Report No.:</b> MEEPL/MAR/0360/2019-20	<b>Date:</b> 20 <sup>th</sup> March, 2020
<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: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <b>Near Weigh Bridge</b>	
Sample collected on: 13.02.2020	

LOCATION / IDENTIFICATION: Near Weigh Bridge				
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	83.7
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	40.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	8.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	6.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	14.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.7
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.39
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.4
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.28

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
**SENIOR EXECUTIVE**





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Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0361/2019-20 Date: 20<sup>th</sup> March, 2020

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: Near Quarry No 1B

Sample collected on: 13.02.2020

### LOCATION / IDENTIFICATION: Near Quarry No 1B

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	75.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	37.0
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.3
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	7.6
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.35
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.1
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.5
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

<b>Report No.:</b> MEEPL/MAR/0362/2019-20	<b>Date:</b> 20 <sup>th</sup> March, 2020
<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: Nav Prathmik Vidyalaya Barang Path	
Sample collected on: 13.02.2020	

LOCATION / IDENTIFICATION: Nav Prathmik Vidyalaya Barang Path				
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	52.8
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	25.6
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	2.7
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.25
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.01
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0363/2019-20

Date: 20<sup>th</sup> March, 2020

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: Near Mine Entry Gate

Sample collected on: 13.02.2020

### LOCATION / IDENTIFICATION: Near Mine Entry Gate

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	65.9
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	31.0
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.7
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	6.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.34
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.1
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.23

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0364/2019-20 Date: 20<sup>th</sup> March, 2020

### 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: **Near Korle Village**  
Sample collected on: 13.02.2020

### LOCATION / IDENTIFICATION: Near Korle Village

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	56.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	22.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.2
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	6.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.28
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.4
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.7
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





# Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0365/2019-20 Date: 20<sup>th</sup> March, 2020

### 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: Near Barang Village  
Sample collected on: 13.02.2020

### LOCATION / IDENTIFICATION: Near Barang Village

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	48.7
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	21.9
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.8
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.3
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.0
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	6.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.28
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	0.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.2
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.21

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

<b>Report No.:</b> MEEPL/MAR/0366/2019-20	<b>Date:</b> 20 <sup>th</sup> March, 2020
<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: Near Ghaghra Village	
Sample collected on: 13.02.2020	

LOCATION / IDENTIFICATION: Near Ghaghra Village				
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	51.4
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	26.9
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	2.4
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.7
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.9
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	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.4
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

FEBRUARY 2020

<b>Report No.:</b> MEEPL/MAR/0367/2019-20	<b>Date:</b> 20 <sup>th</sup> March, 2020
<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: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <b>Near Bimarla Village</b>	
Sample collected on: 13.02.2020	

LOCATION / IDENTIFICATION: Near Bimarla Village				
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	56.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	25.0
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.7
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	6.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.25
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.0
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.8
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.18

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE







# Eco Ventures Pvt. Ltd.

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**Mahabal Enviro Engineers Pvt. Ltd.**  
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,  
District – Ranchi 834009

## **KORLE-BIMARLA BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT**

**MARCH 2020**

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

Vijay Pandey  
**SENIOR EXECUTIVE**





# Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

MARCH 2020

## CONTENT

LOCATION – BIMARLA BAUXITE MINE	
<b>A.</b>	<b>AMBIENT AIR QUALITY – CORE ZONE</b>
1	Near Weigh Bridge
2	Near Quarry No. 1B
3	Nav Prathmik Vidyalaya Barang Path
4	Near Mine Entry Gate
<b>B.</b>	<b>AMBIENT AIR QUALITY – BUFFER ZONE</b>
1	Near Korle Village
2	Near Barang Village
3	Near Ghaghra Village
4	Near Bimarla Village





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 E-mail: [mahabalranchi@gmail.com](mailto:mahabalranchi@gmail.com)

Hindalco Industries: Bimarla

Environmental Monitoring Report

MARCH 2020

<b>Report No.:</b> MEEPL/APR/0160/2019-20	<b>Date:</b> 20 <sup>th</sup> April, 2020
<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: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <b>Near Weigh Bridge</b>	
Sample collected on: 13.03.2020	

LOCATION / IDENTIFICATION: Near Weigh Bridge				
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	84.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	38.7
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	6.2
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	7.3
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.36
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.1
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.28

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](mailto:mahabalranchi@gmail.com)

Hindalco Industries: Bimarla

Environmental Monitoring Report

MARCH 2020

Report No.: MEEPL/APR/0161/2019-20 Date: 20<sup>th</sup> April, 2020

### 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: Near Quarry No 1B  
Sample collected on: 13.03.2020

### LOCATION / IDENTIFICATION: Near Quarry No 1B

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	72.6
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	35.3
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	5.7
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	6.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.32
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.2
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	1.5
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

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SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

MARCH 2020

<b>Report No.:</b> MEEPL/APR/0162/2019-20	<b>Date:</b> 20 <sup>th</sup> April, 2020
<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: Nav Prathmik Vidyalaya Barang Path	
Sample collected on: 13.03.2020	

LOCATION / IDENTIFICATION: Nav Prathmik Vidyalaya Barang Path				
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	50.3
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	22.9
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	2.5
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	6.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.25
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.01
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

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MARCH 2020

<b>Report No.:</b> MEEPL/APR/0163/2019-20	<b>Date:</b> 20 <sup>th</sup> April, 2020
<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>Near Mine Entry Gate</b>	
Sample collected on: 13.03.2020	

LOCATION / IDENTIFICATION: Near Mine Entry Gate				
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	66.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	32.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.4
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	6.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	7.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.36
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	0.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.24

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

MARCH 2020

<b>Report No.:</b> MEEPL/APR/0164/2019-20	<b>Date:</b> 20 <sup>th</sup> April, 2020
<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>Near Korle Village</b>	
Sample collected on: 13.03.2020	

LOCATION / IDENTIFICATION: Near Korle Village				
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	58.3
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	24.1
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	2.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	6.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.28
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.4
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.8
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Bimarla

Environmental Monitoring Report

MARCH 2020

Report No.: MEEPL/APR/0165/2019-20 Date: 20<sup>th</sup> April, 2020

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: Near Barang Village

Sample collected on: 13.03.2020

### LOCATION / IDENTIFICATION: Near Barang Village

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	46.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	21.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	3.6
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.1
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	5.3
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	6.6
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.28
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	0.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.2
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.8
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE







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Hindalco Industries: Bimarla

Environmental Monitoring Report

MARCH 2020

<b>Report No.:</b> MEEPL/APR/0166/2019-20	<b>Date:</b> 20 <sup>th</sup> April, 2020
<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: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <b>Near Ghaghra Village</b>	
Sample collected on: 13.03.2020	

LOCATION / IDENTIFICATION: <i>Near Ghaghra Village</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	54.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	25.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	4.3
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	2.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	4.8
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	5.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.26
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	1.0
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.21

For Mahabal Enviro Engineers Pvt. Ltd.

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SENIOR EXECUTIVE





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Hindalco Industries: Bimarla

Environmental Monitoring Report

MARCH 2020

<b>Report No.:</b> MEEPL/APR/0167/2019-20	<b>Date:</b> 20 <sup>th</sup> April, 2020
<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>Near Bimarla Village</b>	
Sample collected on: 13.03.2020	

LOCATION / IDENTIFICATION: Near Bimarla Village				
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	55.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	23.5
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	2.7
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	6.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.27
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	0.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.0
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	0.8
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.16

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
**SENIOR EXECUTIVE**



## Annexure-2

### BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2019-20

The composite cost during the year 2019-20 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), Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud (152.57 ha), Orsa pat (196.36 Ha), Bhusar (65.31 Ha) and Bimarla Bauxite Mines (134.52 Ha).

S. No	Description	Budget (in Rupees) FY 2019-20	Actual (in Rupees) FY 2019-20 (from October'19 to March'20)
1	Pollution Control & Environment monitoring	3,351,809.00	10,81,028.82
2	Reclamation/ Back filing & Rehabilitation**	25,300,000.00	2,97,49,624
3	Green belt, Plantation & Water spraying arrangement	4,725,854.00	38,57,433.80
4	Rural Development	22,035,865.00	2,00,52,766.56

\*\*Part of OB removed cost.



(Basudev Gangopadhyay)  
Convenor (Quality & Environment)



# MINERALS & MINERALS LIMITED

Regd. Office- Court Road, P.O. & Distt.-Lohardaga, Jharkhand-835302  
Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref. :

Annexure - 3

Date .....

Date: 10.01.19

## Office Order

Environmental Cell has been re-constituted at Bimarla Bauxite Mines (Area 134.526 Ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Minerals & Minerals Industries Limited.

1. Mr. Jitender Kumar - Mines Manager (Coordinator)
2. Mr. Mihir Barai - Geologist - Member
3. Mr. Chandra Kant Dubey - Asst. Manager- Member
4. Mr. Pramod Kumar Sahu - Jr. Engn. (Mines Foreman)- Member



Basudev Gangopadhyay  
Convenor (Quality & Environment)



## Annexure 4

Production, Mined Out, Back Filled and Over Burden removal from October'19 to March'20								
S 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	198	0	6.60	54137.88
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	14190	0.81	0.48	25422.64
4	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	44245	3.26	0.13	29260.78
5	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	80395	3.81	0.55	78767.91
6	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	59995	1.96	0.500	46744.920
7	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	115250	10.45	7.34	261623.65
8	Shrengdag A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	63870	3.25	6.5	263958
9	Shrengdag B Bauxite Mine	140.07	100000	04.10.1978 to 31.03.2030	NIL	NIL	NIL	NIL
10	Jalim & Sanai Bauxite Mine	12.14	50000	16.10.1974 to 31.03.2030	17000	0.3	0.28	21500



## Annexure 4

11	Orsapat Bauxite Mine	196.36	200000	17.07.1986 to 16.07.2036	NIL	NIL	NIL	NIL
12	Chiro Kukud bauxite Mine	152.57	100000	29.01.1985 to 28.01.2035	NIL	NIL	NIL	NIL
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	87200	0.46	0.72	84268.58
<b>Minerals &amp; Minerals Limited</b>								
16	Pakhar (15.58)	15.58	60000	28.04.1965 to 31.03.2030	7500	0.15	0.10	14832.66
17	Pakhar (109.507)	109.507	280000	26.07.2008 to 25.07.2058	121400	0.67	1.00	167350.67
18	Bimarla Bauxite Mine	134.37	300000	18.07.2009 to 17.07.2059	67680	3.17	2.90	178732.51

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



**Basudev Gangopadhyay**  
**Convenor (Quality & Environment)**





**HINDALCO MANAGEMENT FRAMEWORK**  
*excellence by design*

## ENVIRONMENT POLICY

We, at Hindalco Industries Limited, operating across the process chain from mining to semi-fabricated products in non-ferrous metals, will strive to continually improve our environmental performance for sustainable operations and responsible growth globally, by integrating sound environmental systems and practices.

To achieve this, we shall :

- Continue to comply with all applicable legal requirements on environment.
- Continually improve environmental performance by strengthening the Environmental Management System conforming to national/international standards, including setting up and reviewing targets and measuring, monitoring and reporting their progress.
- Allocate sufficient resources such as organisational structure, technology and funds for implementation of the policy and for regular monitoring of performance.
- Adopt pollution prevention approach for all our processes; enhance material efficiency and achieve high productivity.
- Conserve key resources like electricity, coal, water, oil, and raw materials, by promoting efficient technologies and manufacturing process improvements, water conservation programmes, and efficient use of raw materials.
- Adopt energy efficient and cleaner technologies based on techno-economic viability, appropriate to the region in which we operate, and in line with our growth and diversification plans.
- Promote the principles of waste prevention, reduction, reuse, recycling and recovery to minimise waste generation and strengthen the practices for management of wastes.
- Work in partnership with regulatory authorities, relevant suppliers, contractors and all stakeholders, as applicable, to understand and initiate improvement actions.
- Adapt environmental performance over life cycle as an important input to the decision-making processes in the organisation.
- Raise environmental awareness at all levels of our operations, through training and effective communication, participation and consultation.
- Develop and follow appropriate communication system to inform the stakeholders, as applicable, about our environmental commitment and performance.

This policy shall be made available to all employees, suppliers, customers, community and other stakeholders, as appropriate.

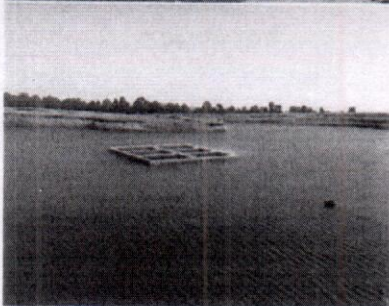
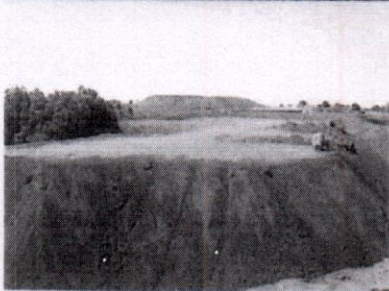
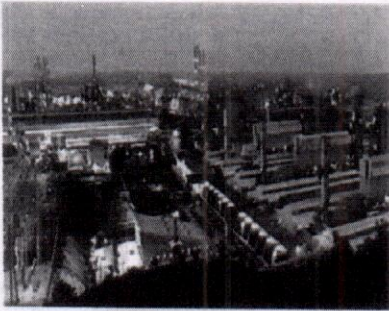
A handwritten signature in blue ink that reads "Satish Pai".

**Satish Pai**  
Managing Director

19<sup>th</sup> November 2016

**HINDALCO INDUSTRIES LIMITED**





## QUALITY, ENVIRONMENT, OCCUPATIONAL HEALTH & SAFETY POLICY

We, at "Hindalco Industries Limited" are committed to demonstrate excellence in Quality, Environment and Occupational Health & Safety for sustainable development

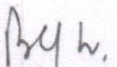
To achieve this, we shall:

- Ensure customer satisfaction by providing value added products and services;
- Continually establish systems, procedures and best practices with technological interventions;
- Optimize resource consumption particularly- raw materials, energy, water oil and promote pollution prevention;
- Commit to continual improvement by strengthening the Integrated Management System;
- Nurture and sustain safe and healthy work environment;
- Commit to protection of environment including prevention of pollution by reclamation and rehabilitation of mined out areas by utilization of solid waste and developing green belt in the area.
- Comply with applicable legislation in letter and spirit;
- Strengthen competence of employees and business associates through continuous training;
- Commit to the control of Quality & Environment risks through a hierarchy of control.

We shall communicate and make this policy available to all stakeholders

Lohardaga

Date: 24-03-2018

  
B.K.Jha

President, Jharkhand Mines

HINDALCO INDUSTRIES LIMITED  
MINES DIVISION