

HIL/LHD/ENV/MoEF/

Date: 27.11.2019

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 Orsa (196.36ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period April'19 to September'19.

Ref: Environmental Clearance letter no J-11015/241/2006-IA II (M) dated 17th May 2007

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Orsa (196.36 ha)** Bauxite mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period April'19 to September'19.

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED


(Basudev Gangopadhyay)
GM (Geology & Environment)

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi
RO, JSPCB, Ranchi
CPCB, Zonal Office, Kolkata
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Compliance of conditions laid down in Environmental Clearance
ORSA BAUXITE MINES
Period: April'19 to September'19
J-11015/241/2006-IA.II (M) Dated 17.5.2007

SI No	Conditions	Compliance Status
Specific Conditions		
1	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter OF Goa foundation Vs Union of India in write petition (civil) no 460 of 2004, as may be applicable to this project	Noted.
2.	Environmental Clearance is subject to obtaining clearance from Wildlife (Protection) Act '1972 from the competent authority.	The Mine is not is operation since 20 April 2018 and this matter is subjudice.
3.	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Noted and Agreed. The Mine is not is operation since 20 April 2018.Mine was operational for very limited period of 4-5 month. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
4	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month. The required land acquisition was done with permission of competent authority of State Government i.e. concerned Deputy Commissioner (D.C.) under CNT Act. The land lease agreement was done with raiyat (Land Owner) for 20 years with permission of State Govt with provision of returning the land as per as per the norms set by D.C. The compensation and facilities are being provided as per norms set in agreement. Thus the provision is taken care off.
5	Mining shall not intersect groundwater. The mine working shall be restricted to above ground water table. Prior approval of the Ministry of Environment & Forests and Central	Noted. Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month during which also it was

	Ground Water Authority shall be obtained for mining below water table.	<p>above ground water level. Post resumption of mining operation compliance to the said conditions will be implemented. In future also, working zone will be restricted to above ground water table.</p> <p>We undertake that no mining is/was carried out below ground water table and the same statusco will be maintained in future also.</p>
6	The project proponent shall ensure that the mining shall be carried out in small blocks and at a given point of time active mining shall not be more than 2.0 ha.	<p>Noted. The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month.</p> <p>As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
7.	The project proponent shall ensure that no natural water course shall be obstructed due to any mining operations.	<p>Noted.</p> <p>The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with .As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
8	Top soil, if any, shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	<p>Noted.</p> <p>The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month. As on date, mine is not operational and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
9.	The overburden generated during the initial year shall be kept as temporary dump. Concurrent backfilling starts from the 2 nd year onwards and there shall be no external dump at the end of the mine life.	<p>The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>

10.	<p>The entire excavated area of 155 ha shall be reclaimed, out of which 131 ha land shall be returned to raiyats for agricultural purpose and in 24 ha plantation shall be raised. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forest on six month basis.</p>	<p>The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
11	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly.</p> <p>Garland drain (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	<p>The Mine is not in operation since 20 April 2018.</p> <p>Prior to this Mine was operational for very limited period of 4-5 month.</p> <p>As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
12	<p>Dimension of the retaining wall at the OB benches within the mine to check run-off and siltation should be based on rainfall data.</p>	<p>The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month.</p> <p>As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
13	<p>Plantation shall be raised in an area of 24.0 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha.</p>	<p>The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month.</p> <p>As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>

14	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.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented. It may be noted that, there is no chance to intersect ground water table during mining operation.
15	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground water Authority and Regional Director Central Ground Water Board.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month. Monitoring report for potable water is enclosed as Annexure-1.
16	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Noted. As on date, mine is not operational
17	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	The Mine is not in operation since 20 April 2018.Mine was operational for very limited period of 4-5 month and this condition was complied with. Post resumption of mining operation compliance to the said conditions will be implemented.
18	Drills should either be operated with dust extractors or should be equipped with water injection system.	The Mine is not in operation since 20 April 2018.Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with as on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
19	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with as on date mine is not operational. Post resumption of mining

		operation compliance to the said conditions will be implemented.
20	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	There is no proposal for enhancement of production. As on date, mine is not operational
21	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	Noted. As on date, mine is not operational
22	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Leopard, Indian Wolf, Indian elephant, Indian small civet, Indian Python, etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
23	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Progressive Mine closure plan and Final mine closure plan (part) has been approved by IBM. FMCP for entire lease will be prepared & submitted in due time. Based on the present resource estimate, and peak rated production capacity mentioned in EC, the tentative balance life is around 6 years. However, after completion of further detailed exploration, the resources estimate vis-à-vis balance life of the mine may change based on final resource estimate, EC capacity and cut-off grade at that point of time.

GENERAL CONDITIONS

Sl No	Conditions	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest	Agreed & Noted.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
3	Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Monitoring Reports of AAQ data is attached as Annexure-1.
4	Data on ambient air quality (RPM, SPM, SO ₂ , and NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Monitoring Reports is attached as Annexure-1.
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
6	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.

7	Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There was no generation of waste water from the mine as of now. The compliance to this condition will be adhered to as applicable. As on date, mine is not operational
8	Personnel working in dusty areas should wear protective respiratory devices and they should also 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.	The Mine is not in operation since 20 April 2018. Prior to this Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
9	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A suitable environmental management cell has been developed with qualified personnel. Copy enclosed as Annexure- 3.
10	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Provisions related to financial closure not applicable.
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 Bhubneshwar.	Cost of Environmental protection measures Annexed as Annexure-2.
12	The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Agreed upon.
13	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry	Duly submitted.

	of Environment and Forests its Regional Office, Bhubneshwar CPCB and State Pollution Control Board.	
14	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Complied.
15	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.	Displayed.
16	The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Already done and copies submitted.



Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
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ORSAPAT BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT

APRIL 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsapat

Environmental Monitoring Report

April 2019

CONTENT

LOCATION – ORSAPAT	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Orsa Village – Near Mine Area
2	Orsa Village – Southern Part of Orsa Lease
3	New Mine Office – Near Weigh Bridge
4	Orsa Village – Northern Part of Orsa Lease





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Hindalco Industries: Orsapat

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0368/2019-20	Date: 31 st May, 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: Orsa Village – Near Mine Area	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Orsa Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	59.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	26.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	9.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.28
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.0
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Orsapat

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0369/2019-20	Date: 31 st May, 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: Orsa Village – Southern Part of Orsa Lease	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Orsa Village – Southern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	68.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	10.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Orsapat

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0370/2019-20	Date: 31 st May, 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: New Mine Office – Near Weigh Bridge	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: New Mine Office – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	74.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	37.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	11.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.5
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsapat

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0371/2019-20	Date: 31 st May, 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: Orsa Village – Northern Part of Orsa Lease	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Orsa Village – Northern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	58.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.6
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	10.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.23
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.7
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0406/2019-20	Date: 31 st May, 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: Kudag Village – Near Hindalco Campus	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	67.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	4.5
06.	Ozone (O ₃)	µg/m ³	180	9.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.3
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0407/2019-20	Date: 31 st May, 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: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	57.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.7
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	9.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0408/2019-20	Date: 31 st May, 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: Amtahi Village – Near Tailoring Centre	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	65.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	9.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.6
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0409/2019-20	Date: 31 st May, 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: Ambakona Village	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	60.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.0
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	9.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.20
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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ORSAPAT BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT

MAY 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

MAY 2019

CONTENT

	LOCATION – ORSAPAT
AMBIENT AIR QUALITY – CORE ZONE	
1	Orsa Village – Near Mine Area
2	Orsa Village – Southern Part of Orsa Lease
3	New Mine Office – Near Weigh Bridge
4	Orsa Village – Northern Part of Orsa Lease





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0358/2019-20	Date: 28 th June, 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: Orsa Village – Near Mine Area	
Sample collected on: 16.05.2019	

LOCATION / IDENTIFICATION: Orsa Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	67.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.3
05.	Ammonia (NH ₃)	µg/m ³	400	5.5
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.25
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.0
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0359/2019-20	Date: 28 th June, 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: Orsa Village – Southern Part of Orsa Lease	
Sample collected on: 16.05.2019	

LOCATION / IDENTIFICATION: Orsa Village – Southern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	73.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	38.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.1
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	10.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0360/2019-20	Date: 28 th June, 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: New Mine Office – Near Weigh Bridge	
Sample collected on: 16.05.2019	

LOCATION / IDENTIFICATION: New Mine Office – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	77.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	39.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.1
05.	Ammonia (NH ₃)	µg/m ³	400	4.7
06.	Ozone (O ₃)	µg/m ³	180	10.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.1
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0361/2019-20	Date: 28 th June, 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: Orsa Village – Northern Part of Orsa Lease	
Sample collected on: 16.05.2019	

LOCATION / IDENTIFICATION: Orsa Village – Northern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	54.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	4.4
06.	Ozone (O ₃)	µg/m ³	180	9.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.25
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0366/2019-20	Date: 28 th June, 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: Kudag Village – Near Hindalco Campus	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	64.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	3.7
06.	Ozone (O ₃)	µg/m ³	180	10.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.2
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0367/2019-20	Date: 28 th June, 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: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	53.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.2
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
06.	Ozone (O ₃)	µg/m ³	180	8.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0368/2019-20	Date: 28 th June, 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: Amtahi Village – Near Tailoring Centre	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	70.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.2
05.	Ammonia (NH ₃)	µg/m ³	400	4.0
06.	Ozone (O ₃)	µg/m ³	180	9.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.3
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0369/2019-20	Date: 28 th June, 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: Ambakona Village	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.7
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.23
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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ORSAPAT BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT

JUNE 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JUNE 2019

CONTENT

	LOCATION – ORSAPAT
AMBIENT AIR QUALITY – CORE ZONE	
1	Orsa Village – Near Mine Area
2	Orsa Village – Southern Part of Orsa Lease
3	New Mine Office – Near Weigh Bridge
4	Orsa Village – Northern Part of Orsa Lease





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0267/2019-20	Date: 15 th July, 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: Orsa Village – Near Mine Area	
Sample collected on: 17.06.2019	

LOCATION / IDENTIFICATION: Orsa Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	72.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.1
05.	Ammonia (NH ₃)	µg/m ³	400	5.0
06.	Ozone (O ₃)	µg/m ³	180	8.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.26
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0268/2019-20	Date: 15 th July, 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: Orsa Village – Southern Part of Orsa Lease	
Sample collected on: 17.06.2019	

LOCATION / IDENTIFICATION: Orsa Village – Southern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	78.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	9.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.25
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0269/2019-20	Date: 15 th July, 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: New Mine Office – Near Weigh Bridge	
Sample collected on: 17.06.2019	

LOCATION / IDENTIFICATION: New Mine Office – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	70.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.5
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	9.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.9
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0270/2019-20	Date: 15 th July, 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: Orsa Village – Northern Part of Orsa Lease	
Sample collected on: 17.06.2019	

LOCATION / IDENTIFICATION: Orsa Village – Northern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	51.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	9.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0275/2019-20	Date: 15 th July, 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: Kudag Village – Near Hindalco Campus	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	69.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	9.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.2
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0276/2019-20	Date: 15 th July, 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: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	56.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.2
06.	Ozone (O ₃)	µg/m ³	180	8.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0277/2019-20	Date: 15 th July, 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: Amtahi Village – Near Tailoring Centre	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	63.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	9.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.3
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0278/2019-20	Date: 15 th July, 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: Ambakona Village	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	50.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	26.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.2
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	8.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
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Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
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ORSAPAT BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT

JULY 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

CONTENT

LOCATION – ORSAPAT	
AMBIENT AIR QUALITY – CORE ZONE	
1	Orsa Village – Near Mine Area
2	Orsa Village – Southern Part of Orsa Lease
3	New Mine Office – Near Weigh Bridge
4	Orsa Village – Northern Part of Orsa Lease
SURFACE WATER ANALYSIS	
1	Orsapat Bauxite Mines
AMBIENT NOISE MONITORING	
1	Orsa Village – Near Mine Area
RUNOFF WATER ANALYSIS	
1	Orsapat Bauxite Mines





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0221/2019-20	Date: 12 th August, 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: Orsa Village – Near Mine Area	
Sample collected on: 15.07.2019	

LOCATION / IDENTIFICATION: Orsa Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	45.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	23.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.3
05.	Ammonia (NH ₃)	µg/m ³	400	5.1
06.	Ozone (O ₃)	µg/m ³	180	5.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.26
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0222/2019-20	Date: 12 th August, 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: Orsa Village – Southern Part of Orsa Lease	
Sample collected on: 15.07.2019	

LOCATION / IDENTIFICATION: Orsa Village – Southern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	54.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	6.3
05.	Ammonia (NH ₃)	µg/m ³	400	3.8
06.	Ozone (O ₃)	µg/m ³	180	6.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.1
10.	Arsenic (As)	ng/m ³	06	0.98
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0223/2019-20	Date: 12 th August, 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: New Mine Office – Near Weigh Bridge	
Sample collected on: 15.07.2019	

LOCATION / IDENTIFICATION: New Mine Office – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	62.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.2
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	5.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0224/2019-20	Date: 12 th August, 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: Orsa Village – Northern Part of Orsa Lease	
Sample collected on: 15.07.2019	

LOCATION / IDENTIFICATION: Orsa Village – Northern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	40.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	18.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	5.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.0
10.	Arsenic (As)	ng/m ³	06	1.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0225/2019-20	Date: 12th August, 2019
Sample described by customer : SURFACE WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: SURFACE WATER	
Marks on Sample: Location: Orsapat Bauxite Mines	
Sample collected on: 15.07.2019	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
1	Colour	Hazen	<2	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.31	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.1	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	383	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	42	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	31	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	35	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO ₄)	mg/l	29.1	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.17	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	5.8	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

Continuation Sheet MEEPL/AUG0225/2019-20

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.11	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	7.6	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.06	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
24	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-CN.C & 4-39 & 4-44
26	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.5	7-8	APHA 20 th 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
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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0226/2019-20	Date: 12 th August, 2019
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 Noise	
Sampling Method : Instrumental, using Sound level Metter	
Data Collection Date: 15.07.2019	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result
Orsa Village – Near Mine Area	dB (A) L_{eq}	75	66.1	70	52.8

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0227/2019-20			Date: 12th August, 2019		
Sample described by customer: Runoff Water					
Client Name: Hindalco Industries Limited					
Client Address: Lohardaga					
Postal Code: 835203					
State: Jharkhand					
Country: India					
Sample Type: Runoff Water – Surface Water					
Marks on Sample: Location: Runoff Water – Orsapat Bauxite Mines					
Quantity: 4 liters.					
Sample collected on: 15.07.2019					
Sl. No.	Analysis	Method	Result	Unit	Limits
1.	pH	APHA 22 nd Ed. 2012, 4500-H+-B,4-92	8.7	mg/l	5.5-9.0
2.	Total Suspended Solids	APHA 22 nd EDN: 2012-2540	79	mg/l	100
3.	BOD @ 27°C	IS 3025 (Part 44): 1993, RA2003, Amd.1	6.2	mg/l	30
4.	COD	IS 3025 (Part 58): 1993, RA2006, Amd.1	30	mg/l	250
5.	Oil & Grease	IS 3025(PART 39): 1991 RA 2003,Ed 2.1	<5.0	mg/l	10
6.	Total Dissolved Solids	APHA 22 ND EDN 2012-2540	1705	mg/l	2100
7.	Aluminium (as Al)	APHA 22 nd EDN 2012-3120B	1.0	mg/l	3
8.	Calcium (as Ca)	APHA 22 nd EDN 2012-3120B	5.9	mg/l	75
9.	Iron (as Fe)	APHA 22 nd EDN 2012-3120B	1.0	mg/l	3
10.	Temperature		30.3	°C	Shall not exceed 5°C above the receiving water temperature

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0234/2019-20	Date: 12 th August, 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: Kudag Village – Near Hindalco Campus	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	51.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0235/2019-20	Date: 12 th August, 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: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	48.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	21.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	5.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.26
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.1
10.	Arsenic (As)	ng/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0236/2019-20	Date: 12 th August, 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: Amtahi Village – Near Tailoring Centre	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	3.2
06.	Ozone (O ₃)	µg/m ³	180	5.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0237/2019-20	Date: 12 th August, 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: Ambakona Village	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	39.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	18.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

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ORSAPAT BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT

AUGUST 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

AUGUST 2019

CONTENT

	LOCATION – ORSAPAT
AMBIENT AIR QUALITY – CORE ZONE	
1	Orsa Village – Near Mine Area
2	Orsa Village – Southern Part of Orsa Lease
3	New Mine Office – Near Weigh Bridge
4	Orsa Village – Northern Part of Orsa Lease





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0218/2019-20	Date: 14 th September, 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: Orsa Village – Near Mine Area	
Sample collected on: 16.08.2019	

LOCATION / IDENTIFICATION: Orsa Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	20.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	9.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.8
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.25
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.0
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0219/2019-20	Date: 14 th September, 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: Orsa Village – Southern Part of Orsa Lease	
Sample collected on: 16.08.2019	

LOCATION / IDENTIFICATION: Orsa Village – Southern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	24.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.6
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	4.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.21
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	0.74
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.21

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0220/2019-20	Date: 14 th September, 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: New Mine Office – Near Weigh Bridge	
Sample collected on: 16.08.2019	

LOCATION / IDENTIFICATION: New Mine Office – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	29.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	17.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.5
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	7.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.24

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0221/2019-20	Date: 14 th September, 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: Orsa Village – Northern Part of Orsa Lease	
Sample collected on: 16.08.2019	

LOCATION / IDENTIFICATION: Orsa Village – Northern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	22.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.3
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	3.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	1.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0226/2019-20	Date: 14 th September, 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: Kudag Village – Near Hindalco Campus	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	20.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	9.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	6.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.23
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	0.84
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0227/2019-20	Date: 14 th September, 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: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	17.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	8.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.0
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	4.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.20
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.0
10.	Arsenic (As)	ng/m ³	06	0.87
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.19

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0228/2019-20	Date: 14 th September, 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: Amtahi Village – Near Tailoring Centre	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	18.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.3
05.	Ammonia (NH ₃)	µg/m ³	400	1.8
06.	Ozone (O ₃)	µg/m ³	180	4.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.19
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	0.9
10.	Arsenic (As)	ng/m ³	06	0.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.16

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0229/2019-20	Date: 14 th September, 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: Ambakona Village	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	17.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	7.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	2.3
06.	Ozone (O ₃)	µg/m ³	180	2.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.16
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.1
10.	Arsenic (As)	ng/m ³	06	0.65
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.17

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 / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

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ORSAPAT BAUXITE MINE – ENVIRONMENTAL MONITORING REPORT

SEPTEMBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

CONTENT

	LOCATION – ORSAPAT
AMBIENT AIR QUALITY – CORE ZONE	
1	Orsa Village – Near Mine Area
2	Orsa Village – Southern Part of Orsa Lease
3	New Mine Office – Near Weigh Bridge
4	Orsa Village – Northern Part of Orsa Lease





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0173/2019-20

Date: 18th October, 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: Orsa Village – Near Mine Area

Sample collected on: 16.09.2019

LOCATION / IDENTIFICATION: Orsa Village – Near Mine Area

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	35.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	20.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.6
05.	Ammonia (NH ₃)	µg/m ³	400	5.0
06.	Ozone (O ₃)	µg/m ³	180	8.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.26
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.23

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0174/2019-20	Date: 18 th October, 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: Orsa Village – Southern Part of Orsa Lease	
Sample collected on: 16.09.2019	

LOCATION / IDENTIFICATION: Orsa Village – Southern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	28.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	17.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.6
06.	Ozone (O ₃)	µg/m ³	180	7.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.14
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.18

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0175/2019-20

Date: 18th October, 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: New Mine Office – Near Weigh Bridge

Sample collected on: 16.09.2019

LOCATION / IDENTIFICATION: New Mine Office – Near Weigh Bridge

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	31.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	22.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.0
05.	Ammonia (NH ₃)	µg/m ³	400	5.4
06.	Ozone (O ₃)	µg/m ³	180	6.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.18
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	2.0
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0176/2019-20	Date: 18 th October, 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: Orsa Village – Northern Part of Orsa Lease	
Sample collected on: 16.09.2019	

LOCATION / IDENTIFICATION: Orsa Village – Northern Part of Orsa Lease				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	24.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	16.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.0
05.	Ammonia (NH ₃)	µg/m ³	400	3.8
06.	Ozone (O ₃)	µg/m ³	180	7.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.10
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.16

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0181/2019-20	Date: 18 th October, 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: Kudag Village – Near Hindalco Campus	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	17.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.7
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	7.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.12
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	1.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.23

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0182/2019-20	Date: 18 th October, 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: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	23.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	12.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.4
05.	Ammonia (NH ₃)	µg/m ³	400	5.2
06.	Ozone (O ₃)	µg/m ³	180	6.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.16
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.2
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0183/2019-20

Date: 18th October, 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: Amtahi Village – Near Tailoring Centre

Sample collected on: 17.09.2019

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	14.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	9.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	7.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.06
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	ng/m ³	20	0.9
10.	Arsenic (As)	ng/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.19

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0184/2019-20	Date: 18 th October, 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: Ambakona Village	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	12.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	8.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.0
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	7.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.05
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	0.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.14

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



Annexure-2

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

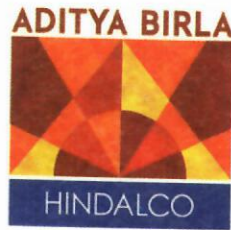
The composite cost during the year 2019-20 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (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 April'19 to Sep'19)
1	Pollution Control & Environment monitoring	3,351,809.00	1,650,803.00
2	Reclamation/ Back filing & Rehabilitation**	25,300,000.00	8,571,756.00
3	Green belt, Plantation & Water spraying arrangement	4,725,854.00	2,360,877.00
4	Rural Development	22,035,865.00	9,848,659.98

**Part of OB removed cost.



(Basudev Gangopadhyay)
Convenor (Quality & Environment)



Date: 10.01.19

Office Order

Environmental Cell has been re-constituted at Orsa Bauxite Mines (Area 196.36 Ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Hindalco Industries Limited.

1. Mr. Rajesh Ambastha- (Coordinator)
2. Mr. Tapas Gachhayat – (Member)
3. Mr. Satyendra Sharma (Foreman) – (Member)

Basudev Gangopadhyay
Convenor (Quality & Environment)


Annexure 4

Production, Mined Out, Back Filled and Over Burden removal from April'19 to September'19										
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	Mine is not in operation since November 2013.					
2	Bhusar Bauxite Mine	65.31	280000	11.07.1981 to 31.03.2030	4895	0.07	0.00	77442.60		
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	7972	0.06	0.00	11629.94		
4	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	NIL	NIL	0.67	21974.96		
5	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	NIL	NIL	1.20	53614.90		
6	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	NIL	NIL	1.00	107763.230		
7	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	153475	6.95	4.67	111211.184		
8	Shrengdag A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	147045	5.00	7.00	325000		
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	28545	0.39	0.33	16000		

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	Pakhhar (8.09)	8.09	80000	16.05.1973 to 31.03.2030	NIL	NIL	NIL	NIL	
14	Pakhhar (35.12)	35.12	200000	17.04.1975 to 31.03.2030	NIL	NIL	NIL	NIL	
15	Pakhhar (115.13)	115.13	300000	19.07.1996 to 31.03.2030	25000	0.35	0.58	72808.76	
Minerals & Minerals Limited									
16	Pakhhar (15.58)	15.58	60000	28.04.1965 to 31.03.2030	49800	0.4	0.20	48359.23	
17	Pakhhar (109.507)	109.507	280000	26.07.2008 to 25.07.2058	118700	1.00	2.04	162256	
18	Bimarla Bauxite Mine	134.526	300000	18.07.2009 to 17.07.2059	87320	4.33	3.10	241367.05	

*Static information about the mines included in the above table


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