

HIL/LHD/ENV/MoEF/61

Date: 24.05.2021

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 Chiro-Kukud (152.57 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period October'20 to March'21.

Ref: Environmental Clearance letter no J-11015/240/2006-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 **Chiro-Kukud (152.57 ha)** Bauxite Mining project of **M/s Hindalco Industries Limited** located in Gumla, Jharkhand for the period October'20 to March'21. The lease detail is as below.

Lease area (ha)	Production Capacity (MT)	Lease Period
152.57	100000	29.01.1985 to 28.01.2035

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

for Basu
(Basudev Gangopadhyay)
GM (Geology & Environment)

Enclosure: - As Above

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Name of the Project : Chiro Kukud Bauxite Mine (152.57 ha)
M/s Hindalco Industries Ltd

Environment Clearance No & date : J-11015/240/2006-IA.II (M), dated 17.5.2007

Period of compliance Report : From 1st October 2020 to 31st March 2021

S 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 writ 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 24 April 2018 as this matter is subjudice.
3.	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Implementations of the stipulated conditions in NOC are fulfilled post which consent to operate has been obtained from time to time when mine was in operation. The Mine is not in operation since 24 April 2018.
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 24 April 2018. The land acquisition was being done with permission of competent authority of State Government i.e. concerned Deputy Commissioner (D.C.) under CNT Act. The land lease agreement was being done with Raiyat (Land Owner) for 20 years with permission of State Govt with provision of returning the land as per the norms set by D.C. Land acquisition was having state government approval.
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 Ground Water Authority shall be	The Mine is not in operation since 24 April 2018. At no point of time mining activities was intersected the ground water table when mine was operational. In future also, post resumption of mining,

	obtained for mining below water table.	it will be restricted above ground water table. We undertake that no mining is/was carried out below ground water table and the same status will be maintained in future also
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.	The Mine is not in operation since 24 April 2018.
7.	The project proponent shall ensure that no natural water course shall be obstructed due to any mining operations.	The Mine is not in operation since 24 April 2018. No natural watercourse obstructed when mine was operational.
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.	The Mine is not in operation since 24 April 2018. Sequential backfilling and reclamation of the mined out area practiced when mine was operational.
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.	The Mine is not in operation since 24 April 2018. The over burdens generated during the initial year are kept as temporary dump. Concurrent backfilling started from the 2 nd year onwards. There is no external dump as on date and earlier dump were re-handled. Data is enclosed as Annexure 4.
10.	The entire excavated area of 86 ha shall be reclaimed, out of which 66 ha land shall be returned to raiyats for agricultural purpose and in 20 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.	This was being complied and also will be complied with in future post resumption of mining work.

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 24 April 2018.</p> <p>During operation period of mines, Catch drains of appropriate size have been constructed to arrest silt and sediment flows from mine working. The water so collected was utilized for watering the mine area, roads, green belt development etc. The drains were regularly desilted particularly after monsoon and maintained properly.</p> <p>Garland drains and sump of appropriate size were provided when mine was operational.</p>
12	Dimension of the retaining wall at the OB benches within the mine to check run-off and siltation should be based on rainfall data.	The Mine is not in operation since 24 April 2018 hence not applicable as of now.
13	Plantation shall be raised in an area of 20.0 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>Plantation was carried out progressively. Total 6.2 ha have been planted till date. In addition to this agricultural activities is going on reclaimed land.</p> <p>The Mine is not in operation since 24 April 2018</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.	<p>The Mine is not in operation since 24 April 2018.</p> <p>Suitable measures such as garland drain have been adopted to augment ground water resources in the area when mine was operational.</p> <p>It may be noted that there was no chance to intersect ground water table during mining operation.</p>
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),	<p>It is being monitored.</p> <p>The mining operation is not intersecting ground water table. Monitoring report of water is enclosed as Annexure-1.</p> <p>Mine is not in operation since 24 April</p>

	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.	2018.
16	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	The Mine is not in operation since 24 April 2018. Not used any natural water for mining purpose when mine was operational. Water used for sprinkling and gardening was drawn from rain water harvesting pond.
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 24 April 2018. Vehicle engaged in mining operation were regularly checked and maintained The vehicles used were covered with tarpaulin while transportation of mineral when mine was operational.
18	Drills should either be operated with dust extractors or should be equipped with water injection system.	The Mine is not in operation since 24 April 2018. Wet drilling done for dust suppression when mine was in operation.
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 24 April 2018. However, for this mine Blasting time was fixed during Lunch Time i.e. 1.00 PM -2.00 PM. Controlled blasting method practiced when mine was in operation.
20	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	There is no proposal for production enhancement.
21	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	The Mine is not in operation since 24 April 2018. There was no effluent discharge from Mine, hence ETP is not required to install.
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	The Mine is not in operation since 24 April 2018. Wildlife conservation plan has already been approved by PCCF, Ranchi. However, a fresh wildlife conservation plan has already been submitted to

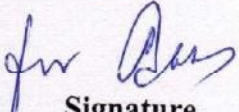
	fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	PCCF, Ranchi for its approval.
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.	Progressive Mine closure plan and Final mine closure plan (part) has been approved by IBM. FMCP for entire lease will be prepared & will be submitted in due time as per procedure mentioned in law. Based on the present resource estimate, and peak rated production capacity mentioned in EC, the tentative balance life is around 26 years. However, based on further availability of geological data in future, resources estimate vis-à-vis EC capacity and cut-off grade at that point of time ,balance life of the mine may change based on final resource estimate,.

GENERAL CONDITIONS

S 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	Noted.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Noted but the Mine is not in operation since 24 April 2018.
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.	The Mine is not in operation since 24 April 2018. 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.

4	Data on ambient air quality (RPM, SPM, SO ₂ , 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.	The Mine is not in operation since 24 April 2018. 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 24 April 2018. Water tankers with sprinkling facility have been provided for haul roads, loading unloading & at transfer points when mine was operational.
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 24 April 2018. PPE provided to operators within the work zone during operation of mines.
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.	The Mine is not in operation since 24 April 2018.
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 24 April 2018. PPE provided to workers during operation of mines. Training was provided through VT centre. PME was conducted for all workers when mine was in operation.
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.	Complied. A suitable environmental management cell has been developed with qualified personnel. Copy is 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.	The Mine is not in operation since 24 April 2018. This was an operating Mine and hence provision 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.	The funds earmarked for environmental protection measures are budgeted. Cost of environmental protection measures is attached as Annexure-2. Now Regional office is at Ranchi.
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. Now Regional office is at Ranchi.
13	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests its Regional Office, Bhubneshwar CPCB and State Pollution Control Board.	Duly submitted. Now Regional office is at Ranchi.
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 with earlier six monthly compliance report.


Signature



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

CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

OCTOBER 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Branch Office:

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

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CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
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1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
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2	Jaljali Village – Near Shiv Temple Sabag Road
C.	AMBIENT NOISE
D.	SPOT NOISE
E.	DRINKING WATER ANALYSIS





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0532/2020-21	Date: 30 th November, 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: Kukud Village – Near Mine Area	
Sample collected on: 17.10.2020	

LOCATION / IDENTIFICATION: Kukud 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	59.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.7
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	9.5
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	2.9
10.	Arsenic (As)	ng/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.38

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0533/2020-21	Date: 30 th November, 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: Kukad Village – Near Weigh Bridge	
Sample collected on: 17.10.2020	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	68.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.3
05.	Ammonia (NH ₃)	µg/m ³	400	2.8
06.	Ozone (O ₃)	µg/m ³	180	8.5
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	3.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0534/2020-21	Date: 30 th November, 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: Chiro Village – Near Mgazine	
Sample collected on: 17.10.2020	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	60.9
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	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.3
05.	Ammonia (NH ₃)	µg/m ³	400	2.8
06.	Ozone (O ₃)	µg/m ³	180	10.9
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	2.7
10.	Arsenic (As)	ng/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.26

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0535/2020-21	Date: 30 th November, 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: Chiro Village – Near Pillar No. 1	
Sample collected on: 17.10.2020	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
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	2.8
10.	Arsenic (As)	ng/m ³	06	3.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.34

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0536/2020-21	Date: 30 th November, 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: Kudag Village – Near Hindalco Campus	
Sample collected on: 17.10.2020	

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	59.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.2
05.	Ammonia (NH ₃)	µg/m ³	400	5.6
06.	Ozone (O ₃)	µg/m ³	180	10.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	3.3
10.	Arsenic (As)	ng/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0537/2020-21	Date: 30 th November, 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: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 17.10.2020	

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	66.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.7
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	2.6
10.	Arsenic (As)	ng/m ³	06	4.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.34
12.	Benzo (a) Pyrene	µg/m ³	01	0.34

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0538/2020-21	Date: 30 th November, 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 Noise	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 17.10.2020	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result
Kukad Village – Mining Area	dB (A) L_{eq}	75	68.1	70	53.6

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0539/2020-21	Date: 30 th November, 2020
Sample described by customer: Measurement of Spot 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: 17.10.2020	

Location/Identification	Unit	Limit (day)	Result
Kukad Mines – Near Poclairn	dB (A) L_{eq}	75	70.4

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0540/2020-21	Date: 30 th November, 2020
Sample described by customer : DRINKING WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: DRINKING WATER	
Marks on Sample: Location: Kukud Village – Drinking Water	
Sample collected on: 17.10.2020	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1	Colour	Hazen	<1	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	0.2	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	6.8	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	171	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO ₃)	mg/l	35.1	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	32.4	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	5.6	250 max	APHA 22 nd Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO ₄)	mg/l	4.2	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Continuation Sheet MEEPL/NOV/0540/2020-21

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO ₃)	mg/l	1.3	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.14	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.11	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	27	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	1.4	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115
20	Iron (as Fe)	mg/l	0.15	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.02	0.02 max	APHA 22 nd 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 nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	N.D	0.001 max	APHA 22 nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 nd 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 nd ED. 2012, 4500-S ₂ -C 4-175 & F 4-178





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

OCTOBER 2020

Continuation Sheet
MEEPL/NOV/0540/2020-21

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

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsapat

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0527/2020-21	Date: 30 th November, 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: Amtahi Village – Near Tailoring Centre	
Sample collected on: 16.10.2020	

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	55.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.0
06.	Ozone (O ₃)	µg/m ³	180	10.4
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	3.7
10.	Arsenic (As)	ng/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsapat

Environmental Monitoring Report

OCTOBER 2020

Report No.: MEEPL/NOV/0528/2020-21	Date: 30 th November, 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: Ambakona Village	
Sample collected on: 16.10.2020	

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	66.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	32.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.7
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.35
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	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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Eco Ventures Pvt. Ltd.

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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

NOVEMBER 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

NOVEMBER 2020

CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temple Sabag Road





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

NOVEMBER 2020

Report no: MEEPL/DEC/0472/2020-21	Date: 28 th December, 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: Kukud Village – Near Mine Area	
Sample collected on: 18.11.2020	

LOCATION / IDENTIFICATION: Kukud 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	75.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	39.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	6.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.6
05.	Ammonia (NH ₃)	µg/m ³	400	7.3
06.	Ozone (O ₃)	µg/m ³	180	5.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

NOVEMBER 2020

Report no: MEEPL/DEC/0473/2020-21	Date: 28 th December, 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: Kukad Village – Near Weigh Bridge	
Sample collected on: 18.11.2020	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	81.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	43.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	6.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.1
05.	Ammonia (NH ₃)	µg/m ³	400	7.5
06.	Ozone (O ₃)	µg/m ³	180	5.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.37
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	1.7
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

NOVEMBER 2020

Report no: MEEPL/DEC/0474/2020-21	Date: 28 th December, 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: Chiro Village – Near Mgazine	
Sample collected on: 18.11.2020	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	57.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	5.5
06.	Ozone (O ₃)	µg/m ³	180	5.2
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	1.4
10.	Arsenic (As)	ng/m ³	06	0.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

NOVEMBER 2020

Report no: MEEPL/DEC/0475/2020-21	Date: 28 th December, 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: Chiro Village – Near Pillar No. 1	
Sample collected on: 18.11.2020	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	61.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	34.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	5.6
06.	Ozone (O ₃)	µg/m ³	180	6.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.34

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

NOVEMBER 2020

Report no: MEEPL/DEC/0476/2020-21	Date: 28 th December, 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: Kudag Village – Near Hindalco Campus	
Sample collected on: 18.11.2020	

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	53.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	5.2
06.	Ozone (O ₃)	µg/m ³	180	6.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.34
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	0.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.5
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

NOVEMBER 2020

Report no: MEEPL/DEC/0477/2020-21	Date: 28 th December, 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: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 18.11.2020	

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	25.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.9
06.	Ozone (O ₃)	µg/m ³	180	4.0
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	1.1
10.	Arsenic (As)	ng/m ³	06	0.75
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

NOVEMBER 2020

Report no: MEEPL/DEC/0470/2020-21	Date: 28 th December, 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: Amtahi Village – Near Tailoring Centre	
Sample collected on: 17.11.2020	

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	49.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	4.8
06.	Ozone (O ₃)	µg/m ³	180	5.5
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	1.3
10.	Arsenic (As)	ng/m ³	06	0.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.17

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries: Orsa & Chiro

Environmental Monitoring Report

NOVEMBER 2020

Report no: MEEPL/DEC/0471/2020-21	Date: 28 th December, 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: Ambakona Village	
Sample collected on: 17.11.2020	

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	43.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	20.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.5
05.	Ammonia (NH ₃)	µg/m ³	400	4.8
06.	Ozone (O ₃)	µg/m ³	180	5.3
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	1.5
10.	Arsenic (As)	ng/m ³	06	0.83
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.18

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Eco Ventures Pvt. Ltd.

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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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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

DECEMBER 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

DECEMBER 2020

CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temple Sabag Road





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

DECEMBER 2020

Report No. : MEEPL/JAN/0372/2020-21

Date: 25th January, 2021

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: Kukud Village – Near Mine Area

Sample collected on: 16.12.2020

LOCATION / IDENTIFICATION: Kukud 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	61.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.8
05.	Ammonia (NH ₃)	µg/m ³	400	5.6
06.	Ozone (O ₃)	µg/m ³	180	7.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.04
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	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

DECEMBER 2020

Report No. : MEEPL/JAN/0373/2020-21	Date: 25 th January, 2021
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: Kukad Village – Near Weigh Bridge	
Sample collected on: 16.12.2020	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	75.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	40.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	7.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.5
05.	Ammonia (NH ₃)	µg/m ³	400	7.0
06.	Ozone (O ₃)	µg/m ³	180	7.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.24

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

DECEMBER 2020

Report No. : MEEPL/JAN/0374/2020-21

Date: 25th January, 2021

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: Chiro Village – Near Mgazine

Sample collected on: 16.12.2020

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	49.1
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	4.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.7
05.	Ammonia (NH ₃)	µg/m ³	400	4.9
06.	Ozone (O ₃)	µg/m ³	180	8.2
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	1.3
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.21

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

DECEMBER 2020

Report No. : MEEPL/JAN/0375/2020-21	Date: 25 th January, 2021
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: Chiro Village – Near Pillar No. 1	
Sample collected on: 16.12.2020	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
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	28.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	5.1
06.	Ozone (O ₃)	µg/m ³	180	8.0
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	1.2
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.12

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

DECEMBER 2020

Report No. : MEEPL/JAN/0376/2020-21	Date: 25 th January, 2021
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: 16.12.2020	

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	41.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	23.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.6
06.	Ozone (O ₃)	µg/m ³	180	7.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.20
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

DECEMBER 2020

Report No. : MEEPL/JAN/0377/2020-21	Date: 25 th January, 2021
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: 16.12.2020	

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	46.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	22.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.1
05.	Ammonia (NH ₃)	µg/m ³	400	5.7
06.	Ozone (O ₃)	µg/m ³	180	6.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
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	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Orsapat

Environmental Monitoring Report

DECEMBER 2020

Report No. : MEEPL/JAN/0370/2020-21

Date: 25th January, 2021

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: 15.12.2020

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	42.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.7
05.	Ammonia (NH ₃)	µg/m ³	400	3.9
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	0.03
09.	Nickel (Ni)	ng/m ³	20	0.9
10.	Arsenic (As)	ng/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.18

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries: Orsapat

Environmental Monitoring Report

DECEMBER 2020

Report No. : MEEPL/JAN/0371/2020-21	Date: 25 th January, 2021
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: 15.12.2020	

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	49.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	26.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.8
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	0.17
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	0.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.17

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

JANUARY 2021

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JANUARY 2021

CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temple Sabag Road
C.	DRINKING WATER ANALYSIS





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JANUARY 2021

Report No.: MEEPL/FEB/0379/2020-21	Date: 10 th February, 2021
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: Kukud Village – Near Mine Area	
Sample collected on: 18.01.2021	

LOCATION / IDENTIFICATION: Kukud 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	61
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	37
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.0
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	2.2
10.	Arsenic (As)	ng/m ³	06	1.8
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

JANUARY 2021

Report No.: MEEPL/FEB/0380/2020-21	Date: 10 th February, 2021
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: Kukad Village – Near Weigh Bridge	
Sample collected on: 18.01.2021	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	66.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	39.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.6
06.	Ozone (O ₃)	µg/m ³	180	8.8
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	2.4
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: Chiro Kukud

Environmental Monitoring Report

JANUARY 2021

Report No.: MEEPL/FEB/0381/2020-21	Date: 10 th February, 2021
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: Chiro Village – Near Mgazine	
Sample collected on: 18.01.2021	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	58
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.0
05.	Ammonia (NH ₃)	µg/m ³	400	2.5
06.	Ozone (O ₃)	µg/m ³	180	7.7
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	2.2
10.	Arsenic (As)	ng/m ³	06	1.5
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

JANUARY 2021

Report No.: MEEPL/FEB/0382/2020-21	Date: 10 th February, 2021
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: Chiro Village – Near Pillar No. 1	
Sample collected on: 18.01.2021	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	65
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	32
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	4.7
06.	Ozone (O ₃)	µg/m ³	180	9.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.35
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.7
10.	Arsenic (As)	ng/m ³	06	3.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JANUARY 2021

Report No.: MEEPL/FEB/0383/2020-21	Date: 10 th February, 2021
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: 18.01.2021	

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	59.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.7
05.	Ammonia (NH ₃)	µg/m ³	400	5.9
06.	Ozone (O ₃)	µg/m ³	180	9.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.35
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	2.9
10.	Arsenic (As)	ng/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.28

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JANUARY 2021

Report No.: MEEPL/FEB/0384/2020-21	Date: 10 th February, 2021
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: 18.01.2021	

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	69
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.3
05.	Ammonia (NH ₃)	µg/m ³	400	4.8
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.37
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	1.8
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

JANUARY 2021

Report No.: MEEPL/FEB/0385/2020-21	Date: 10 th February, 2021
Sample described by customer : DRINKING WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: DRINKING WATER	
Marks on Sample: Location: Kukud Village – Drinking Water	
Sample collected on: 18.01.2021	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1	Colour	Hazen	<1	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	0.2	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	6.8	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	266	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO ₃)	mg/l	30.7	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	25.2	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	5.1	250 max	APHA 22 nd Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO ₄)	mg/l	4.2	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JANUARY 2021

Continuation Sheet MEEPL/FEB/0385/2020-21

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO ₃)	mg/l	1.5	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.17	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.12	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	25	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	1.4	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115
20	Iron (as Fe)	mg/l	0.15	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.02	0.02 max	APHA 22 nd 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 nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	N.D	0.001 max	APHA 22 nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 nd 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 nd ED. 2012, 4500-S ₂ -C 4-175 & F 4-178





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JANUARY 2021

Continuation Sheet
MEEPL/FEB/0385/2020-21

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

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

FEBRUARY 2021

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

FEBRUARY 2021

CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temple Sabag Road





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

FEBRUARY 2021

Report No. : MEEPL/MAR/0422/2020-21	Date: 25 th March, 2021
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: Kukud Village – Near Mine Area	
Sample collected on: 17.02.2021	

LOCATION / IDENTIFICATION: Kukud 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	65
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	39
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.2
05.	Ammonia (NH ₃)	µg/m ³	400	5.5
06.	Ozone (O ₃)	µg/m ³	180	7.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.04
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	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

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,

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E-mail: mahabalanranchi@gmail.com

Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

FEBRUARY 2021

Report No. : MEEPL/MAR/0423/2020-21	Date: 25 th March, 2021
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: Kukad Village – Near Weigh Bridge	
Sample collected on: 17.02.2021	

LOCATION / IDENTIFICATION: Kukad Village – 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
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	42
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	7.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.1
05.	Ammonia (NH ₃)	µg/m ³	400	7.9
06.	Ozone (O ₃)	µg/m ³	180	9.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.38
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

FEBRUARY 2021

Report No. : MEEPL/MAR/0424/2020-21

Date: 25th March, 2021

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: Chiro Village – Near Mgazine

Sample collected on: 17.02.2021

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	53
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	5.5
06.	Ozone (O ₃)	µg/m ³	180	8.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.28
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	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.23

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

FEBRUARY 2021

Report No. : MEEPL/MAR/0425/2020-21	Date: 25 th March, 2021
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: Chiro Village – Near Pillar No. 1	
Sample collected on: 17.02.2021	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	59
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.2
05.	Ammonia (NH ₃)	µg/m ³	400	7.1
06.	Ozone (O ₃)	µg/m ³	180	8.5
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	1.2
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.15

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

FEBRUARY 2021

Report No. : MEEPL/MAR/0426/2020-21	Date: 25 th March, 2021
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: 17.02.2021	

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	49
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.2
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
06.	Ozone (O ₃)	µg/m ³	180	7.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

FEBRUARY 2021

Report No. : MEEPL/MAR/0427/2020-21	Date: 25 th March, 2021
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: 17.02.2021	

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
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.7
05.	Ammonia (NH ₃)	µg/m ³	400	5.7
06.	Ozone (O ₃)	µg/m ³	180	8.5
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	1.4
10.	Arsenic (As)	ng/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsapat

Environmental Monitoring Report

FEBRUARY 2021

Report No. : MEEPL/MAR/0420/2020-21

Date: 25th March, 2021

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: 16.02.2021

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	46
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.1
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
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	0.03
09.	Nickel (Ni)	ng/m ³	20	0.9
10.	Arsenic (As)	ng/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.18

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Orsapat

Environmental Monitoring Report

FEBRUARY 2021

Report No. : MEEPL/MAR/0421/2020-21	Date: 25 th March, 2021
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: 16.02.2021	

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	53
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.6
06.	Ozone (O ₃)	µg/m ³	180	7.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.19
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	0.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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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.

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Mahabal Enviro Engineers Pvt. Ltd.

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

MARCH 2021

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MARCH 2021

CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temple Sabag Road





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MARCH 2021

Report No. : MEEPL/MAR/0417/2020-21	Date: 30 th March, 2021
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: Kukud Village – Near Mine Area	
Sample collected on: 17.03.2021	

LOCATION / IDENTIFICATION: Kukud 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	55
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	5.9
06.	Ozone (O ₃)	µg/m ³	180	8.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	1.9
10.	Arsenic (As)	ng/m ³	06	1.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MARCH 2021

Report No. : MEEPL/MAR/0418/2020-21	Date: 30 th March, 2021
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: Kukad Village – Near Weigh Bridge	
Sample collected on: 17.03.2021	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	71
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	38
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.9
05.	Ammonia (NH ₃)	µg/m ³	400	5.8
06.	Ozone (O ₃)	µg/m ³	180	7.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	ng/m ³	20	1.9
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MARCH 2021

Report No. : MEEPL/MAR/0419/2020-21	Date: 30 th March, 2021
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: Chiro Village – Near Mgazine	
Sample collected on: 17.03.2021	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	55.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	4.7
06.	Ozone (O ₃)	µg/m ³	180	8.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.28
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	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.20

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MARCH 2021

Report No. : MEEPL/MAR/0420/2020-21	Date: 30 th March, 2021
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: Chiro Village – Near Pillar No. 1	
Sample collected on: 17.03.2021	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	59
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.6
05.	Ammonia (NH ₃)	µg/m ³	400	5.0
06.	Ozone (O ₃)	µg/m ³	180	8.3
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	1.4
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.12

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MARCH 2021

Report No. : MEEPL/MAR/0421/2020-21	Date: 30 th March, 2021
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: 17.03.2021	

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	47.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.3
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
06.	Ozone (O ₃)	µg/m ³	180	7.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.7
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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Mobile No: +91 9431.102.102 / +91 9955.358.262,

E-mail: mahabalanranchi@gmail.com

Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MARCH 2021

Report No. : MEEPL/MAR/0422/2020-21	Date: 30 th March, 2021
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: 17.03.2021	

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	52
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	5.4
06.	Ozone (O ₃)	µg/m ³	180	7.1
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	1.7
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	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



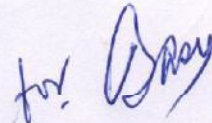
Annexure-2

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2020-21

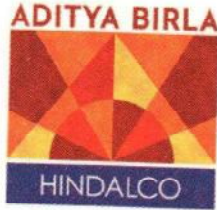
The composite cost during the year 2020-21 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 ha), Pakhar (15.58 ha), Pakhar (109.507 ha), Pakhar (8.09 ha), Pakhar (35.12 ha), 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 2020-21	Actual (in Rupees) FY 2020-21 (From October'20 to March'21)
1	Pollution Control & Environment monitoring	38,21,524.00	26,99,875.07
2	Reclamation/ Back filling & Rehabilitation**	3,21,50,000.00	2,90,93,388.00
3	Green belt, Plantation & Water spraying arrangement	49,25,800.00	46,95,346.80
4	Rural Development	3,20,21,451.00	1,65,48,825.39

**Part of OB removed cost.

for 

(Basudev Gangopadhyay)
Head (Geology & Environment)



Annexure 3

Date – 06.07.2020

Office Order

Environmental Cell has been re-constituted at Chiro Kukud Bauxite Mine (Area 152.57 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 Gachhyat -Geologist
3. Mr. Satyendra Sharma -Member
4. Mr. Abhay Kumar – Environment Engineer

The Undersigned is the in charge of above Environment Management Cell constituted for the purpose of ensuring compliances of environmental act rule and regulation for the above mine.

Basudev Gangopadhyay
Senior Executive (Quality & Environment)

Annexure 4

Production, Mined Out, Back Filled and Over Burden removal from October'20 to March'21									
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	25490	0.178	0.15	0.00	
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	57149	0.512	0.00	0.00	
4	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	37780	1.52	4.28	50116.10	
5	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	90915	3.19	6.18	157480.42	
6	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	79180	3.27	8.420	285021.770	
7	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	138808	6.52	6.23	208233.55	
8	Shrengdag A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	81960	1.9	1.2	225276.75	
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	23128	0.46	0.44	22658.4	

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	111000	0.80	0.70	272905.96	
Minerals & Minerals Limited									
16	Pakhar (15.58)	15.58	60000	28.04.1965 to 31.03.2030	3200	0.20	0.10	31346.54	
17	Pakhar (109.507)	109.507	280000	26.07.2008 to 25.07.2058	108500	0.46	0.75	234214.42	
18	Bimarla Bauxite Mine	134.37	300000	18.07.2009 to 17.07.2059	62100	2.95	2.50	160141.10	

*Static information about the mines included in the above table

for
Basudev

Basudev Gangopadhyay
Head (Geology & Environment)