

HIL/LHD/ENV/MoEF/523

Date: 28.05.2020

To,
The Additional Principal Chief Conservator of Forest (C)
Ministry of Environment, Forests and Climate Changes
Regional Office (ECZ), Ranchi-834002.

Sub: Compliance Report of EC conditions for Pakhar (8.09 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga, Jharkhand for the period October'19 to March'20.

Ref: Environmental Clearance letter no J-11015/135/2006-IA II (M) dated 24th January 2007

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar (8.09 ha)** Bauxite Mining project of **M/s Hindalco Industries Limited** located in Lohardaga, Jharkhand for the period October'19 to March'20. The lease detail is as below.

| Lease area (ha) | Production Capacity (MT) | Lease Period |
|-----------------|--------------------------|--------------------------|
| 8.09 | 80000 | 16.05.1973 to 31.03.2030 |

Hope you will find the same in order.

Thanking You.

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

(Basudev Gangopadhyay)
GM (Geology & Environment)

Enclosure: - As Above

CC: ro.ranchi-mef@gov.in, mef@ori.nic.in, mef@nic.in, mef.or@nic.in, mescb.cpcb@nic.in, zokolkatta.cpcb@nic.in, ranchiispcb@gmail.com, roranchi47@gmail.com

Compliance of conditions laid down in Environmental Clearance
PAKHAR (8.09 ha) BAUXITE MINES
Period: October'19- March'20
J-11015/135 /2006-IA.II (M) Dated 24.1.2007

| Sl No | Specific Conditions | Compliance Status |
|--------------|--|---|
| 1 | All the conditions stipulated by SPCB in their NOC shall be effectively implemented. | Winning of Bauxite is closed w.e.f Nov 2014 due to exhaustion of resources and field activity of final Mine closure plan are completed. |
| 2 | 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. | Winning of Bauxite is closed w.e.f Nov 2014 due to exhaustion of resources and field activity of final Mine closure plan are completed. |
| 3 | Mining shall not intersect groundwater. The mine working shall be restricted to ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table. | The Mine is not in operation since Nov 2014. Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. Final Mine Closure Plan has been approved by Indian Bureau of Mines. Field activity of final Mine closure plan are completed. |
| 4 | The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operation. | No natural water course was obstructed during mining in past. Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. Mine is not in operation since Nov 2014. Field activity of final Mine closure plan are completed. |
| 5 | Top soil 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 Nov 2014. Winning of bauxite operation not carried out in this lease during financial year 2019-20 due to exhaustion of mineral reserve. Field activity of final Mine closure plan are completed. |
| 6 | The waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. Monitoring and | Mine is not in operation since Nov 2014. Winning of bauxite operation not carried out in this lease during the financial year |

| | | |
|---|--|--|
| | <p>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 monthly basis.</p> | <p>2019-20 due to exhaustion of mineral reserve.</p> <p>No external OB dump is in mine lease area.</p> <p>Field activity of final Mine closure plan are completed.</p> |
| 7 | <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>Winning of bauxite operation not carried out in this lease during financial year 2019-20 due to exhaustion of mineral reserve.</p> <p>The Mine is not in operation since Nov 2014.</p> <p>Field activity of final Mine closure plan are completed.</p> |
| 8 | <p>Plantation shall be raised in an area of 6.35 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>Mine is not in operation since Nov 2014 due to exhaustion of reserves. FMCP approved by IBM. Mine Voids are reclaimed and rehabilitated. Water body is also created. Plantation done. Entire land is utilized for meaningful purpose.</p> <p>Field activity of final Mine closure plan are completed.</p> |
| 9 | <p>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> | <p>Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. Mine is not in operation since Nov 2014 due to exhaustion of reserves. FMCP approved by IBM. Mine Voids are reclaimed and rehabilitated. Water body is also created.</p> <p>Field activity of final Mine closure plan are completed.</p> |

| | | |
|----|--|---|
| 10 | 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. | Mine is not in operation since Nov 2014 due to exhaustion of reserves. FMCP approved by IBM. Mine Voids are reclaimed and rehabilitated. Water body is also created. Field activity of final Mine closure plan are completed. |
| 11 | Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. Field activity of final Mine closure plan are completed. |
| 12 | 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. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. FMCP approved by IBM. Mine Voids are reclaimed and rehabilitated. Water body is also created. Field activity of final Mine closure plan are completed. |
| 13 | Drills should either be operated with dust extractors or should be equipped with water injection system. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. FMCP approved by IBM. Mine Voids are reclaimed and rehabilitated. Water body is also created. Field activity of final Mine closure plan are completed. |

| | | |
|----|---|---|
| 14 | 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. | <p>Winning of bauxite operation not carried out in this lease during financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014.</p> <p>FMCP approved by IBM. Mine Voids are reclaimed and rehabilitated. Water body is also created.</p> <p>Field activity of final Mine closure plan are completed.</p> |
| 15 | Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine. | <p>The Mine is not in operation since Nov 2014. Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve.</p> <p>FMCP approved by IBM. Mine Voids are reclaimed and rehabilitated. Water body is also created.</p> <p>Field activity of final Mine closure plan are completed.</p> |
| 16 | Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations. | <p>The Mine is not in operation since Nov 2014. Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve.</p> <p>FMCP approved by IBM. Mine Voids are reclaimed and rehabilitated. Water body is also created.</p> <p>Field activity of final Mine closure plan are completed.</p> |
| 17 | The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as 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. | <p>Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014.</p> <p>Field activity of final Mine closure plan are completed.</p> |

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|----|--|---|
| 18 | 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. | Approval letter of Final Mine closure plan duly approved by Indian Bureau of Mines is hereby attached as Annexure-5 . |
|----|--|---|

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 | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. Field activity of final Mine closure plan are completed. |
| 2 | No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. Enclosed as Annexure 4. Field activity of final Mine closure plan are completed. |
| 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 Pakhar Plateau is enclosed 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 of Pakhar Plateau is enclosed in 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. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. Water spraying is being done around Mine Lease in dust prone areas. Field activity of final Mine closure plan are completed. |
| 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. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. Field activity of final Mine closure plan are completed. |
| 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. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. Field activity of final Mine closure plan are completed. |
| 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. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. Field activity of final Mine closure plan are completed. |
| 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. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. We have Environment Management Cell for our Pakhar Group of Mines. The same is looking after Environment issues of this Mine. Annexure-3. Field activity of final Mine closure plan are completed. |

| | | |
|----|---|---|
| 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. | Winning of bauxite operation not carried out in this lease during the financial year 2019-20 due to exhaustion of mineral reserve. The Mine is not in operation since Nov 2014. This was an operational mine and hence provision related to financial closure not applicable. Field activity of final Mine closure plan are completed. |
| 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. | Statement of budgetary provision and actual expenses for environmental protection measure is enclosed as Annexure-2. Currently, the Regional Office is located at Ranchi. Field activity of final Mine closure plan are completed. |
| 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. Currently, the Regional Office is located at Ranchi. |
| 13 | 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 |
| 14 | 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. |
| 15 | The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar. | Complied. Copies, of the advertisement made in the local newspapers, have already been submitted to the Regional Office. |



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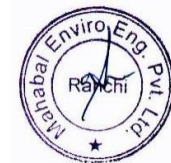
Mahabal Enviro Engineers Pvt. Ltd.
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

PAKHAR (109.507) – ENVIRONMENTAL MONITORING REPORT

OCTOBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

CONTENT

| LOCATION – PAKHAR (109.507) | |
|--|---|
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| 3 | Near Mine Quarry No. – K 10 |
| 4 | Pakhar Loading Area |
| AMBIENT AIR QUALITY – BUFFER ZONE | |
| 1 | Yatri Shed (Near K 10) |
| 2 | Near Bunglapart Village |
| 3 | Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village |
| 4 | Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village |
| DRINKING WATER | |
| 1 | Pakhar Mine – Near Canteen |





Mahabal Enviro Engineers Pvt. Ltd.

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 E-mail: mahabalranchi@gmail.com

Hindalco Industries:**Environmental Monitoring Report****OCTOBER 2019**

Report No.: MEEPL/NOV0106/2019-20 **Date:** 11th November, 2019

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 7

Sample collected on: 12.10.2019

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 7

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 71.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 37.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.14 |
| 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 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

Report No.: MEEPL/NOV0107/2019-20 Date: 11th November, 2019

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 9

Sample collected on: 12.10.2019

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 9

| 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 | 31.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.16 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.07 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.5 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

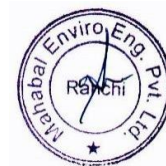
OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0108/2019-20 | Date: 11 th November, 2019 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Mine Quarry No. – K 10 | |
| Sample collected on: 12.10.2019 | |

| LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 10 | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 62.4 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 30.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.4 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.08 |
| 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 | 0.95 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

Report No.: MEEPL/NOV0109/2019-20 Date: 11th November, 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: Pakhar Loading Area

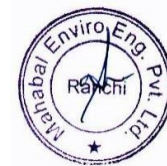
Sample collected on: 12.10.2019

LOCATION / IDENTIFICATION: Pakhar Loading Area

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 73.2 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 37.7 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 4.5 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 2.8 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 6.3 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 8.5 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.19 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.12 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 1.8 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 1.2 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 1.9 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.25 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:**Environmental Monitoring Report****OCTOBER 2019**

Report No.: MEEPL/NOV0110/2019-20 **Date:** 11th November, 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: Yatri Shed (Near K 10)

Sample collected on: 12.10.2019

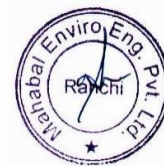
LOCATION / IDENTIFICATION: Yatri Shed (Near K 10)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 53.7 |
| 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 | 3.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 4.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.14 |
| 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 | 0.92 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

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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Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

Report No.: MEEPL/NOV0111/2019-20 Date: 11th November, 2019

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Bunglapart Village

Sample collected on: 12.10.2019

LOCATION / IDENTIFICATION: Near Bunglapart Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 37.0 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 19.4 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 2.7 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 1.3 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 3.0 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 5.1 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.06 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 0.6 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.13 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

Report No.: MEEPL/NOV0112/2019-20 Date: 11th November, 2019

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village

Sample collected on: 12.10.2019

LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM_{10} | $\mu\text{g}/\text{m}^3$ | 100 | 41.1 |
| 02. | Particulate Matter (size less than 2.5 μm) $\text{PM}_{2.5}$ | $\mu\text{g}/\text{m}^3$ | 60 | 23.0 |
| 03. | Sulphur Dioxide (SO_2) | $\mu\text{g}/\text{m}^3$ | 80 | 1.9 |
| 04. | Nitrogen Dioxide (NO_2) | $\mu\text{g}/\text{m}^3$ | 80 | 2.5 |
| 05. | Ammonia (NH_3) | $\mu\text{g}/\text{m}^3$ | 400 | 4.0 |
| 06. | Ozone (O_3) | $\mu\text{g}/\text{m}^3$ | 180 | 6.8 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.12 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 0.91 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 1.0 |
| 11. | Benzene (C_6H_6) | $\mu\text{g}/\text{m}^3$ | 05 | 0.8 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.13 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

Report No.: MEEPL/NOV0113/2019-20 Date: 11th November, 2019

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

Sample collected on: 12.10.2019

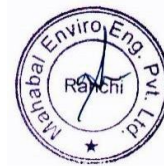
LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 36.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 20.6 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.6 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.04 |
| 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 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.5 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.12 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0175/2019-20 | Date: 11 th November, 2019 |
| Sample described by customer : DRINKING WATER-POTABILITY | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: DRINKING WATER-POTABILITY | |
| Marks on Sample: Location: Near Canteen | |
| Sample collected on: 12.10.2019 | |

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS 10500:2012) | 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 | 0.11 | 1 Max | APHA 22 nd Ed. 2012, 2130-B, 2-13 |
| 5 | pH | -- | 7.0 | 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 | 318 | 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 | 40 | 200 max | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 11 | Alkalinity Total (as CaCO ₃) | mg/l | 33 | 200 max | IS 3025 (Part 237): 1986, Reaffirmed 2009 |
| 12 | Chloride (as Cl) | mg/l | 8.1 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 13 | Sulphate (as SO ₄) | mg/l | 3.9 | 200 max | APHA 22 nd Ed. 2012, 4500-so4-e, 4-190 |





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Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

Continuation Sheet MEEPL/NOV0175/2019-20

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method reference |
|---------|--|------|--------|---------------------------------|--|
| 14 | Nitrate (as NO ₃) | mg/l | 1.01 | 45 max | APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125 |
| 15 | Fluoride (as F) | mg/l | 0.24 | 1 max | APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87 |
| 16 | Boron (as B) | mg/l | 0.02 | 0.5 max | APHA 22 nd Ed. 2012, 4500-BB, 4-25 |
| 17 | Calcium (as Ca) | mg/l | 19.2 | 75 max | APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67 |
| 18 | Magnesium (as Mg) | mg/l | 2.5 | 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 | 0.10 | 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 | 0.10 | 5 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 28 | Arsenic (as As) | mg/l | 0.006 | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-38 |
| 29 | Selenium (as Se) | mg/l | N.D | 0.001 max | APHA 22 nd Ed. 2012, 3112-B, 3-23 |
| 30 | Mercury (as Hg) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-38 |
| 31 | Nickel (as Ni) | mg/l | <0.008 | 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-S2-C 4-175 & F 4-178 |





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Hindalco Industries:

Environmental Monitoring Report

OCTOBER 2019

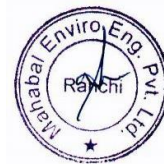
Continuation Sheet MEEPL/NOV0175/2019-20

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS 10500:2012) | Method Reference |
|---------------------------------|---------------------|-----------|--------|----------------------------------|---|
| Microbiological Analysis | | | | | |
| 1 | Total Colliforms | MPN/100mL | N.D | <1.1 | APHA 22 nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67 |
| 2 | E-Coli | MPN/100mL | N.D | Absent | APHA 22 nd Ed. 2012, 9221-B & C, 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 | 0.01 | US EPA 508-1995 |
| 11 | β-HCH | µg/L | N.D | 0.04 | US EPA 508-1995 |
| 12 | ε-HCH | µg/L | N.D | 0.04 | US EPA 508-1995 |
| 13 | Butachlor | µg/L | N.D | 125 | US EPA 508-1995 |
| 14 | Alachlor | µg/L | N.D | 20 | US EPA 508-1995 |
| 15 | Atrazine | µg/L | N.D | 2 | US EPA 508-1995 |
| 16 | α Endosulfan | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 17 | β Endosulfan | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 18 | Endosulfan Sulphate | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 19 | Ethion | µg/L | N.D | 3 | US EPA 8141A-1994 |
| 20 | Malathion | µg/L | N.D | 190 | US EPA 8141A-1994 |
| 21 | Methoyl Parathion | µg/L | N.D | 0.3 | US EPA 8141A-1994 |
| 22 | Monocrotophos | µg/L | N.D | 1 | US EPA 8141A-1994 |
| 23 | Phorate | µg/L | N.D | 2 | US EPA 8141A-1994 |
| 24 | Chlorpyrifos | µg/L | N.D | 30 | US EPA 8141A-1994 |
| 25 | Aldrin | µg/L | N.D | 0.03 | US EPA 508-1995 |
| 26 | Dieldrin | µg/L | N.D | 0.03 | US EPA 508-1995 |
| Remarks: N.D- Not Detected | | | | | |

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.
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PAKHAR (109.507) – ENVIRONMENTAL MONITORING REPORT

NOVEMBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

NOVEMBER 2019

CONTENT

| | LOCATION - PAKHAR (109.507) |
|---|---|
| | AMBIENT AIR QUALITY - CORE ZONE |
| 1 | Near Mine Quarry No. - K 7 |
| 2 | Near Mine Quarry No. - K 9 |
| 3 | Near Mine Quarry No. - K 10 |
| 4 | Pakhar Loading Area |
| | AMBIENT AIR QUALITY - BUFFER ZONE |
| 1 | Yatri Shed (Near K 10) |
| 2 | Near Bunglapart Village |
| 3 | Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village |
| 4 | Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village |
| | SURFACE WATER ANALYSIS |
| 1 | Pakhar (109.507) Bauxite Mines |





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Hindalco Industries:

Environmental Monitoring Report

NOVEMBER 2019

Report No.: MEEPL/DEC0236/2019-20 Date: 27th December, 2019

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 7

Sample collected on: 12.11.2019

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 7

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 79.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 41.7 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.0 |
| 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 | 1.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0237/2019-20 | Date: 27 th December, 2019 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Mine Quarry No. – K 9 | |
| Sample collected on: 12.11.2019 | |

| LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 9 | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 64.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 31.6 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.4 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.23 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.06 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.5 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

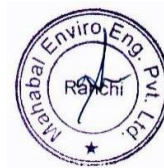
NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0238/2019-20 | Date: 27 th December, 2019 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Mine Quarry No. – K 10 | |
| Sample collected on: 12.11.2019 | |

| LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 10 | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 68.0 |
| 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 | 4.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.14 |
| 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 | 1.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

NOVEMBER 2019

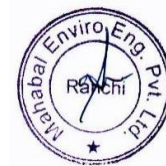
| | |
|---|--|
| Report No.: MEEPL/DEC0239/2019-20 | Date: 27 th December, 2019 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Loading Area | |
| Sample collected on: 12.11.2019 | |

LOCATION / IDENTIFICATION: Pakhar Loading Area

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 78.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 40.3 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.9 |
| 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 | 0.18 |
| 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 | 1.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.25 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries:**Environmental Monitoring Report****NOVEMBER 2019****Report No.:** MEEPL/DEC0240/2019-20 **Date:** 27th December, 2019**Sample described by customer:** AMBIENT AIR QUALITY MONITORING**Client Name:** Hindalco Industries Limited**Client Address:** Lohardaga**Postal Code:** 835203**State:** Jharkhand**Country:** India**Sample type:** AMBIENT AIR QUALITY MONITORING**Marks on Sample:** Location: Yatri Shed (Near K 10)**Sample collected on:** 12.11.2019**LOCATION / IDENTIFICATION: Yatri Shed (Near K 10)**

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 60.1 |
| 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 | 4.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.7 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 4.9 |
| 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 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.95 |
| 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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Hindalco Industries:**Environmental Monitoring Report****NOVEMBER 2019**

| | |
|---|--|
| Report No.: MEEPL/DEC0241/2019-20 | Date: 27 th December, 2019 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Bunglapart Village | |
| Sample collected on: 12.11.2019 | |

| LOCATION / IDENTIFICATION: Near Bunglapart Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 45.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.8 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.12 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.13 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries:

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0242/2019-20 | Date: 27 th December, 2019 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village | |
| Sample collected on: 12.11.2019 | |

| LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village | | | | |
|--|--|-------------------|----------------|---------------|
| 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 | 25.0 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.2 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.18 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.91 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 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:

Environmental Monitoring Report

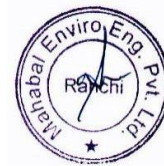
NOVEMBER 2019

| | |
|--|--|
| Report No.: MEEPL/DEC0243/2019-20 | Date: 27 th December, 2019 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village | |
| Sample collected on: 12.11.2019 | |

| LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 40.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 22.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 4.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.04 |
| 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 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.16 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:**Environmental Monitoring Report****NOVEMBER 2019**

| | |
|---|--|
| Report No.: MEEPL/DEC0332/2019-20 | Date: 27 th December, 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: Pakhar (109.507) Bauxite Mine | |
| Sample collected on: 12.11.2019 | |

| 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 | 0.21 | 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-CI-G, 4-69 |
| 7 | Total Dissolved Solids | mg/l | 355 | 500 max | IS 3025 (Part 16): 1984, Reaffirmed 2006 |
| 8 | Total hardness (as CaCO ₃) | mg/l | 26 | 200 max | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 9 | Alkalinity Total (as CaCO ₃) | mg/l | 30 | 200 max | IS 3025 (Part 237): 1986, Reaffirmed 2009 |
| 10 | Chloride (as Cl) | mg/l | 34 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 11 | Sulphate (as SO ₄) | mg/l | 26.1 | 200 max | APHA 22 nd Ed. 2012, 4500-so4-e, 4-190 |
| 12 | Boron (as B) | mg/l | 0.16 | 0.5 max | APHA 22 nd Ed. 2012, 4500-BB, 4-25 |
| 13 | Magnesium (as Mg) | mg/l | 5.3 | 30 max | APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84 |





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Hindalco Industries:

Environmental Monitoring Report

NOVEMBER 2019

Continuation Sheet
MEEPL/DEC0332/2019-20

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS 10500:2012) | Method Reference |
|---------|------------------------|------|--------|----------------------------------|---|
| 14 | Fluoride (as F) | mg/l | 0.12 | 1 max | APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87 |
| 15 | Calcium (as Ca) | mg/l | 7.7 | 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 | 7.4 | 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
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.
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PAKHAR (109.507) – ENVIRONMENTAL MONITORING REPORT

DECEMBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

CONTENT

| | LOCATION – PAKHAR (109.507) |
|---|---|
| | AMBIENT AIR QUALITY – CORE ZONE |
| 1 | Near Mine Quarry No. – K 7 |
| 2 | Near Mine Quarry No. – K 9 |
| 3 | Near Mine Quarry No. – K 10 |
| 4 | Pakhar Loading Area |
| | AMBIENT AIR QUALITY – BUFFER ZONE |
| 1 | Yatri Shed (Near K 10) |
| 2 | Near Bunglapart Village |
| 3 | Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village |
| 4 | Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village |
| | |
| | |
| | |





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Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0156/2019-20 Date: 27th January, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 7

Sample collected on: 10.12.2019

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 7

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 85.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 40.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 8.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.1 |
| 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 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0157/2019-20 Date: 27th January, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 9

Sample collected on: 10.12.2019

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 9

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 70.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 33.8 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.27 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.06 |
| 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 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.23 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0158/2019-20 Date: 27th January, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 10

Sample collected on: 10.12.2019

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 10

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 74.8 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 35.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.19 |
| 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 | 1.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

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: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0159/2019-20 Date: 27th January, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Loading Area

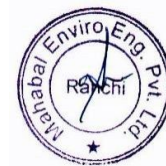
Sample collected on: 10.12.2019

LOCATION / IDENTIFICATION: Pakhar Loading Area

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 86.0 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 41.6 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 5.8 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 4.2 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 8.5 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 8.0 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.29 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.25 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 1.6 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 1.2 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 1.1 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.24 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0160/2019-20 Date: 27th January, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Yatri Shed (Near K 10)

Sample collected on: 10.12.2019

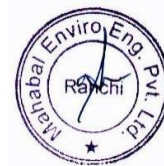
LOCATION / IDENTIFICATION: Yatri Shed (Near K 10)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 64.7 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 31.5 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 4.6 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 3.8 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 6.5 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 5.2 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.23 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 1.0 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 0.91 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0161/2019-20 Date: 27th January, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Bunglapart Village

Sample collected on: 10.12.2019

LOCATION / IDENTIFICATION: Near Bunglapart Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 48.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 26.1 |
| 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 | 4.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.15 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.12 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0162/2019-20 Date: 27th January, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village

Sample collected on: 10.12.2019

LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 52.7 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 21.8 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 4.0 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 6.7 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.18 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 0.85 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.13 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0163/2019-20 Date: 27th January, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

Sample collected on: 10.12.2019

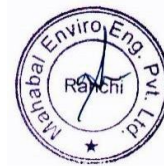
LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 44.1 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 23.7 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 2.2 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 1.6 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 2.9 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 4.5 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.07 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 1.0 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 0.6 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.14 |

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

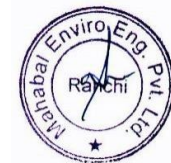
Mahabal Enviro Engineers Pvt. Ltd.
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

PAKHAR (109.507) – ENVIRONMENTAL MONITORING REPORT

JANUARY 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

CONTENT

| LOCATION – PAKHAR (109.507) | |
|-----------------------------|---|
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| 2 | Near Mine Quarry No. – K 9 |
| 3 | Near Mine Quarry No. – K 10 |
| 4 | Pakhar Loading Area |
| | |
| B. | AMBIENT AIR QUALITY – BUFFER ZONE |
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| 2 | Near Bunglapart Village |
| 3 | Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village |
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| | |
| C. | SURFACE WATER ANALYSIS |
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| 1 | Pakhar (109.507) Bauxite Mines |
| | |
| E. | SPOT NOISE MONITORING |
| 1 | Pakhar (109.507) Bauxite Mine Loading Point – Near Dumper |





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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0247/2019-20 | Date: 15 th February, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Mine Quarry No. – K 7 | |
| Sample collected on: 10.01.2020 | |

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 7

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 81.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 43.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 8.7 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.9 |
| 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 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.24 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0248/2019-20 | Date: 15 th February, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Mine Quarry No. – K 9 | |
| Sample collected on: 10.01.2020 | |

| LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 9 | | | | |
|---|--|-------------------|----------------|---------------|
| 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 | 36.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.2 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.31 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.06 |
| 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 | 0.8 |
| 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.

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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0249/2019-20

Date: 15th February, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 10

Sample collected on: 10.01.2020

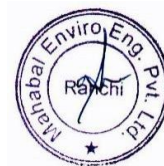
LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 10

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 79.0 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 37.4 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 6.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.9 |
| 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 | 1.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.22 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0250/2019-20 Date: 15th February, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Loading Area

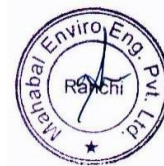
Sample collected on: 10.01.2020

LOCATION / IDENTIFICATION: Pakhar Loading Area

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 85.2 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 43.8 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 6.6 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 4.8 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 8.9 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 8.2 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.34 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.25 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 1.6 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 1.2 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 1.1 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.24 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0251/2019-20

Date: 15th February, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Yatri Shed (Near K 10)

Sample collected on: 10.01.2020

LOCATION / IDENTIFICATION: Yatri Shed (Near K 10)

| 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 | 29.8 |
| 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 | 6.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.8 |
| 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 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.91 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

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: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0252/2019-20 | Date: 15 th February, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Bunglapart Village | |
| Sample collected on: 10.01.2020 | |

| LOCATION / IDENTIFICATION: Near Bunglapart Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 50.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 27.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.4 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.18 |
| 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 | 0.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0253/2019-20 | Date: 15 th February, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village | |
| Sample collected on: 10.01.2020 | |

| LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village | | | | |
|--|--|-------------------|----------------|---------------|
| 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 | 24.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.21 |
| 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 | 1.0 |
| 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.

Vijay Pandey
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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0254/2019-20

Date: 15th February, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

Sample collected on: 10.01.2020

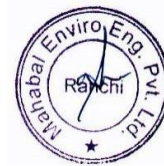
LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

| 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 | 23.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.18 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries:**Environmental Monitoring Report****JANUARY 2020**

| | |
|---|--|
| Report No.: MEEPL/FEB/0255/2019-20 | Date: 15 th February, 2020 |
| 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: Pakhar (109.507) Bauxite Mine | |
| Sample collected on: 10.01.2020 | |

| 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 | 0.22 | 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-CI-G, 4-69 |
| 7 | Total Dissolved Solids | mg/l | 373 | 500 max | IS 3025 (Part 16): 1984, Reaffirmed 2006 |
| 8 | Total hardness (as CaCO ₃) | mg/l | 28 | 200 max | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 9 | Alkalinity Total (as CaCO ₃) | mg/l | 32 | 200 max | IS 3025 (Part 237): 1986, Reaffirmed 2009 |
| 10 | Chloride (as Cl) | mg/l | 37 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 11 | Sulphate (as SO ₄) | mg/l | 29.8 | 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 | 5.3 | 30 max | APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84 |





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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

Continuation Sheet
MEEPL/FEB/0255/2019-20

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS 10500:2012) | Method Reference |
|---------|------------------------|------|--------|----------------------------------|---|
| 14 | Fluoride (as F) | mg/l | 0.13 | 1 max | APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87 |
| 15 | Calcium (as Ca) | mg/l | 7.7 | 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 | 7.4 | 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
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0256/2019-20 Date: 15th February, 2020

Sample described by customer : Measurement of Noise

Client Name : Hindalco Industries Limited

Client Address : Lohardaga

Postal Code : 835203

State : Jharkhand

Country : India

Sample Description : Measurement of Noise

Sampling Method : Instrumental, using Sound level Metter

Data Collection Date: 10.01.2020

| Location/Identification | Unit | Limit (day) | Result | Limit (night) | Result |
|-------------------------|-----------------|-------------|--------|---------------|--------|
| Pakhar (109.507) | dB (A) L_{eq} | 75 | 70.5 | 70 | 55.2 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries:

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0257/2019-20 **Date:** 15th February, 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: 10.01.2020

| Location/Identification | Unit | Limit (day) | Result |
|---|-----------------|-------------|--------|
| Pakhar (109.507) Bauxite Mine - Loading point Near Dumper | dB (A) L_{eq} | 75 | 70.9 |

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

PAKHAR (109.507) – ENVIRONMENTAL MONITORING REPORT

FEBRUARY 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

FEBRUARY 2020

CONTENT

| LOCATION – PAKHAR (109.507) | |
|-----------------------------|---|
| A. | AMBIENT AIR QUALITY – CORE ZONE |
| 1 | Near Mine Quarry No. – K 7 |
| 2 | Near Mine Quarry No. – K 9 |
| 3 | Near Mine Quarry No. – K 10 |
| 4 | Pakhar Loading Area |
| | |
| B. | AMBIENT AIR QUALITY – BUFFER ZONE |
| 1 | Yatri Shed (Near K 10) |
| 2 | Near Bunglapart Village |
| 3 | Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village |
| 4 | Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village |
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Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0336/2019-20 Date: 20th March, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 7

Sample collected on: 10.02.2020

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 7

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 85.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 40.8 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 6.2 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 8.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.1 |
| 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 | 1.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.25 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0337/2019-20 Date: 20th March, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 9

Sample collected on: 10.02.2020

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 9

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 79.4 |
| 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 | 6.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.3 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.34 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.06 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.1 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.4 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.25 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0338/2019-20 Date: 20th March, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 10

Sample collected on: 10.02.2020

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 10

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 72.7 |
| 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 | 6.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.1 |
| 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 | 0.24 |
| 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 | 1.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.22 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0339/2019-20 Date: 20th March, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Loading Area

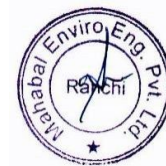
Sample collected on: 10.02.2020

LOCATION / IDENTIFICATION: Pakhar Loading Area

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 85.9 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 41.3 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 6.8 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 4.4 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 8.5 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 8.0 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.35 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.28 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 1.6 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 1.2 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 1.1 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.24 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, District – Ranchi 834009,
Mobile No: +91 9431.102.102 / +91 9955.358.262,
E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0340/2019-20 Date: 20th March, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Yatri Shed (Near K 10)

Sample collected on: 10.02.2020

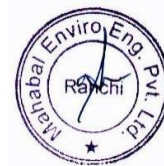
LOCATION / IDENTIFICATION: Yatri Shed (Near K 10)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 63.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 28.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 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 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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 Mobile No: +91 9431.102.102 / +91 9955.358.262,
 E-mail: mahabalranchi@gmail.com

Hindalco Industries:**Environmental Monitoring Report****FEBRUARY 2020**

| | |
|---|---|
| Report No.: MEEPL/MAR/0341/2019-20 | Date: 20 th March, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Bunglapart Village | |
| Sample collected on: 10.02.2020 | |

| LOCATION / IDENTIFICATION: Near Bunglapart Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 53.8 |
| 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 | 3.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.2 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.21 |
| 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 | 0.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.16 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0342/2019-20 Date: 20th March, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village

Sample collected on: 10.02.2020

LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 51.8 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 23.0 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 3.7 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 6.2 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.22 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 0.9 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0343/2019-20 Date: 20th March, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

Sample collected on: 10.02.2020

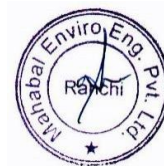
LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

| 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 | 21.7 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.18 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.16 |

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

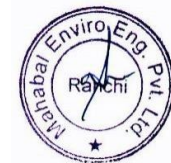
Mahabal Enviro Engineers Pvt. Ltd.
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

PAKHAR (109.507) – ENVIRONMENTAL MONITORING REPORT

MARCH 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Branch Office:

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E-mail: mahabalranchi@gmail.com

CONTENT

| LOCATION – PAKHAR (109.507) | |
|-----------------------------|---|
| A. | AMBIENT AIR QUALITY – CORE ZONE |
| 1 | Near Mine Quarry No. – K 7 |
| 2 | Near Mine Quarry No. – K 9 |
| 3 | Near Mine Quarry No. – K 10 |
| 4 | Pakhar Loading Area |
| | |
| B. | AMBIENT AIR QUALITY – BUFFER ZONE |
| 1 | Yatri Shed (Near K 10) |
| 2 | Near Bunglapart Village |
| 3 | Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village |
| 4 | Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village |
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Mahabal Enviro Engineers Pvt. Ltd.

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E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0136/2019-20 | Date: 20 th April, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Mine Quarry No. – K 7 | |
| Sample collected on: 09.03.2020 | |

| LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 7 | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 83.0 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 41.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 7.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 9.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.6 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.37 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.2 |
| 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 | 0.25 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

MARCH 2020

Report No.: MEEPL/APR/0137/2019-20 Date: 20th April, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 9

Sample collected on: 09.03.2020

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 9

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 81.9 |
| 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 | 7.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.35 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.06 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.4 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.8 |
| 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:

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E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

MARCH 2020

Report No.: MEEPL/APR/0138/2019-20 Date: 20th April, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Mine Quarry No. – K 10

Sample collected on: 09.03.2020

LOCATION / IDENTIFICATION: Near Mine Quarry No. – K 10

| 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 | 36.4 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 7.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.6 |
| 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 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.3 |
| 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.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

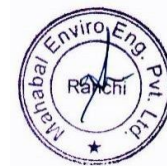
MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0139/2019-20 | Date: 20 th April, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Loading Area | |
| Sample collected on: 09.03.2020 | |

| LOCATION / IDENTIFICATION: Pakhar Loading Area | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 84.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 40.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 6.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 8.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 8.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.37 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.3 |
| 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 | 1.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.25 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0140/2019-20 | Date: 20 th April, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Yatri Shed (Near K 10) | |
| Sample collected on: 09.03.2020 | |

| LOCATION / IDENTIFICATION: Yatri Shed (Near K 10) | | | | |
|---|--|-------------------|----------------|---------------|
| 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 | 31.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.2 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.7 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 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 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0141/2019-20 | Date: 20 th April, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Bunglapart Village | |
| Sample collected on: 09.03.2020 | |

| LOCATION / IDENTIFICATION: Near Bunglapart Village | | | | |
|--|--|-------------------|----------------|---------------|
| 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 | 26.8 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.20 |
| 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 | 0.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, District – Ranchi 834009,
Mobile No: +91 9431.102.102 / +91 9955.358.262,
E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0142/2019-20 | Date: 20 th April, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village | |
| Sample collected on: 09.03.2020 | |

| LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Bunglapart Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 52.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 25.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.4 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.21 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.16 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, District – Ranchi 834009,
Mobile No: +91 9431.102.102 / +91 9955.358.262,
E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

MARCH 2020

Report No.: MEEPL/APR/0143/2019-20 Date: 20th April, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

Sample collected on: 09.03.2020

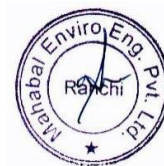
LOCATION / IDENTIFICATION: Near Utkramit Rajkiya Prathmik Vidyalaya Dumrapart Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 51.1 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 23.0 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 2.7 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 1.5 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 3.3 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 5.0 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.18 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m^3 | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m^3 | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | $\mu\text{g}/\text{m}^3$ | 05 | 0.7 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE



Annexure-2

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

The composite cost during the year 2019-20 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha), Pakhar (8.09 Ha), Pakhar (35.12Ha), Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.97 Ha) Kujam II (157.38 Ha), Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud (152.57 ha), Orsa pat (196.36 Ha), Bhusar (65.31 Ha) and Bimarla Bauxite Mines (134.52 Ha).

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

**Part of OB removed cost.



(Basudev Gangopadhyay)
Convenor (Quality & Environment)

MINERALS & MINERALS LIMITED

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

Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref. :

Annexure - 3

Date

Date: 10.01.19

Office Order

Environmental Cell has been re-constituted at Pakhar Bauxite Mines (Area 109.507 Ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Minerals & Minerals Industries Limited.

1. Mr. Kiran Shankar Singh-Mines Manager (Coordinator)
2. Mr. Abhay Bharti (CSR Dept) - Member
3. Mr. Amlendu Singh (Fore man) - Member



Basudev Gangopadhyay
Convenor (Quality & Environment)

Annexure 4

| Production, Mined Out, Back Filled and Over Burden removal from October'19 to March'20 | | | | | | | | |
|--|----------------------------|------------------------|---------------------------|--------------------------------|-----------------|---------------------|-----------------------|--------------------|
| S No | Name of the Mines | Mining lease area (ha) | Production Capacity (MT)* | Lease Period* | Production (MT) | Mined out area (ha) | Back filled area (ha) | Over burden (Cu.M) |
| 1 | Bagru bauxite Mine | 75.41 | 85000 | 22.01.1974 to 31.03.2030 | NIL | NIL | NIL | NIL |
| 2 | Bhusar Bauxite Mine | 65.31 | 280000 | 11.07.1981 to 31.03.2030 | 198 | 0 | 6.60 | 54137.88 |
| 3 | Hisri (New) Bauxite Mine | 14.55 | 100000 | 19.07.1981 to 31.03.2030 | 14190 | 0.81 | 0.48 | 25422.64 |
| 4 | Kujam - I Bauxite Mine | 80.87 | 150000 | 13.03.2006 to 12.03.2056 | 44245 | 3.26 | 0.13 | 29260.78 |
| 5 | Kujam - II Bauxite Mine | 157.38 | 300000 | 24.03.2006 to 23.03.2056 | 80395 | 3.81 | 0.55 | 78767.91 |
| 6 | Amtipani Bauxite Mine | 190.95 | 150000 | 13.03.2006 to 12.03.2056 | 59995 | 1.96 | 0.500 | 46744.920 |
| 7 | Gurdari Bauxite Mine | 584.19 | 325000 | 23.03.1985 to 22.03.2035 | 115250 | 10.45 | 7.34 | 261623.65 |
| 8 | Shrengdag A Bauxite Mine | 155.81 | 260000 | 16.10.1974 to 31.03.2030 | 63870 | 3.25 | 6.5 | 263958 |
| 9 | Shrengdag B Bauxite Mine | 140.07 | 100000 | 04.10.1978 to 31.03.2030 | NIL | NIL | NIL | NIL |
| 10 | Jalim & Sanai Bauxite Mine | 12.14 | 50000 | 16.10.1974 to 31.03.2030 | 17000 | 0.3 | 0.28 | 21500 |

Annexure 4

| | | | | | | | | |
|--|--------------------------|---------|--------|--------------------------------|--------|------|------|-----------|
| 11 | Orsapat Bauxite Mine | 196.36 | 200000 | 17.07.1986 to 16.07.2036 | NIL | NIL | NIL | NIL |
| 12 | Chiro Kukud bauxite Mine | 152.57 | 100000 | 29.01.1985 to 28.01.2035 | NIL | NIL | NIL | NIL |
| 13 | Pakhar (8.09) | 8.09 | 80000 | 16.05.1973 to 31.03.2030 | NIL | NIL | NIL | NIL |
| 14 | Pakhar (35.12) | 35.12 | 200000 | 17.04.1975 to 31.03.2030 | NIL | NIL | NIL | NIL |
| 15 | Pakhar (115.13) | 115.13 | 300000 | 19.07.1996 to 31.03.2030 | 87200 | 0.46 | 0.72 | 84268.58 |
| Minerals & Minerals Limited | | | | | | | | |
| 16 | Pakhar (15.58) | 15.58 | 60000 | 28.04.1965 to 31.03.2030 | 7500 | 0.15 | 0.10 | 14832.66 |
| 17 | Pakhar (109.507) | 109.507 | 280000 | 26.07.2008 to 25.07.2058 | 121400 | 0.67 | 1.00 | 167350.67 |
| 18 | Bimarla Bauxite Mine | 134.37 | 300000 | 18.07.2009 to 17.07.2059 | 67680 | 3.17 | 2.90 | 178732.51 |

*Static information about the mines included in the above table



Basudev Gangopadhyay
Convenor (Quality & Environment)

Registered Parcel



**GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES
OFFICE OF THE REGIONAL CONTROLLER OF MINES**

Telephone: (0651) 2242889
(0651) 2242903
Fax: (0651) 2242903
E-mail: ro.ranchi@ibm.gov.in

No.: RAN/LOH/BX/FMCP-03/2014-15

318-B, Road No.- 3,
Ashok Nagar,
Ranchi – 834 002,
Date: 15/05/2015

To: **Shri A. K. Agarwal,**
Director cum Nominated Owner
M/s HINDALCO Industries Ltd.,
Court Road, Lohardaga - 835 302 (Jharkhand).

Sub: **Approval of Final Mine Closure Plan in respect of PAKHAR Bauxite Mines of M/s HINDALCO Industries Ltd. over an area of 8.09 hectares in village-Pakhar, Lohardaga district of Jharkhand State submitted under Rule 23C of MCDR, 1988.**

Ref: Your A.G.M. (Geology) letters no.(1)HIL/LHD/BX/IBM/926(I) Dated 25/09/2014
(2)HIL/LHD/BX/IBM/ Dated 06/04/2015

This office letter no. रांची/लोहरदगा/बाक्साइट/एफ.एम.सी पी.-03/2014-15,दिनांक:13/03/2015

Sir,

In exercise of the powers conferred by the sub-rule 2 of Rule 23C of Mineral Conservation & Development Rules, 1988; I hereby **approve** the above said Final Mine Closure Plan in respect of PAKHAR Bauxite mines of M/s HINDALCO Industries Ltd. over an area of 8.09 hectares in village-Pakhar, Lohardaga district of Jharkhand State, submitted under Rule 23C of MCDR, 1988. This approval is subject to the following conditions: -

- (i) that the Final Mine Closure Plan is approved without prejudice to any other laws applicable to the mine/lease area from time to time whether made by the Central Government, State Government or any other Authority.
- (ii) that this approval of the Final Mine Closure Plan does not, in any way, imply the approval of the Government in terms of any other provisions of the Mines & Minerals (Development & Regulation) Act, 1957 or the Mineral Concession Rules, 1960 and any other laws including Forest (Conservation) Act, 1980, Environment (Protection) Act, 1986 and the rules made there under.
- (iii) that the Final Mine Closure Plan is approved without prejudice to any order or direction from any court of competent jurisdiction.
- (iv) that the Regional Office, Indian Bureau of Mines, Ranchi shall be informed after completion of activities of final mine closure as per proposal of the Final Mine Closure Plan.
- (v) that the Yearly report as required under Rule 23E(2) of MCDR, 1988 setting forth the extent of protection and rehabilitation works carried out as envisaged in the approved final mine closure plan and if there is any deviations, reasons thereof shall be submitted before 1st July of every year to the Regional office, Indian Bureau of Mines, Ranchi.

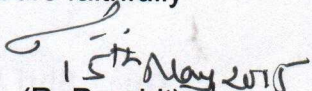
Contd...2

No.: RAN/LOH/BX/FMCP-03/2014-15.

- (iv) The financial assurance submitted for Rs.2,00,000/- (Two lacs only) is valid up to 31/03/2017. A new bank guarantee is to be submitted on or before its expiry i.e. 31/03/2017, if the rehabilitation proposal not completed by the time.

Encl.: One copy of approved
Final Mine Closure Plan.

Yours faithfully


(R. Purohit)

Regional Controller of Mines

Copy forwarded for information to: -

1. **The Director (Mines),**
Directorate of Mines and Geology,
Government of Jharkhand,
Nepal House Area, Doranda,
Ranchi - 834 002. (Jharkhand), along with a copy of approved Final Mine Closure Plan. **It is requested to ensure that the determination of aforesaid lease is not accepted unless and until a certificate issued by the Indian Bureau of Mines under Rule 29A (2) of Mineral Concession Rules, 1960 to the effect that protective, reclamation and rehabilitative works as envisaged in the approved Final Mine Closure Plan are carried out.**
2. **The Director of Mines Safety**
Ranchi Region
CMPDIL-Campus
3rd Floor, Old Building
Kanke Road, Ranchi-834008
along with a copy of approved Final Mine Closure Plan.
3. **Shri B.K.Mahapatra, RQP,**
HINDALCO Industries Ltd.
Court Road
LOHARDAGA - 835 302.


(R. Purohit)

Regional Controller of Mines