

HIL/LHD/ENV/MoEF/517

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 Serengdag Bauxite Mining (140.07 ha) project of M/s Hindalco Industries Limited located in Dist- Gumla, Jharkhand for the period October'19 to March'20.

Ref: Environmental Clearance letter no J-11015/243/2005-IA II (M) dated 23th June 2006

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Serengdag (140.07 Ha)** Bauxite Mining project of **M/s Hindalco Industries Limited** located in Gumla, Jharkhand for the period October'19 to March'20. The lease detail is as below.

| Lease area (ha) | Production Capacity (MT) | Lease Period |
|-----------------|--------------------------|--------------------------|
| 140.07 | 100000 | 04.10.1978 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

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Compliance of conditions laid down in Environmental Clearance

SERENDAG BAUXITE MINES (140.07 Ha)

Period: October'19 to March'20

MoEF Environment Clearance ref: No. J-11015/243/2005-IA.II (M) dated 23 June'06

| SI No | Conditions | Compliance Status |
|----------------------------|---|--|
| Specific Conditions | | |
| 1 | All the conditions stipulated by the State Pollution Control Board in their consent to establish should be effectively implemented. | <p>Implementations of the stipulated conditions in consent to establish are fulfilled post which consent to operate has been obtained from time to time. Existing consent to operate is valid upto 31.03.2020 and also renewal CTO has applied and the same has been deemed approved by JSPCB up to 31.05.2020.</p> <p>Implementations of the stipulated conditions mentioned in consent to operate are being complied with.</p> |
| 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. | Land acquisition is being done with permission of competent authority of State Government i.e. concerned Deputy Commissioner (D.C.) under CNT Act. The land lease agreement is being done with raiyat (Land Owner) for 20 years with permission of State Govt with provision of returning the land as per the norms set by D.C. The compensation and facilities are being provided as per norms set in agreement. Thus land acquisition has the approval of State Government |
| 3 | Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 62.18 ha forestland shall be obtained before starting mining operation in that area | Mining is being carried out in non-forest area only. The forest land has been surrendered by the company. The necessary formality is under process at forest department for same. |
| 4 | Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas. | Top soil is being spread over the backfilled area adequately for reclamation and rehabilitation of mined out areas. |
| 5 | The waste generated in the initial period shall be dumped temporarily and backfilled in the mined out area. There shall be no permanent | Waste/OB generated is used in backfilling, data enclosed. |

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| | external OB dump in the project area. Concurrent backfilling should start from the fifth year onwards. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on six monthly basis. | There is no external dump as on date. Concurrent backfilling is under progress. Monitoring and management of rehabilitated areas continuing with regular supervision. |
| 6 | Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil and mineral dump. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de-silted particularly after monsoon and maintained properly. Garland 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 settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals. | No run-off is generated from mining activities. However, to collect & manage rain water during monsoon, part of mined out area is used as settling tank for the runoff. Rain water stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary. Catch drains, Garland drains of appropriate size have been constructed both around the mine pit to prevent run off of water and flow of sediments directly into the agricultural field and water bodies. Sump of adequate capacity is being provided and maintained as required. No external dump in project area as on date. |
| 7 | Plantation shall be raised in an area of 37.1 ha including a green belt of adequate width by planting the native species around the ML area, roads, 06 dump sites etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1500 plants per ha. | During year 2019-20, around 2000 saplings have planted in this mine. Total 2.50 Ha areas has been planted till date. In addition to this agricultural activities is going on reclaimed land. Rest to be complied during project period. |
| 8 | The mining operations shall not intersect groundwater table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table. | No natural water course and/or water resource has been obstructed due to any mining operations. In future also, working zone will be restricted to above ground water table. We undertake that no mining is/was carried out below ground water table and the same status will be maintained in future also. |

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| 9 | 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. | As of now, to augment the ground water resources, measures like sump, no use of ground water for mining activities, no discharge of mine water out side mining lease area, systematic backfilling etc. being practiced. It may be noted that there is no chance to intersect ground water table during mining operation. |
| 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. | The mining operation is not intersecting ground water table. We are not using ground water for any mining purpose. Piezometer has been installed to regular monitoring of ground water table. Quality of water report is attached as Annexure 1 |
| 11 | Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies. | Water is collected from rain water harvesting pond of Serengdag plateau. We are not using natural water bodies, ground water for mining purposes. There is no chance to intersect ground water table during mining operation as total mining depth is around 20m and depth of ground water table is around 100m. |
| 12 | The project proponent shall monitor the spring discharge on long term basis (at lease one major spring) both in terms of quantity and quality of water and records maintained. Six monthly report should be submitted to the Ministry of Environment and Forests and its Regional Office located at Bhubneshwar. | Surface water quality report is attached as Annexure-1. |
| 13 | Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded. | To keep vehicular emissions in control, company vehicles are periodically checked & repaired. All measures are being taken to control vehicular emission. |
| 14 | The higher benches of the excavated void to be converted into water reservoir shall be terraced and afforested to stabilize the slopes. Peripheral fencing shall be done along the | This work is in progress with the progress of mining activity. Mined out pit will be converted into water |

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| | excavated area. | reservoir, plantation will be carried out to stabilize the slopes and get them terraced. |
| 15 | Drills should either be operated with dust extractors or should be equipped with water injection system | Wet drilling is in practice |
| 16 | Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented | Blasting time is fixed during Lunch Time i.e. 1.00 PM -2.00 PM. Controlled blasting method is in practice. Efforts and mitigative measures are being taken to mitigate impact of blasting. |
| 17 | Consent to operate should be obtained from SPCB prior to start of production of mine | Existing consent to operate is valid upto 31.03.2020 and also renewal CTO has applied and the same has been deemed approved by JSPCB up to 31.05.2020 |
| 18 | Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations. | There is no effluent discharge from Mines, hence ETP has not been installed. There is no residential accommodation in the mine area hence STP is not required. |
| 19 | The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered flora and fauna spotted in the study area. Action plan for conservation of endangered 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. | Following precautionary measures are being undertaken for conservation of flora and fauna. Suitable conservation measures to protect endangered flora & fauna implemented as under 1. Permanent pillars are established within the mine lease area. 2. Maintenance of the forest road being done 3. Ensured necessary air and noise pollution control measures. 4. Regular water sprinkling is being carried out on the forest road 5. Transportation done only in day time 6. Patrolling is being done. |
| 20 | A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval. | Final mine Closure Plan will be prepared & submitted at appropriate time as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same. Presently we are having approved progressive mine closure Plan. Based on |

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| | | the present resource estimate, and peak rated production capacity mentioned in EC, the tentative balance life is around 21 years (Life is 8 years with surrender of forest land). Balance life of the mine may change based on final resource estimate, EC capacity and cut-off grade at that point of time. |
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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 & Forests. | Noted. |
| 2 | No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made | Calendar plan including excavation, quantum of mineral bauxite and waste is being done as per IBM approved mining scheme. Report is attached as Annexure 4. |
| 3 | Four ambient air quality-monitoring stations 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 meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. | We have already established four ambient air quality monitoring stations in core zone as well as buffer zone. Monitoring is being carried out and reported to concern authorities. Report is attached as Annexure 1 |
| 4 | Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhopal and the State Pollution Control Board / Central Pollution Control Board once in six months. | Monitoring is being done. AAQ monitoring report is attached as Annexure -1 |
| 5 | Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained. | One mobile water tanker with sprinkling facility has been provided along haul roads, loading unloading & at transfer points to arrest dust emissions. |

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| 6 | Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs. | Noise monitoring is done regularly. Workers engaged in operation of HEMM, etc. are provided with ear plugs / muffs. Monitoring report is enclosed as Annexure 1 |
| 7 | Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents. | There is no Industrial waste water generated from workshop within mine lease area. We are not discharging any waste water outside mine lease area. Oil and grease has been installed at Sherengdag plateau at suitable site. |
| 8 | Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed. | Complied. Use of Personal Protective Equipment is provided & used by the individuals. We have a well-equipped hospital at mine site where health checkup of workmen is carried out regularly. Training on safety, health & environmental aspects of mining is being regularly imparted through VT training & other training programmes. |
| 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 | Separate management cell is functioning with qualified in-house members. Copy is enclosed as Annexure – 3. |
| 10 | The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work. | Provisions related to financial closure is not applicable as this is an operating mine. Currently, the Regional Office is located at Ranchi |
| 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 actual expenses for environmental protection measure is attached as Annexure- 2. Currently, the Regional Office is located at Ranchi |
| 12 | 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. | Vide sl. No. 10. Currently, the Regional Office is located at Ranchi |

| | | |
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| 13 | 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 |
| 14 | A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom and suggestion / representation has been received while processing the proposal. | Complied |
| 15 | State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days. | Displayed. |
| 16 | The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar. | Complied. (Documents already submitted) |



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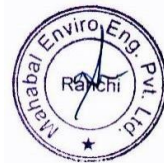
Mahabal Enviro Engineers Pvt. Ltd.
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

SHERENG DAG B BAUXITE MINE- ENVIRONMENTAL MONITORING REPORT

OCTOBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

OCTOBER 2019

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| 3 | Block 2A (Prohopat Village) |
| 4 | Harup Block C (Proposed) |
| | |
| | DRINKING WATER |
| | Near Baisbhatan Village |





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

OCTOBER 2019

Report No.: MEEPL/NOV0122/2019-20

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: *Mine Pit Quarry No. 2B*

Sample collected on: 15.10.2019

LOCATION / IDENTIFICATION: *Mine Pit Quarry No. 2B*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 55.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 24.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.22 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0123/2019-20 | 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: <i>Near Baisbhatan Village</i> | |
| Sample collected on: 15.10.2019 | |

LOCATION / IDENTIFICATION: *Near Baisbhatan Village*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 29.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 13.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.14 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 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 | 1.4 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

OCTOBER 2019

| | |
|--|--|
| Report No.: MEEPL/NOV0124/2019-20 | 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: <i>Block 2A (Prohopat Village)</i> | |
| Sample collected on: 15.10.2019 | |

| LOCATION / IDENTIFICATION: <i>Block 2A (Prohopat Village)</i> | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 32.0 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 17.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.15 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 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 | 1.5 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0125/2019-20 | 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: <i>Harup Block C (Proposed)</i> | |
| Sample collected on: 15.10.2019 | |

| LOCATION / IDENTIFICATION: <i>Harup Block (Proposed)</i> | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 27.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 15.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.12 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.3 |
| 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





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0177/2019-20 | 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 Baisbhatan Village | |
| Sample collected on: 15.10.2019 | |

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method reference |
|---------|--|-------|-----------|---------------------------------|---|
| 1 | Colour | Hazen | <1 | 5 Max | APHA 22 nd Ed. 2012, 2120-B, 2-6 |
| 2 | Odour | -- | Agreeable | Agreeable | IS 3025 (Part 7): 1983, Reaffirmed 2006 |
| 3 | Taste | -- | Agreeable | Agreeable | IS 3025 (Part 7): 1983, Reaffirmed 2006 |
| 4 | Turbidity | NTU | 0.1 | 1 Max | APHA 22 nd Ed. 2012, 2130-B, 2-13 |
| 5 | pH | -- | 7.2 | 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 | 349 | 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 | 44.1 | 200 max | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 11 | Alkalinity Total (as CaCO ₃) | mg/l | 27.5 | 200 max | IS 3025 (Part 237): 1986, Reaffirmed 2009 |
| 12 | Chloride (as Cl) | mg/l | 14.9 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 13 | Sulphate (as SO ₄) | mg/l | 4.3 | 200 max | APHA 22 nd Ed. 2012, 4500-so4-e, 4-190 |





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

OCTOBER 2019

Continuation Sheet

MEEPL/NOV0177/2019-20

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS 10500:2012) | Method Reference |
|---------|--|------|--------|----------------------------------|--|
| 14 | Nitrate (as NO ₃) | mg/l | 1.12 | 45 max | APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125 |
| 15 | Fluoride (as F) | mg/l | 0.03 | 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 | 10.5 | 75 max | APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67 |
| 18 | Magnesium (as Mg) | mg/l | 2.2 | 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 | 0.01 | 5 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 28 | Arsenic (as As) | mg/l | <0.01 | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-38 |
| 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 | <0.01 | 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 : Shrengdag B

Environmental Monitoring Report

OCTOBER 2019

Continuation Sheet
MEEPL/NOV0177/2019-20

| 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





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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0118/2019-20 | 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 Banjari Village | |
| Sample collected on: 14.10.2019 | |

LOCATION / IDENTIFICATION: Near Banjari Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 31.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 16.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.6 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.06 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.74 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.12 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0119/2019-20 | 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 Pauri Village | |
| Sample collected on: 14.10.2019 | |

| LOCATION / IDENTIFICATION: Near Pauri Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 30.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 14.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.6 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.10 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.4 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.10 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0120/2019-20 | 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 Paintoli Village | |
| Sample collected on: 14.10.2019 | |

| LOCATION / IDENTIFICATION: Near Paintoli Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 26.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 14.6 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.0 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.05 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.2 |
| 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 : Shrengdag A

Environmental Monitoring Report

OCTOBER 2019

| | |
|---|--|
| Report No.: MEEPL/NOV0121/2019-20 | 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 Harup Village | |
| Sample collected on: 14.10.2019 | |

| LOCATION / IDENTIFICATION: Near Harup Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 34.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 19.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.6 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.07 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

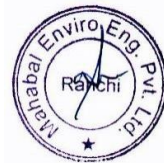
Mahabal Enviro Engineers Pvt. Ltd.
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SHERENG DAG B BAUXITE MINE- ENVIRONMENTAL MONITORING REPORT

NOVEMBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

NOVEMBER 2019

CONTENT

| | LOCATION – SHRENGDAG B BAUXITE MINE |
|---|--|
| | AMBIENT AIR QUALITY – CORE ZONE |
| 1 | Mine Pit Quarry No. 2B |
| 2 | Near Baisbhatan Village |
| 3 | Block 2A (Prohopat Village) |
| 4 | Harup Block C (Proposed) |
| | |
| | SURFACE WATER ANALYSIS |
| 1 | Sherengdag – B Bauxite Mines |





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0252/2019-20 | 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: <i>Mine Pit Quarry No. 2B</i> | |
| Sample collected on: 14.11.2019 | |

| LOCATION / IDENTIFICATION: <i>Mine Pit Quarry No. 2B</i> | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 48.4 |
| 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 | 5.2 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.9 |
| 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 | 0.27 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0253/2019-20 | 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: <i>Near Baisbhatan Village</i> | |
| Sample collected on: 14.11.2019 | |

LOCATION / IDENTIFICATION: *Near Baisbhatan Village*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 35.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 18.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.7 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 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 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.4 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

NOVEMBER 2019

| | |
|--|--|
| Report No.: MEEPL/DEC0254/2019-20 | 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: <i>Block 2A (Prohopat Village)</i> | |
| Sample collected on: 14.11.2019 | |

| LOCATION / IDENTIFICATION: <i>Block 2A (Prohopat Village)</i> | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 39.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 21.0 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.0 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.20 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 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 | 1.5 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.18 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0255/2019-20 | 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: <i>Harup Block C (Proposed)</i> | |
| Sample collected on: 14.11.2019 | |

LOCATION / IDENTIFICATION: *Harup Block (Proposed)*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 37.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 20.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.8 |
| 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 | 0.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Shrengdag B**Environmental Monitoring Report****NOVEMBER 2019**

| | |
|---|--|
| Report No.: MEEPL/DEC0334/2019-20 | 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: Sherengdag – B Bauxite Mine | |
| Sample collected on: 14.11.2019 | |

| 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 | 0.25 | 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 | 349 | 500 max | IS 3025 (Part 16): 1984, Reaffirmed 2006 |
| 8 | Total hardness (as CaCO ₃) | mg/l | 35 | 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 | 24 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 11 | Sulphate (as SO ₄) | mg/l | 22.5 | 200 max | APHA 22 nd Ed. 2012, 4500-so4-e, 4-190 |
| 12 | Boron (as B) | mg/l | 0.15 | 0.5 max | APHA 22 nd Ed. 2012, 4500-BB, 4-25 |
| 13 | Magnesium (as Mg) | mg/l | 6.2 | 30 max | APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84 |





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

NOVEMBER 2019

Continuation Sheet MEEPL/DEC0334/2019-20

| 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 | 7.6 | 75 max | APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67 |
| 16 | Iron (as Fe) | mg/l | 0.06 | 0.3 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 17 | Cadmium (as Cd) | mg/l | N.D | 0.003 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 18 | Chromium Total (as Cr) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 19 | Copper (as Cu) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 20 | Lead (as Pb) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 21 | Zinc (as Zn) | mg/l | 0.02 | 5 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 22 | Arsenic (as As) | mg/l | <0.01 | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-38 |
| 23 | Selenium (as Se) | mg/l | N.D | 0.001 max | APHA 22 nd Ed. 2012, 3112-B, 3-23 |
| 24 | Mercury (as hg) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-38 |
| 25 | Cyanide (as CN) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 4500-CN.C & 4-39 & 4-44 |
| 26 | Manganese (as Mn) | mg/l | N.D | 0.1 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 27 | Dissolved Oxygen | mg/l | 7.3 | 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.

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0248/2019-20 | 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 Banjari Village | |
| Sample collected on: 13.11.2019 | |

LOCATION / IDENTIFICATION: Near Banjari Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 45.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.7 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.6 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.06 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.7 |
| 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 : Shrengdag A

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0249/2019-20 | 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 Pauri Village | |
| Sample collected on: 13.11.2019 | |

| LOCATION / IDENTIFICATION: Near Pauri Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 36.8 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 17.4 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.4 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.15 |
| 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 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.12 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0250/2019-20 | 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 Paintoli Village | |
| Sample collected on: 13.11.2019 | |

| LOCATION / IDENTIFICATION: Near Paintoli Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 30.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 16.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.11 |
| 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 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

NOVEMBER 2019

| | |
|---|--|
| Report No.: MEEPL/DEC0251/2019-20 | 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 Harup Village | |
| Sample collected on: 13.11.2019 | |

| LOCATION / IDENTIFICATION: Near Harup Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 41.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.3 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.2 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.10 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 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 | 1.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Eco Ventures Pvt. Ltd.

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Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

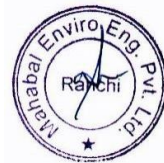
Mahabal Enviro Engineers Pvt. Ltd.
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SHERENG DAG B BAUXITE MINE- ENVIRONMENTAL MONITORING REPORT

DECEMBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

DECEMBER 2019

CONTENT

| | LOCATION – SHRENGDAG B BAUXITE MINE |
|---|--|
| | AMBIENT AIR QUALITY – CORE ZONE |
| 1 | Mine Pit Quarry No. 2B |
| 2 | Near Baisbhatan Village |
| 3 | Block 2A (Prohopat Village) |
| 4 | Harup Block C (Proposed) |
| | |
| | |
| | |





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0172/2019-20

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: *Mine Pit Quarry No. 2B*

Sample collected on: 12.12.2019

LOCATION / IDENTIFICATION: *Mine Pit Quarry No. 2B*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 56.2 |
| 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 | 5.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.28 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

DECEMBER 2019

Report No.: MEEPL/JAN/0173/2019-20 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 Baisbhatan Village*

Sample collected on: 12.12.2019

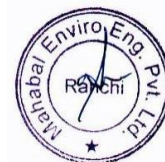
LOCATION / IDENTIFICATION: *Near Baisbhatan Village*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 42.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 20.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.24 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 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 | 1.4 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

DECEMBER 2019

| | |
|--|---|
| Report No.: MEEPL/JAN/0174/2019-20 | Date: 27 th 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: <i>Block 2A (Prohopat Village)</i> | |
| Sample collected on: 12.12.2019 | |

| LOCATION / IDENTIFICATION: <i>Block 2A (Prohopat Village)</i> | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 46.1 |
| 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 | 2.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.0 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.23 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.5 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

DECEMBER 2019

| | |
|---|---|
| Report No.: MEEPL/JAN/0175/2019-20 | Date: 27 th 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: <i>Harup Block C (Proposed)</i> | |
| Sample collected on: 12.12.2019 | |

| LOCATION / IDENTIFICATION: <i>Harup Block (Proposed)</i> | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 41.8 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 19.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.20 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.3 |
| 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
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

DECEMBER 2019

| | |
|---|---|
| Report No.: MEEPL/JAN/0168/2019-20 | Date: 27 th 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 Banjari Village | |
| Sample collected on: 11.12.2019 | |

LOCATION / IDENTIFICATION: Near Banjari Village

| 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 | 28.1 |
| 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 | 3.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.06 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.7 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

DECEMBER 2019

| | |
|---|---|
| Report No.: MEEPL/JAN/0169/2019-20 | Date: 27 th 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 Pauri Village | |
| Sample collected on: 11.12.2019 | |

| LOCATION / IDENTIFICATION: Near Pauri Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 44.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 19.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.6 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 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 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

DECEMBER 2019

| | |
|---|---|
| Report No.: MEEPL/JAN/0170/2019-20 | Date: 27 th 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 Paintoli Village | |
| Sample collected on: 11.12.2019 | |

| LOCATION / IDENTIFICATION: Near Paintoli Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 37.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 20.3 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.14 |
| 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 | 0.8 |
| 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 : Shrengdag A

Environmental Monitoring Report

DECEMBER 2019

| | |
|---|---|
| Report No.: MEEPL/JAN/0171/2019-20 | Date: 27 th 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 Harup Village | |
| Sample collected on: 11.12.2019 | |

| LOCATION / IDENTIFICATION: Near Harup Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 47.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 25.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.7 |
| 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 | 0.10 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 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 | 1.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

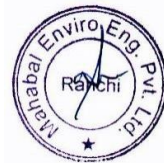
Mahabal Enviro Engineers Pvt. Ltd.
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

SHERENG DAG B BAUXITE MINE- ENVIRONMENTAL MONITORING REPORT

JANUARY 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

JANUARY 2020

CONTENT

| | LOCATION – SHRENGDAG B BAUXITE MINE |
|---|--|
| | AMBIENT AIR QUALITY – CORE ZONE |
| 1 | Mine Pit Quarry No. 2B |
| 2 | Near Baisbhatan Village |
| 3 | Block 2A (Prohopat Village) |
| 4 | Harup Block C (Proposed) |
| | |
| | SURFACE WATER ANALYSIS |
| 1 | Sherengdag – B Bauxite Mines |
| | |
| | AMBIENT NOISE MONITORING |
| 1 | Sherengdag – B Bauxite Mines |





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0268/2019-20 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: *Mine Pit Quarry No. 2B*

Sample collected on: 13.01.2020

LOCATION / IDENTIFICATION: *Mine Pit Quarry No. 2B*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|--------------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 μm) PM ₁₀ | $\mu\text{g}/\text{m}^3$ | 100 | 60.3 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 29.0 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 6.3 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 3.5 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 7.7 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 6.8 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.34 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.03 |
| 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 | 1.7 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.23 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0269/2019-20 | 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: <i>Near Baisbhatan Village</i> | |
| Sample collected on: 13.01.2020 | |

LOCATION / IDENTIFICATION: *Near Baisbhatan Village*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 47.0 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.29 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 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 | 1.4 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

JANUARY 2020

| | |
|--|--|
| Report No.: MEEPL/FEB/0270/2019-20 | 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: <i>Block 2A (Prohopat Village)</i> | |
| Sample collected on: 13.01.2020 | |

| LOCATION / IDENTIFICATION: <i>Block 2A (Prohopat Village)</i> | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 48.6 |
| 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 | 3.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.27 |
| 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 | 1.4 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0271/2019-20 | 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: <i>Harup Block C (Proposed)</i> | |
| Sample collected on: 13.01.2020 | |

| LOCATION / IDENTIFICATION: <i>Harup Block (Proposed)</i> | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 45.2 |
| 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 | 2.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.25 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 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.

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

| | |
|---|--|
| Report No.: MEEPL/FEB/0272/2019-20 | 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: Sherengdag – B Bauxite Mine | |
| Sample collected on: 13.01.2020 | |

| 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 | 0.25 | 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 | 377 | 500 max | IS 3025 (Part 16): 1984, Reaffirmed 2006 |
| 8 | Total hardness (as CaCO ₃) | mg/l | 30 | 200 max | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 9 | Alkalinity Total (as CaCO ₃) | mg/l | 34 | 200 max | IS 3025 (Part 237): 1986, Reaffirmed 2009 |
| 10 | Chloride (as Cl) | mg/l | 29 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 11 | Sulphate (as SO ₄) | mg/l | 24.9 | 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 | 6.1 | 30 max | APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84 |





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

JANUARY 2020

Continuation Sheet
MEEPL/FEB/0272/2019-20

| 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 | 7.9 | 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 | 7.3 | 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 : Shrengdag B

Environmental Monitoring Report

JANUARY 2020

Report No.: MEEPL/FEB/0273/2019-20

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: 13.01.2020

| Location/Identification | Unit | Limit (day) | Result | Limit (night) | Result |
|---------------------------|-----------------|-------------|--------|---------------|--------|
| Sherengdag B Bauxite Mine | dB (A) L_{eq} | 75 | 68.4 | 70 | 52.7 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0262/2019-20 | 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 Banjari Village | |
| Sample collected on: 11.01.2020 | |

| LOCATION / IDENTIFICATION: Near Banjari Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 57.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 29.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.9 |
| 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 | 5.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.06 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.7 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0263/2019-20 | 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 Pauri Village | |
| Sample collected on: 11.01.2020 | |

| LOCATION / IDENTIFICATION: Near Pauri Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 47.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 22.6 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.22 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.16 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0264/2019-20 | 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 Paintoli Village | |
| Sample collected on: 11.01.2020 | |

| LOCATION / IDENTIFICATION: Near Paintoli Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 41.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.0 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.17 |
| 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
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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

JANUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0265/2019-20 | 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 Harup Village | |
| Sample collected on: 11.01.2020 | |

| LOCATION / IDENTIFICATION: Near Harup Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 50.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 26.7 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.3 |
| 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 | 0.15 |
| 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 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

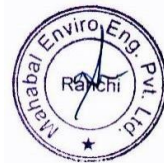
Mahabal Enviro Engineers Pvt. Ltd.
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

SHERENGDAG B BAUXITE MINE- ENVIRONMENTAL MONITORING REPORT

FEBRUARY 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

FEBRUARY 2020

CONTENT

| | LOCATION – SHRENGDAG B BAUXITE MINE |
|---|--|
| | AMBIENT AIR QUALITY – CORE ZONE |
| 1 | Mine Pit Quarry No. 2B |
| 2 | Near Baisbhatan Village |
| 3 | Block 2A (Prohopat Village) |
| 4 | Harup Block C (Proposed) |
| | |
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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0352/2019-20

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: *Mine Pit Quarry No. 2B*

Sample collected on: 12.02.2020

LOCATION / IDENTIFICATION: *Mine Pit Quarry No. 2B*

| 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 | 30.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 6.2 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.35 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.24 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

FEBRUARY 2020

Report No.: MEEPL/MAR/0353/2019-20 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 Baisbhatan Village*

Sample collected on: 12.02.2020

LOCATION / IDENTIFICATION: *Near Baisbhatan Village*

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 50.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 22.7 |
| 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 | 4.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.27 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 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 | 1.4 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

FEBRUARY 2020

| | |
|--|---|
| Report No.: MEEPL/MAR/0354/2019-20 | 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: <i>Block 2A (Prohopat Village)</i> | |
| Sample collected on: 12.02.2020 | |

| LOCATION / IDENTIFICATION: <i>Block 2A (Prohopat Village)</i> | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 45.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 24.6 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.2 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.6 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.28 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.4 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

FEBRUARY 2020

| | |
|---|---|
| Report No.: MEEPL/MAR/0355/2019-20 | 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: <i>Harup Block C (Proposed)</i> | |
| Sample collected on: 12.02.2020 | |

| LOCATION / IDENTIFICATION: <i>Harup Block (Proposed)</i> | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 49.7 |
| 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 | 1.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.8 |
| 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 | 0.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 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





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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

FEBRUARY 2020

| | |
|---|---|
| Report No.: MEEPL/MAR/0348/2019-20 | 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 Banjari Village | |
| Sample collected on: 11.02.2020 | |

LOCATION / IDENTIFICATION: Near Banjari Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 53.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 25.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.06 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.7 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

FEBRUARY 2020

| | |
|---|--|
| Report No.: MEEPL/FEB/0249/2019-20 | 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 Pauri Village | |
| Sample collected on: 11.02.2020 | |

| LOCATION / IDENTIFICATION: Near Pauri Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 48.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 22.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.22 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.7 |
| 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:

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

FEBRUARY 2020

| | |
|---|---|
| Report No.: MEEPL/MAR/0350/2019-20 | 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 Paintoli Village | |
| Sample collected on: 11.02.2020 | |

| LOCATION / IDENTIFICATION: Near Paintoli Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 44.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.6 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.9 |
| 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 | 5.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.19 |
| 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 : Shrengdag A

Environmental Monitoring Report

FEBRUARY 2020

| | |
|---|---|
| Report No.: MEEPL/MAR/0351/2019-20 | 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 Harup Village | |
| Sample collected on: 11.02.2020 | |

| LOCATION / IDENTIFICATION: Near Harup Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 47.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 21.4 |
| 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 | 5.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.17 |
| 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 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

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

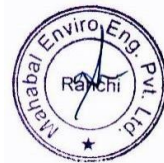
Mahabal Enviro Engineers Pvt. Ltd.
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

SHERENG DAG B BAUXITE MINE- ENVIRONMENTAL MONITORING REPORT

MARCH 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

MARCH 2020

CONTENT

| | LOCATION – SHRENGDAG B BAUXITE MINE |
|---|--|
| | AMBIENT AIR QUALITY – CORE ZONE |
| 1 | Mine Pit Quarry No. 2B |
| 2 | Near Baisbhatan Village |
| 3 | Block 2A (Prohopat Village) |
| 4 | Harup Block C (Proposed) |
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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0152/2019-20 | 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: <i>Mine Pit Quarry No. 2B</i> | |
| Sample collected on: 12.03.2020 | |

| LOCATION / IDENTIFICATION: <i>Mine Pit Quarry No. 2B</i> | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 67.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 32.4 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 6.6 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.7 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.32 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.4 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.22 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

MARCH 2020

Report No.: MEEPL/APR/0153/2019-20 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 Baisbhatan Village*

Sample collected on: 12.03.2020

LOCATION / IDENTIFICATION: *Near Baisbhatan 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 | 52.8 |
| 02. | Particulate Matter (size less than 2.5 μm) PM _{2.5} | $\mu\text{g}/\text{m}^3$ | 60 | 23.2 |
| 03. | Sulphur Dioxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 3.3 |
| 04. | Nitrogen Dioxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | 80 | 2.1 |
| 05. | Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | 400 | 4.0 |
| 06. | Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | 180 | 5.7 |
| 07. | Carbon Monoxide (CO) | mg/m^3 | 02 | 0.25 |
| 08. | Lead (Pb) | $\mu\text{g}/\text{m}^3$ | 1.0 | 0.01 |
| 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 | 1.3 |
| 12. | Benzo (a) Pyrene | $\mu\text{g}/\text{m}^3$ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Shrengdag B

Environmental Monitoring Report

MARCH 2020

| | |
|--|---|
| Report No.: MEEPL/APR/0154/2019-20 | 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: <i>Block 2A (Prohopat Village)</i> | |
| Sample collected on: 12.03.2020 | |

| LOCATION / IDENTIFICATION: <i>Block 2A (Prohopat Village)</i> | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 48.1 |
| 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 | 3.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.3 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.4 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.23 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.4 |
| 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 : Shrengdag B

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0155/2019-20 | 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: <i>Harup Block C (Proposed)</i> | |
| Sample collected on: 12.03.2020 | |

| LOCATION / IDENTIFICATION: <i>Harup Block (Proposed)</i> | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 51.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 22.8 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.6 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.29 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 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
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E-mail: mahabalranchi@gmail.com

Hindalco Industries : Shrengdag A

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0148/2019-20 | 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 Banjari Village | |
| Sample collected on: 11.03.2020 | |

| LOCATION / IDENTIFICATION: Near Banjari Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 50.3 |
| 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 | 3.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.2 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.09 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.7 |
| 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
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0149/2019-20 | 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 Pauri Village | |
| Sample collected on: 11.03.2020 | |

| LOCATION / IDENTIFICATION: Near Pauri Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 47.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.6 |
| 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 | 5.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.22 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 0.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

MARCH 2020

| | |
|--|------------------------------------|
| Report No.: MEEPL/APR/0150/2019-20 | 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 Paintoli Village | |
| Sample collected on: 11.03.2020 | |

| LOCATION / IDENTIFICATION: Near Paintoli Village | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 45.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.0 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.9 |
| 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 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Shrengdag A

Environmental Monitoring Report

MARCH 2020

| | |
|---|---|
| Report No.: MEEPL/APR/0151/2019-20 | 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 Harup Village | |
| Sample collected on: 11.03.2020 | |

| LOCATION / IDENTIFICATION: Near Harup Village | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 43.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 20.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.16 |
| 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 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



Annexure-2

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

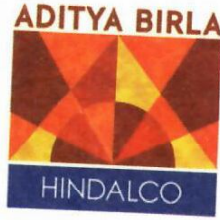
The composite cost during the year 2019-20 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (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)



Annexure-3

Date: 10.01.19

Office Order

Environmental Cell has been re-constituted at Shrengdag Bauxite Mines (Area 140.06 Ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Hindalco Industries Limited.

1. Mr. Shambhu Saran Vasistha -Mines Manager (Coordinator)
2. Mr. Mangal Hansda (Coordinator)
3. Mr. Navnit Kr. Jaiswal-Mines Foreman (Member)

A handwritten signature in blue ink, appearing to be "Basudev Gangopadhyay", with a horizontal line underneath it.

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)