

MINERALS & MINERALS LIMITED

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

Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref. :

Ref No: M&M/LHD/GM (GEO) MoEF/296

Date: 25.11.2018

Date

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

Sub: **Compliance Report of EC conditions for Pakhar (15.58 ha) Bauxite Mining project of M/s Minerals & Minerals Limited located in Lohardaga, Jharkhand for the period April'18 to Sept'18.**

Ref: **Environmental Clearance letter no J-11015/123/2006-IA II (M) dated 24th January 2007**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar (15.58 ha) Bauxite Mining project of M/s Minerals & Minerals Limited**, located in Lohardaga, Jharkhand for the period **April'18 to Sept'18**.

Hope you will find the same in order.

Thanking You

Yours Sincerely

FOR Minerals & Minerals Limited

(Basudey Gangopadhyay)

GM(Geology)

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi

RO, JSPCB, Ranchi

CPCB, Zonal Office, Kolkata

<mef@ori.nic.in>, <mef@nic.in>, <mef.or@nic.in>, mef.or@nic.in

Compliance of conditions laid down in Environmental Clearance

PAKHAR BAUXITE MINES (15.58 Ha)

MINERALS & MINERALS LTD.

Period: April'18- Sep'18

J-11015/123/2006-IA.II (M) Dated 24.01.2007

| Sl No | Conditions | Compliance Status |
|----------------------------|--|---|
| Specific Conditions | | |
| 1 | All the conditions stipulated by SPCB in their NOC shall be effectively implemented. | Implementations of the stipulated conditions in NOC are fulfilled post which consent to operate has been obtained from time to time. Existing consent to operate is valid upto 31.12.2020. Production of bauxite are within limits specified in consent to operate. |
| 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 as per the norms set by D.C. .The compensation and facilities are being provided as per norms set in agreement. Thus the provision is taken care off. |
| 3 | Mining shall not intersect groundwater. The mine working shall be restricted to ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table. | The mining operation is confined within shallow depth (20 m max). Working zone restricted above ground water table. The depth of water table is 70-80 mts from mining horizon and thus there is no chance to intersect ground water table during mining operation. |
| 4 | The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operation. | It is being ensured. No natural water course has been obstructed as yet and care will be taken in future also. |

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| 5 | Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas. | Top soil is being stacked properly with proper slope as and when required for its use for reclamation and rehabilitation. Sequential backfilling and reclamation of the mined out area are being exercised during mining operation. |
| 6 | The waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forest on six monthly basis. | Overburden and waste rock from the mining pit are being used for back filling. Earlier OB dump being rehandled and is being backfilled into mining voids. Backfilling and plantation detail provided in Annexure-4. |
| 7 | Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly. Garland drain (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals. | No run off is being generated from mining activities. However, to collect and manage rainwater during monsoon, part of mined out area is used as settling tank. Settled water is being used for sprinkling of quarry, roads, green belt development etc. Catch drain, siltation pond, garland drain is being maintained and constructed with progress of mining activity as and when required. Sump of adequate capacity is being provided. |
| 8 | Plantation shall be raised in an area of 6.98 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha. | Mining activity was discontinued since Sep'2014. Post Sep 14, mining operations resumed during August'17. Plantation is being carried out around ML area with progress of mining. Eco park is being developed adjacent to the mine. |
| 9 | The project proponent shall ensure that there shall be no discharge from the mine. | Ensured. There is no discharge from the mine. |

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| 10 | The Project proponent shall carry out regular monitoring of spring discharge and its quality near Pakhar village on long term basis. | The quality parameter of the potable water has been monitored, report attached. (Annex. 1) |
| 11 | The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board. | <p>A plan is drawn on the basis of discussions with scientists of State unit office of Central Ground Water Board, Ranchi to implement suitable conservation measures to augment ground water resources in the area and is also submitted to the Regional Director, Central Ground Water Board, Patna, for his further suggestions.</p> <p>Suitable conservation measures to augment water resource in area are implemented viz construction of sump, contour bunds, check dam etc is being provided.</p> |
| 12 | 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. | <p>The mining operation is confined within shallow depth (20 m max). The depth of water table is 70-80 mts from mining horizon and thus there is no chance to intersect ground water table during mining operation.</p> <p>Report on quality of water attached. Annexure 1.</p> |
| 13 | Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies. | We are not using natural water bodies, ground water for mining purposes. |
| 14 | Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded. | To keep vehicular emissions in control, vehicles are periodically checked & repaired. All measures are being taken to control vehicular emission including covering with tarpaulin and non-overloading during transportation. |
| 15 | Drills should either be operated with dust extractors or should be equipped with water injection system. | Drilling is being done with water pouring in holes intermittently for dust suppression. |
| 16 | Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of | Blasting time is fixed during Lunch Time i.e. 1.00 PM -2.00 PM. Controlled blasting method is in practice. |

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| | ground vibration and to arrest fly rocks and boulders should be implemented. | All efforts are being taken to mitigate impact of blasting. |
| 17 | Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine. | There is no proposal for production enhancement. |
| 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 from mine; hence ETP has not been installed. |
| 19 | The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Indian Python etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months. | <p>Action plan for conservation of flora and fauna spotted in the study area has been prepared based on discussions with forest Dept.</p> <p>Action taken for conservation of flora and fauna as under:</p> <ol style="list-style-type: none"> 1) Permanent pillars are established within the mine lease area. 2) Maintenance of the forest road 3) Ensured necessary air and noise pollution control measures. 4) Daily water sprinkling is being carried out on the forest road 5) Transportation is being done during day time. |
| 20 | A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval. | Progressive Mine closure plan has been dully approved by Indian Bureau of Mines. FMCP related provision will be compiled as per statue. Based on the present resource estimate, and peak rated production capacity mentioned in EC, the tentative balance life is around 14-15 years. However, after completion of further detailed exploration, the resources estimate vis-à-vis balance life of the mine may change based on final resource estimate, EC capacity and cut-off grade at that point of time. |

General Conditions.

| SN | Conditions | Compliance Status |
|----|--|--|
| 1 | No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest. | Noted and Being adhered to. |
| 2 | No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made. | Bauxite production are in line with calendar plan. Details attached as Annexure-4 for the month April'18 to September'18. |
| 3 | Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. | Monitoring Reports is enclosed as Annexure-1. |
| 4 | Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months. | Monitoring Reports is enclosed as Annexure-1. |
| 5 | Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained. | One no. of mobile water tanker with sprinkling facility has been provided along haul roads, loading unloading & at transfer points to arrest dust emissions. |
| 6 | Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs. | Noise monitoring is done regularly. Workers engaged in operation of HEMM, etc. are provided with ear plug / muffs. Monitoring report enclosed as Annexure-1. |
| 7 | Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents. | There is no effluent discharge from Mine. Discharge of workshop effluents is being passed through oil catchment pit to trap oil and grease. |

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| 8 | <p>Personnel working in dusty areas should wear protective respiratory devices and they should also provided with adequate training and information on safety and health aspects.</p> <p>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.</p> | <p>Complied.</p> <p>Use of Personal Protective Equipment (PPE) by the individuals is being ensured. All mine workers are being regularly and periodically sent to our own hospital for health checkup for any contraction of diseases due to exposure in dusty and noisy areas.</p> <p>Training on safety, health and environmental aspects of mining is being regularly imparted through VT centre and also through various other training programmes conducted by the State Government, recognized agencies, etc.</p> |
| 9 | <p>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.</p> | <p>Separate management cell is functioning with qualified in-house members. Copy enclosed.(Annexure-3)</p> |
| 10 | <p>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.</p> | <p>Provision related to financial closure are not applicable as this is an operating Mine</p> |
| 11 | <p>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.</p> | <p>Statement of Budgetary provision & actual expenses for environmental protection measure is submitted. (Annexed-2).</p> |
| 12 | <p>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.</p> | <p>Agreed</p> |
| 13 | <p>A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.</p> | <p>Complied.</p> |
| 14 | <p>State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.</p> | <p>Displayed.</p> |

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| 15 | <p>The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.</p> | <p>Complied. Copies of the advertisement made in the local newspapers, have already been submitted to the Regional Office.</p> |
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Eco Ventures Pvt. Ltd.

Regd. Office: 2/37, Sarvapriya Vihar, Near IIT Gate, New Delhi-110016

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

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

Mahabal Enviro Engineers Pvt. Ltd.

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

PAKHAR PLATEAU- ENVIRONMENTAL MONITORING REPORT

APRIL TO JUNE 2018

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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

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E-mail: mahabalranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

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| 5 | Pakhar Plateau Pakhar Mines(109.507 ha. Yatri Shed) |
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| 3 | Pakhar Mine (109.507 ha. Loading Area) Pakhar Plateau |
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| 5 | Pakhar Quarry (Near Shed) |
| | SPOT NOISE LEVEL |
| 1 | Near Poclain at Pakhar Mine (115.13 ha.) |
| 2 | Loading point near Dumper at Pakhar Mines (109.507 ha. Minerals & Minerals) |
| | DRINKING WATER |
| 1 | Pakhar Mine-Near Canteen |





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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|---|--|
| Report no: MEEPL/JULY0161/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau-Near Weigh Bridge | |
| Sample collected on: 06.06.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau-Near Weigh Bridge | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 85.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 40.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 7.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 10.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 12.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.32 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.40 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|--|--|
| Report no: MEEPL/JULY0162/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4 | |
| Sample collected on: 06.06.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4 | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 76.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 43.3 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 8.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 11.4 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 13.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.29 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.41 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|---|--|
| Report no: MEEPL/JULY0163/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau-Near Office | |
| Sample collected on: 06.06.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau-Near Office | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 70.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 35.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.6 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 8.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 10.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 12.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.30 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.1 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.35 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|---|--|
| Report no: MEEPL/JULY0164/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed) | |
| Sample collected on: 07.06.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed) | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 83.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 39.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 8.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 10.6 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 11.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.35 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.6 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.2 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.4 |

For Mahabal Enviro Engineers Pvt. Ltd.

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APRIL – JUNE 2018

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| Report no: MEEPL/JULY0165/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed) | |
| Sample collected on: 07.06.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed) | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 67.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 32.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.4 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 7.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 11.7 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 12.9 |
| 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 | 2.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.3 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.40 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, District – Ranchi 834009,
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E-mail: mahabalaranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|---|--|
| Report no: MEEPL/JULY0166/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau- 109.507 ha. Loading Area. | |
| Sample collected on: 07.06.2018 | |

LOCATION / IDENTIFICATION: Pakhar Plateau- 109.507 ha. Loading Area.

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 79.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 38.8 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 7.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 10.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 9.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.43 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.10 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.41 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|--|--|
| Report no: MEEPL/JULY0167/2018-19 | Date: 14 th July, 2018 |
| 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: 06.06.2018 | |

| Location/Identification | Unit | Limit (day) | Result | Limit (night) | Result |
|-------------------------|-----------------|-------------|--------|---------------|--------|
| Pakhar Near Office | dB (A) L_{eq} | 75 | 64.7 | 70 | 56.4 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|---|---|
| Report no: MEEPL/JULY0168/2018-19 | Date: 14th July, 2018 |
| 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: 06.06.2018 | |

| Location/Identification | Unit | Limit (day) | Result | Limit (night) | Result |
|------------------------------|-----------------|-------------|-------------|---------------|-------------|
| Pakhar Mines (115.13 ha.) | dB (A) L_{eq} | 75 | 61.3 | 70 | 54.1 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|---|--|
| Report no: MEEPL/JULY0169/2018-19 | Date: 14 th July, 2018 |
| 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: 07.06.2018 | |

| Location/Identification | Unit | Limit (day) | Result | Limit (night) | Result |
|--|-----------------|-------------|--------|---------------|--------|
| Pakhar Mines (109.507 ha. Loading Area) | dB (A) L_{eq} | 75 | 67.5 | 70 | 52.7 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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E-mail: mahabalanranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

APRIL - JUNE 2018

| | |
|---|--|
| Report no: MEEPL/JULY0170/2018-19 | Date: 14 th July, 2018 |
| 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: 07.06.2018 | |

| Location/Identification | Unit | Limit (day) | Result | Limit (night) | Result |
|---|-----------------|-------------|-------------|---------------|-------------|
| Pakhar Mines (109.507 ha. of Yatri Shed) | dB (A) L_{eq} | 75 | 64.0 | 70 | 56.2 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

APRIL - JUNE 2018

| | |
|---|--|
| Report no: MEEPL/JULY0171/2018-19 | Date: 14 th July, 2018 |
| 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: 06.06.2018 | |

| Location/Identification | Unit | Limit (day) | Result | Limit (night) | Result |
|------------------------------|-----------------|-------------|-------------|---------------|-------------|
| Pakhar Quarry (Near Shed) | dB (A) L_{eq} | 75 | 61.7 | 70 | 53.5 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|--|--|
| Report no: MEEPL/JULY0172/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer: Measurement of Spot Noise | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Description: Measurement of Spot Noise | |
| Sampling Method: Instrumental, using Sound level Metter | |
| Data Collection Date: 06.06.2018 | |

| Location/Identification | Unit | Limit (day) | Result |
|--|-----------------|-------------|--------|
| Near Poklen at Pakhar Mines (115.13 ha.) | dB (A) L_{eq} | 75 | 73.0 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|--|--|
| Report no: MEEPL/JULY0173/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer: Measurement of Spot Noise | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Description: Measurement of Spot Noise | |
| Sampling Method: Instrumental, using Sound level Metter | |
| Data Collection Date: 07.06.2018 | |

| Location/Identification | Unit | Limit (day) | Result |
|---|-----------------|-------------|--------|
| Pakhar Mines (109.507 ha. of Minerals & Minerals) Loading point near Dumper | dB (A) L_{eq} | 75 | 72.6 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

| | |
|---|--|
| Report no: MEEPL/JULY0174/2018-19 | Date: 14 th July, 2018 |
| Sample described by customer : DRINKING WATER-POTABILITY | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: DRINKING WATER-POTABILITY | |
| Marks on Sample: Location: Near Canteen | |
| Quantity: 5 L X 2 No. PVC Can | |
| Sample collected on: 07.06.2018 | |

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS 10500:2012) | Method reference |
|---------|--|-------|-----------|----------------------------------|---|
| 1 | Colour | Hazen | <1 | 5 Max | APHA 22 nd Ed. 2012, 2120-B, 2-6 |
| 2 | Odour | -- | Agreeable | Agreeable | IS 3025 (Part 7): 1983, Reaffirmed 2006 |
| 3 | Taste | -- | Agreeable | Agreeable | IS 3025 (Part 7): 1983, Reaffirmed 2006 |
| 4 | Turbidity | NTU | 0.20 | 1 Max | APHA 22 nd Ed. 2012, 2130-B, 2-13 |
| 5 | pH | -- | 7.4 | 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 | 389 | 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 | 49 | 200 max | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 11 | Alkalinity Total (as CaCO ₃) | mg/l | 52 | 200 max | IS 3025 (Part 237): 1986, Reaffirmed 2009 |
| 12 | Chloride (as Cl) | mg/l | 7.4 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 13 | Sulphate (as SO ₄) | mg/l | 3.9 | 200 max | APHA 22 nd Ed. 2012, 4500-so4-e, 4-190 |





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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

Continuation Sheet

MEEPL/JULY0174/2018-19

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method reference |
|---------|--|------|--------|---------------------------------|--|
| 14 | Nitrate (as NO ₃) | mg/l | 1.01 | 45 max | APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125 |
| 15 | Fluoride (as F) | mg/l | 0.24 | 1 max | APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87 |
| 16 | Boron (as B) | mg/l | 0.02 | 0.5 max | APHA 22 nd Ed. 2012, 4500-BB, 4-25 |
| 17 | Calcium (as Ca) | mg/l | 19.2 | 75 max | APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67 |
| 18 | Magnesium (as Mg) | mg/l | 2.5 | 30 max | APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84 |
| 19 | Ammonical Nitrogen/Total Ammonia | mg/l | <0.1 | -- | APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115 |
| 20 | Iron (as Fe) | mg/l | 0.10 | 0.3 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 21 | Manganese (as Mn) | mg/l | N.D | 0.1 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 22 | Aluminium (as Al) | mg/l | 0.01 | 0.03 max | APHA 22 nd Ed. 2012, 3500-Al-B, 3-61 |
| 23 | Cadmium (as Cd) | mg/l | N.D | 0.003 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 24 | Chromium Total (as Cr) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 25 | Copper (as Cu) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 26 | Lead (as Pb) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 27 | Zinc (as Zn) | mg/l | 0.10 | 5 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 28 | Arsenic (as As) | mg/l | 0.006 | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-38 |
| 29 | Selenium (as Se) | mg/l | N.D | 0.001 max | APHA 22 nd Ed. 2012, 3112-B, 3-23 |
| 30 | Mercury (as hg) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-38 |
| 31 | Nickel (as Ni) | mg/l | <0.008 | 0.02 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 32 | Mineral Oil | mg/l | N.D | 0.5 max | IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1 |
| 33 | Cyanide (as CN) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 4500-CN.C & 4-39 & 4-44 |
| 34 | Anionic detergents as MBAS | mg/l | <0.1 | 0.2 max | APHA 22 nd Ed. 2012, 5540-C.C & 5-53 |
| 35 | Phenolic compounds (as C ₆ H ₅ OH) | mg/l | N.D | 0.001 max | APHA 22 nd Ed. 2012, 5530-B & C 5-4753 |
| 36 | Polynuclear aromatic hydrocarbons (PAH) | mg/l | N.D | 0.0001 max | APHA 22 nd Ed. 2012, 6440, 6-93 |
| 37 | Polychlorinated Biphenyls (PCBs) | mg/l | N.D | 0.0005 max | USEPA Method 8082 |
| 38 | Sulphide (as S) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 4500-S2-C 4-175 & F 4-178 |





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Hindalco Industries:

Environmental Monitoring Report

APRIL – JUNE 2018

Continuation Sheet

MEEPL/JULY0174/2018-19

| 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 (Lindance) | 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 | β-HCH | µg/L | N.D | 0.04 | US EPA 508-1995 |
| 13 | Butachlor | µg/L | N.D | 125 | US EPA 508-1995 |
| 14 | Alachlor | µg/L | N.D | 20 | US EPA 508-1995 |
| 15 | Atrazine | µg/L | N.D | 2 | US EPA 508-1995 |
| 16 | α Endosulfan | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 17 | β Endosulfan | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 18 | Endosulfan Sulphate | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 19 | Ethion | µg/L | N.D | 3 | US EPA 8141A-1994 |
| 20 | Malathion | µg/L | N.D | 190 | US EPA 8141A-1994 |
| 21 | Methoyl Parathion | µg/L | N.D | 0.3 | US EPA 8141A-1994 |
| 22 | Monocrotophos | µg/L | N.D | 1 | US EPA 8141A-1994 |
| 23 | Phorate | µg/L | N.D | 2 | US EPA 8141A-1994 |
| 24 | Chlorpyrifos | µg/L | N.D | 30 | US EPA 8141A-1994 |
| 25 | Aldrin | µg/L | N.D | 0.03 | US EPA 508-1995 |
| 26 | Dieldrin | µg/L | N.D | 0.03 | US EPA 508-1995 |
| Remarks: N.D- Not Detected | | | | | |

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
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PAKHAR PLATEAU- ENVIRONMENTAL MONITORING REPORT

JULY TO SEPTEMBER 2018

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2018

CONTENT

| | LOCATION |
|---|---|
| | AMBIENT AIR QUALITY |
| 1 | Pakhar Plateau-Near Weigh Bridge |
| 2 | Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4 |
| 3 | Pakhar Plateau- Near Office |
| 4 | Pakhar Plateau- Pakhar Quarry (109.507 ha. Near Shed) |
| 5 | Pakhar Plateau Pakhar Mines(109.507 ha. Yatri Shed) |
| 6 | Pakhar Plateau- Pakhar Loading Area (109.507 ha.) |





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Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2018

| | |
|---|---|
| Report no: MEEPL/OCT0141/2018-19 | Date: 10 th October, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau-Near Weigh Bridge | |
| Sample collected on: 05.09.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau-Near Weigh Bridge | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 65 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 32 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.30 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.40 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2018

| | |
|--|---|
| Report no: MEEPL/OCT0142/2018-19 | Date: 10 th October, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4 | |
| Sample collected on: 05.09.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4 | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 79 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 37 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.34 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.41 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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

Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2018

| | |
|---|---|
| Report no: MEEPL/OCT0143/2018-19 | Date: 10 th October, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau-Near Office | |
| Sample collected on: 05.09.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau-Near Office | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 72.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 31 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.7 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 11.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.26 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.1 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.35 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2018

| | |
|---|---|
| Report no: MEEPL/OCT0144/2018-19 | Date: 10 th October, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed) | |
| Sample collected on: 06.09.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed) | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 68 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 30 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.4 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 9.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.30 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.4 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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E-mail: mahabalanranchi@gmail.com

Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2018

| | |
|--|---|
| Report no: MEEPL/OCT0145/2018-19 | Date: 10 th October, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed) | |
| Sample collected on: 06.09.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed) | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 63 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 34 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.7 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.25 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 2.0 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.3 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.40 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2018

| | |
|---|---|
| Report no: MEEPL/OCT0146/2018-19 | Date: 10 th October, 2018 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Pakhar Plateau- 109.507 ha. Loading Area. | |
| Sample collected on: 05.09.2018 | |

| LOCATION / IDENTIFICATION: Pakhar Plateau- 109.507 ha. Loading Area. | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 80 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 41 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 9.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.38 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.7 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.10 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.41 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



Annexure-2

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING April'18 to Sept'18

The composite cost during **April'18 to Sept'18** 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) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud, Orsa pat(196.36 Ha), Bhusar (65.31 Ha)& Bimarla Bauxite Mines (134.52 Ha).

| SI No | Description | Budget (in Rupees) FY 2018-19 | Actual (in Rupees) (from April'18 to Sep'2018) |
|-------|---|----------------------------------|---|
| 1 | Pollution Control & Environment monitoring | 1521000 | 8,82,300.00 |
| 2 | Reclamation/ Back filing & Rehabilitation** | 29200000 | 1,49,78,461.39 |
| 3 | Green belt, Plantation & Water spraying arrangement | 4500256 | 25,38,864.95 |
| 4 | Rural Development | 26025236 | 1,32,42,312.42 |

**Part of OB removed cost.



(Basudev Gangopadhyay)
Convenor (Quality & Environment)

MINERALS & MINERALS LIMITED

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

Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref. :

Date

Date: 03.04.17

Office Order

Environmental Cell has been re-constituted at Pakhar Bauxite Mines (Area 15.58 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. Pradeep Kumar Bhaleker- Manager (Coordinator)
2. Mr. Akhilesh Singh (Mine Surveyor)-Member
3. Mr. Ramnath Bhagat (Mining Mate)-Member

Basudev Gangopadhyay
Convenor (Quality & Environment)

Annexure-4

| Sl 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 | 106353 | 0.168 | 1.711 | 112376 |
| 3 | Hisri (New) Bauxite Mine | 14.55 | 100000 | 19-07-1981 to 31-03-2030 | 38172 | 0.742 | 0.467 | 29252 |
| 4 | Kujam - I Bauxite Mine | 80.87 | 150000 | 13-03-2006 to 12-03-2056 | 60550 | 1.64 | 1.37 | 40287 |
| 5 | Kujam - II Bauxite Mine | 157.38 | 300000 | 24-03-2006 to 23-03-2056 | 114325 | 4.68 | 3.78 | 122769 |
| 6 | Amtipani Bauxite Mine | 190.95 | 150000 | 13-03-2006 to 12-03-2056 | 83810 | 12 | 8 | 96051 |
| 7 | Gurdari Bauxite Mine | 584.19 | 325000 | 23-03-1985 to 22-03-2035 | 173295 | 4.6 | 8.59 | 251277 |
| 8 | Shrengdag A Bauxite Mine | 155.81 | 260000 | 16-10-1974 to 31-03-2030 | 108900 | 1.21 | 1.62 | 162637 |
| 9 | Shrengdag B Bauxite Mine | 140.07 | 100000 | 04-10-1978 to 31-03-2030 | 36100 | 1.21 | 0.72 | 46930 |
| 10 | Jalim & Sanai Bauxite Mine | 12.14 | 50000 | 16-10-1974 to 31-03-2030 | 18600 | 0.36 | 0.12 | 49104 |
| 11 | Orsapat Bauxite Mine | 196.36 | 200000 | 17-07-1986 to 16-07-2036 | 1470 | 0 | 0 | 2185 |

| | | | | | | | | | |
|--|--------------------------|---------|--------|--------------------------------|--------|-------|------|--------|--|
| 12 | Chiro Kukud bauxite Mine | 152.57 | 100000 | 29-01-1985 to 28-01-2035 | 1970 | 0.113 | 0 | 13168 | |
| 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 | 111995 | 1.01 | 0.65 | 70700 | |
| Minerals & Minerals Limited | | | | | | | | | |
| 16 | Pakhar (15.58) | 15.58 | 60000 | 28-04-1965 to 31-03-2030 | 27475 | 0.35 | 0.15 | 26250 | |
| 17 | Pakhar (109.507) | 109.507 | 280000 | 26-07-2008 to 25-07-2058 | 151240 | 1.05 | 0.5 | 78750 | |
| 18 | Bimarla Bauxite Mine | 134.526 | 300000 | 18-07-2009 to 17-07-2059 | 89315 | 3.108 | 1.61 | 203116 | |

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



Basudev Gangopadhyay

Convenor (Quality & Environment)