



Ref No: HIL/LHD/JP (M)/MoEF/ 102

Date: 23.05.2017

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

**Sub: Compliance Report of EC conditions for Pakhar (8.09 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga, Jharkhand for the period Oct'16 to March'17.**

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


Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar (8.09 ha) Bauxite Mining project** of M/s Hindalco located in Lohardaga, Jharkhand for the period **Oct'16 to March'17**.

Hope you will find the same in order.

Thanking You

Yours Sincerely  
FOR HINDALCO INDUSTRIES LIMITED

  
(Bijesh Kumar Jha)  
Agent of Mines

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 (8.09 ha) BAUXITE MINES  
Period: Oct'16-March'17  
J-11015/135 /2006-IA.II (M) Dated 24.1.2007

Sl No	Specific Conditions	Compliance Status
1	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Implementations of the stipulated condition are fulfilled.
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.	Mining Lease is granted by the State Govt. after due consideration and Cabinet approval on recommendation of DC who is the competent authority to give permission for using the agricultural land for non-agricultural purpose.
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.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.  Final Mine closure Plan has been approved by Indian Bureau of Mines. We are in the process of implementation of Final Mine closure.
4	The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operation.	No natural water course was obstructed during mining.
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.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
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.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.



7	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly.</p> <p>Garland drain (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
8	Plantation shall be raised in an area of 6.35 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha.	In 2016-17, Around 7000 plantation carried out around this lease within Pakhar plateau.
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.	We are in the process of final mine closure.
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.	It is being monitored. Monitoring report is enclosed as Annexure-1.
11	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	We are in the process of final mine closure.
12	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The	We are in the process of final mine closure. .  Mining operation not carried out in this lease during the financial year 2016-17 due to

	vehicles should be covered with a tarpaulin and shall not be overloaded.	exhaustion of mineral reserve.
13	Drills should either be operated with dust extractors or should be equipped with water injection system.	We are in the process of final mine closure. . Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
14	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
15	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
16	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
17	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Indian Python etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
18	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	Final Mine closure plan dully approved by Indian Bureau of Mines.



GENERAL CONDITIONS

Sl No	Conditions	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
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 <sub>2</sub> , NO <sub>x</sub> 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 locations have been fixed after due consultation of SPCB and regular monitoring is being carried out. Monitoring Reports is enclosed.
4	Data on ambient air quality (RPM, SPM, SO <sub>2</sub> , and NO <sub>x</sub> ) 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.	Regular monitoring is being carried out. Monitoring Reports is enclosed in Annexure-1.
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve. Water spraying is being done around Mine Lease in dust prone areas.
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.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.
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 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.

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>Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.</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>Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve.</p> <p>We have Environment Management Cell for our Pakhar Group of Mines. The same is looking after Environment issues of this Mine. 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>Mining operation not carried out in this lease during the financial year 2016-17 due to exhaustion of mineral reserve. This was an operational mine and hence provision related to financial closure not applicable.</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 and actual expenses for environmental protection measure is enclosed. It is once again reiterated that the funds so earmarked shall not be diverted for any other purposes other than it is committed at the beginning of the financial year. (Annexure-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>



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 <a href="http://envfor.nic.in">http://envfor.nic.in</a> 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.*

Annexure - 1

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](mailto:ecoventures.mumbai@gmail.com) / [ecoventures@eco-ventures.in](mailto: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**

**JANUARY TO MARCH 2017**

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
SENIOR EXECUTIVE







# Mahabal Enviro Engineers Pvt. Ltd.

## Branch Office:

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Mobile No: +91 9431.102.102 / +91 9955.358.262,

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

## CONTENT

	LOCATION
	<b>AMBIENT AIR QUALITY</b>
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.)
	<b>NOISE LEVEL</b>
1	Pakhar Near Office.
2	Pakhar Mine (115.13 ha. ) Pakhar Plateau
3	Pakhar Mine (109.507 ha. Loading Area) Pakhar Plateau
4	Pakhar Mine (109.507 Ha Yatri Shed ) Pakhar Plateau
5	Pakhar Quarry (Near Shed)
	<b>SPOT NOISE LEVEL</b>
1	Near Poclairn at Pakhar Mine (115.13 ha.)
2	Loading point near Dumper at Pakhar Mines (109.507 ha. Minerals & Minerals)
	<b>DRINKING WATER</b>
1	Pakhar Mine-Near Canteen





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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no:</b> MEEPL/APRIL0140/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample type:</b> AMBIENT AIR QUALITY MONITORING	
<b>Marks on Sample:</b> Location: Pakhar Plateau-Near Weigh Bridge	
<b>Sample collected on:</b> 26.03.2017	

LOCATION / IDENTIFICATION: Pakhar Plateau-Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	63.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	39.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	32.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	41.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	17.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.60
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.05
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.95
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.18
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no:</b> MEEPL/APRIL0141/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample type:</b> AMBIENT AIR QUALITY MONITORING	
<b>Marks on Sample:</b> Location: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4	
<b>Sample collected on:</b> 26.03.2017	

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 <sub>10</sub>	µg/m <sup>3</sup>	100	66.4
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	35.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	9.8
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	19.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	14.3
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.50
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.4
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.10
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.52

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no:</b> MEEPL/APRIL0142/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample type:</b> AMBIENT AIR QUALITY MONITORING	
<b>Marks on Sample:</b> Location: Pakhar Plateau-Near Office	
<b>Sample collected on:</b> 26.03.2017	

LOCATION / IDENTIFICATION: Pakhar Plateau-Near Office				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	60.4
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29.9
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	10.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	18.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	17.2
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	14.6
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.4
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.8
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.1
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.34

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no:</b> MEEPL/APRIL0143/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample type:</b> AMBIENT AIR QUALITY MONITORING	
<b>Marks on Sample:</b> Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed)	
<b>Sample collected on:</b> 26.03.2017	

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 <sub>10</sub>	µg/m <sup>3</sup>	100	64.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	31.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	9.4
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	18.6
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	15.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.49
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.8
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.10
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no:</b> MEEPL/APRIL0144/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample type:</b> AMBIENT AIR QUALITY MONITORING	
<b>Marks on Sample:</b> Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed)	
<b>Sample collected on:</b> 27.03.2017	

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 <sub>10</sub>	µg/m <sup>3</sup>	100	43.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	27.8
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	9.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	20.1
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.7
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	16.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.49
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.8
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.1
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.52

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE







# Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. - MAR. 2017

<b>Report no:</b> MEEPL/APRIL0145/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample type:</b> AMBIENT AIR QUALITY MONITORING	
<b>Marks on Sample:</b> Location: Pakhar Plateau- 109.507 ha. Loading Area.	
<b>Sample collected on:</b> 27.03.2017	

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 <sub>10</sub>	µg/m <sup>3</sup>	100	64.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	37.4
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	9.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	19.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	11.2
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	15.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.52
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	3.6
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.13
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.50

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
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**Hindalco Industries: Environmental Monitoring Report**

**JAN. - MAR. 2017**

<b>Report no:</b> MEEPL/APRIL0146/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer:</b> Measurement of Noise	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample Description:</b> Measurement of Noise	
<b>Sampling Method:</b> Instrumental, using Sound level Metter	
<b>Data Collection Date:</b> 27.03.2017	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Near Office	dB (A) $L_{eq}$	75	55.1	70	49.9	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no:</b> MEEPL/APRIL0147/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
Sample described by customer: <b>Measurement of Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>27.03.2017</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (115.13 ha.)	dB (A) L <sub>eq</sub>	75	59.5	70	49.2	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no: MEEPL/APRIL0148/2016-17</b>	<b>Date: 20<sup>th</sup> April, 2017</b>
Sample described by customer: <b>Measurement of Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>2703.2017</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (109.507 ha. Loading Area)	dB (A) L <sub>eq</sub>	75	<b>60.3</b>	70	<b>38.6</b>	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no: MEEPL/APRIL0149/2016-17</b>	<b>Date: 20<sup>th</sup> April, 2017</b>
Sample described by customer: <b>Measurement of Noise</b>	
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: <b>27.03.2017</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (109.507 ha. of Yatri Shed)	dB (A) $L_{eq}$	75	<b>57.9</b>	70	<b>44.6</b>	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no: MEEPL/APRIL0150/2016-17</b>	<b>Date: 20<sup>th</sup> April, 2017</b>
Sample described by customer: <b>Measurement of Noise</b>	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>27.03.2017</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Quarry (Near Shed)	dB (A) $L_{eq}$	75	52.9	70	47.1	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no: MEEPL/APRIL0151/2016-17</b>	<b>Date: 20<sup>th</sup> April, 2017</b>
Sample described by customer: <b>Measurement of Spot Noise</b>	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>27.03.2017</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
Near Poklen at Pakhar Mines (115.13 ha.)	dB (A) $L_{eq}$	75	<b>61.9</b>	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no: MEEPL/APRIL0152/2016-17</b>	<b>Date: 20<sup>th</sup> April, 2017</b>
Sample described by customer: <b>Measurement of Spot Noise</b>	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>27.03.2017</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mines (109.507 ha. of Minerals & Minerals) Loading point near Dumper	dB (A) $L_{eq}$	75	67.3	27.03.2017

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

<b>Report no:</b> MEEPL/APRIL0153/2016-17	<b>Date:</b> 20 <sup>th</sup> April, 2017
<b>Sample described by customer :</b> DRINKING WATER-POTABILITY	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample Type:</b> DRINKING WATER-POTABILITY	
<b>Marks on Sample:</b> Location: Near Canteen	
<b>Quantity:</b> 5 L X 2 No. PVC Can	
<b>Sample collected on:</b> 27.03.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.1	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	83	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	61	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	67	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	8.1	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	3.9	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries: Environmental Monitoring Report

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## Continuation Sheet

MEEPL/APRIL0153/2016-17

Report no: MEEPL/APRIL0153/2016-17					Date: 20 <sup>th</sup> April, 2017
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	1.01	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.26	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.02	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	20.4	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	2.7	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.10	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.10	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	0.006	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.008	0.02 max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> Ed. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> Ed. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> Ed. 2012, 4500-S2-C 4-175 & F 4-178



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Continuation Sheet  
MEEPL/JAN0153/2016-17

Report no: MEEPL/APRIL0153/2016-17				Date: 20 <sup>th</sup> April, 2017	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
<b>Pesticides Residues</b>					
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	Б-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.

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## **Mahabal Enviro Engineers Pvt. Ltd.**

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

### **PAKHAR PLATEAU- ENVIRONMENTAL MONITORING REPORT**

**OCTOBER TO DECEMBER 2016**

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey  
SENIOR EXECUTIVE





# Mahabal Enviro Engineers Pvt. Ltd.

## Branch Office:

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, District – Ranchi 834009,  
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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

## CONTENT

	LOCATION
	<b>AMBIENT AIR QUALITY</b>
1	Pakhar Plateau- Near Office
2	Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4
3	Pakhar Plateau- Pakhar Quarry (109.507 ha. Near Shed)
4	Pakhar Plateau Pakhar Mines(109.507 ha. Yatri Shed)
5	Pakhar Plateau- Pakhar Loading Area (109.507 ha.)
6	Pakhar Plateau-Near Weigh Bridge
	<b>NOISE LEVEL</b>
1	Pakhar Near Office.
2	Pakhar Mine (115.13 ha. ) Pakhar Plateau
3	Pakhar Mine (109.507 ha. Loading Area) Pakhar Plateau
4	Pakhar Mine (109.507 Ha Yatri Shed ) Pakhar Plateau
5	Pakhar Quarry (Near Shed)
	<b>SPOT NOISE LEVEL</b>
1	Near Poclain at Pakhar Mine (115.13 ha.)
2	Loading point near Dumper at Pakhar Mines (109.507 ha. Minerals & Minerals)
	<b>DRINKING WATER</b>
1	Pakhar Mine-Near Canteen
	<b>SURFACE WATER</b>
1	Pakhar Mine-115.13 Quarry





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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

Report no: : MEEPL/ JAN0167/2016-17	Date: 30 <sup>th</sup> January , 2017
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: 29.12.2016	

LOCATION / IDENTIFICATION: Pakhar Plateau-Near Office				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	65.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	32.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	26.2
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	38.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	18.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	19.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.43
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	5.3
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.72
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.1
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.34

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no. :</b> MEEPL/ JAN0168/2016-17	<b>Date:</b> 30 <sup>th</sup> January , 2017
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample type:</b> AMBIENT AIR QUALITY MONITORING	
<b>Marks on Sample:</b> Location: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4	
<b>Sample collected on:</b> 29.12.2016	

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 <sub>10</sub>	µg/m <sup>3</sup>	100	61.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	45.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	20.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	31.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	14.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.52
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	6.3
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.71
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.10
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.52

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

Report no: : MEEPL/ JAN0169/2016-17	Date: 30 <sup>th</sup> January , 2017
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: 29.12.2016	

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 <sub>10</sub>	µg/m <sup>3</sup>	100	62.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	33.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	20.4
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	41.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	18.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.52
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	6.5
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.89
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.10
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

Report no: : MEEPL/ JAN0170/2016-17	Date: 30 <sup>th</sup> January , 2017
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: 29.12.2016	

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 <sub>10</sub>	µg/m <sup>3</sup>	100	43.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	27.8
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	23.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	36.8
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	19.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.62
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	7.3
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.89
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.3
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.52

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

Report no: : MEEPL/ JAN0171/2016-17	Date: 30 <sup>th</sup> January , 2017
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: 29.12.2016	

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 <sub>10</sub>	µg/m <sup>3</sup>	100	64.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	41.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	26.8
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	41.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	10.2
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	15.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.52
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.4
10.	Arsenic (As)	ng/m <sup>3</sup>	06	3.00
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.15
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.50

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

Report no: : MEEPL/ JAN0172/2016-17	Date: 30 <sup>th</sup> January , 2017
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: 29.12.2016	

LOCATION / IDENTIFICATION: Pakhar Plateau-Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	63.5
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	39.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	32.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	41.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	17.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.60
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.05
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.95
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.18
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no:</b> : MEEPL/ JAN0173/2016-17	<b>Date:</b> 30 <sup>th</sup> January , 2017
<b>Sample described by customer:</b> Measurement of Noise	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample Description:</b> Measurement of Noise	
<b>Sampling Method:</b> Instrumental, using Sound level Metter	
<b>Data Collection Date:</b> 29.12.2016	
<b>Analyse Date:</b> 30.12.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Near Office	dB (A) L <sub>eq</sub>	75	53.5	70	47.8	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no: : MEEPL/ JAN0174/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
Sample described by customer: <b>Measurement of Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>29.12.2016</b>	
Analyse Date: <b>30.12.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (115.13 ha.)	dB (A) $L_{eq}$	75	<b>59.8</b>	70	<b>49.1</b>	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no: : MEEPL/ JAN0175/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
Sample described by customer: <b>Measurement of Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>29.12.2016</b>	
Analyse Date: <b>30.12.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (109.507 ha. Loading Area)	dB (A) L <sub>eq</sub>	75	<b>61.8</b>	70	<b>36.2</b>	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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SENIOR EXECUTIVE





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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no. : MEEPL/ JAN0176/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
Sample described by customer: <b>Measurement of Noise</b>	
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: <b>29.12.2016</b>	
Analyse Date: <b>30.12.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (109.507 ha. of Yatri Shed)	dB (A) L <sub>eq</sub>	75	53.5	70	43.5	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no. : MEEPL/ JAN0177/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
Sample described by customer: <b>Measurement of Noise</b>	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>29.12.2016</b>	
Analyse Date: <b>30.12.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Quarry (Near Shed)	dB (A) $L_{eq}$	75	52.5	70	44.5	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no: : MEEPL/ JAN0178/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
Sample described by customer: <b>Measurement of Spot Noise</b>	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>29.12.2016</b>	
Analyse Date: <b>30.12.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
Near Poklen at Pakhar Mines (115.13 ha.)	dB (A) $L_{eq}$	75	<b>61.5</b>	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE



Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India  
(600 m from Hotel Rukhmini Palace Turn Opp Toyota Show Room. Near J B Sawant Bus Stop)  
Phone: 2582 0658/ 3139/ 1663/ 3154 Fax: 91-22-25823543 thane@mahabal.com



# Mahabal Enviro Engineers Pvt. Ltd.

## Branch Office:

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

Mobile No: +91 9431.102.102 / +91 9955.358.262,

E-mail: [mahabalranchi@gmail.com](mailto:mahabalranchi@gmail.com)

**Hindalco Industries: Environmental Monitoring Report**

**OCT-DEC 2016**

<b>Report no: : MEEPL/ JAN0179/2016-17</b>	<b>Date: 30<sup>th</sup> January , 2017</b>
Sample described by customer: <b>Measurement of Spot Noise</b>	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>29.12.2016</b>	
Analyse Date: <b>30.12.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mines (109.507 ha. of Minerals & Minerals) Loading point near Dumper	dB (A) L <sub>eq</sub>	75	64.5	29.12.2016

**For Mahabal Enviro Engineers Pvt. Ltd.**

Vijay Pandey

**SENIOR EXECUTIVE**







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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no:</b> : MEEPL/ JAN0180/2016-17	<b>Date:</b> 30 <sup>th</sup> January , 2017
<b>Sample described by customer :</b> DRINKING WATER-POTABILITY	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample Type:</b> DRINKING WATER-POTABILITY	
<b>Marks on Sample: Location:</b> Near Canteen	
<b>Quantity:</b> 5 L X 2 No. PVC Can	
<b>Sample collected on:</b> 29.12.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.0	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	80	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	65	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	70	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	10.5	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	4.0	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

Continuation Sheet  
MEEPL/JAN0180/2016-17

Report no: : MEEPL/ JAN0180/2016-17					Date: 30 <sup>th</sup> January , 2017
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	1.05	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.35	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.08	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	25.6	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	5.0	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.15	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.16	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	0.007	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.008	0.02 max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> ED. 2012, 4500-S2-C 4-175 & F 4-178



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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

Continuation Sheet  
MEEPL/JAN0180/2016-17

Report no: : MEEPL/ JAN0180/2016-17			Date: 30 <sup>th</sup> January , 2017		
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
<b>Pesticides Residues</b>					
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	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



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Hindalco Industries: Environmental Monitoring Report

OCT-DEC 2016

<b>Report no :</b> MEEPL/ JAN0181/2016-17	<b>Date:</b> 30 <sup>th</sup> January , 2017
<b>Sample described by customer :</b> SURFACE WATER - POTABILITY	
<b>Client Name:</b> Hindalco Industries Limited	
<b>Client Address:</b> Lohardaga	
<b>Postal Code:</b> 835203	
<b>State:</b> Jharkhand	
<b>Country:</b> India	
<b>Sample Type:</b> SURFACE WATER	
<b>Marks on Sample: Location:</b> 115.13 Quarry	
<b>Quantity:</b> 5 L X 2 No. PVC Can	
<b>Sample collected on:</b> 29.12.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> 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	0.30	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	6.8	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	124	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	70	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	82	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	8.2	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	7.0	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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Continuation Sheet  
MEEPL/JAN0181/2016-17

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Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	1.20	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.3	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.23	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	18.9	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	5.2	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.10	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.15	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as Hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.008	0.02 max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> 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 <sup>nd</sup> ED. 2012, 4500-S2-C 4-175 & F 4-178



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## Continuation Sheet MEEPL/JAN0181/2016-17

Report no: : MEEPL/ JAN0181/2016-17				Date: 30 <sup>th</sup> January , 2017	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
<b>Pesticides Residues</b>					
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	δ- 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	Diieldrin	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.

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**BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2016-17**

The composite cost during the year 2016-17 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).

Sl No	Description	Budget (in Rupees) FY 2016-17	Actual (in Rupees) FY 2016-17 (from April'16 to Sep'2016)	Actual (in Rupees) FY 2016-17 (from April'16 to March'2017)
1	Pollution Control & Environment monitoring	1540000.00	574975.50	1674221.50
2	Reclamation/ Back filing & Rehabilitation**	40000000.00	33837173.00	74355537.00
3	Green belt, Plantation & Water spraying arrangement	2100000.00	2051751.00	6821323.50
4	Rural Development	20000000.00	10244807.32	21404308.19

\*\*Part of OB removed cost.

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**PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-16 to March-17**

NAME OF THE MINES	MINING LEASE AREA (IN HA)	MINED OUT AREA (HA)	BACK FILLED AREA (HA)	PRODUCTION (In MT)	OVERBURDEN (In Cu.M)
Shrengdag Bauxite	155.81	5.87	5.10	258487.00	413395.00
Gurdari Bauxite Mines	584.19	12.94	10.63	324200.00	428811.00
Jalim & Sanai	12.14	1.04	0.45	44624.00	36500.00
Serangdag	140.06	0.00	0.00	0.00	0.00
Pakhar Buxite Mines	115.13	3.90	3.40	282190.00	370111.00
Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
Kujam-I	80.87	4.52	4.05	148770.00	272334.00
Kujam-II	157.38	8.30	7.85	294830.00	572328.00
Amtipani	190.95	6.61	5.91	149450.00	282375.00
Chiro-Kukud	152.57	3.09	2.03	87570.00	154928.20
Orsa Bauxite Mines	196.36	0.00	0.00	0.00	0.00
Hisri New	14.55	1.77	1.27	98608.00	90560
Bhusar	65.31	0.68	1.38	171961.00	51545.00
Bagru	75.41	0.00	0.00	0.00	0.00
<b>Minerals &amp; Minerals Limited</b>					
Pakhar Buxite Mines	109.51	3.78	3.28	277220.00	414676.00
Pakhar Buxite Mines	15.58	0.00	0.00	0.00	0.00
Bimarla Bauxite Mines	134.53	5.47	2.61	112730.00	135260.64

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Monitored water level (FY 2016-17)

Location (Mines)	Elevation (Mtr)	Well type	Monsoon (July-Sep)		Post Monsoon (November)		Winter (January)		Pre Monsoon (April-May)		
			Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML	
Bagru Plateau (Hisri new, Bagru & Bhusar)	905	Open Well		21.32					27.30		29.10
	910	Open Well		24.38					26.50		27.40
	915	Open Well		29.00					29.90		31.35
	903	Open Well		22.81					35.15		35.70
	909	Open Well		20.15					30.15		30.25
Pakhar Gr. Of Mines (115.13,109.507,15.58,8.	1000	Open Well		24.93					25.15		25.85
	1083	Hand Pump	35.35							35.45	
Sherengdag Plateau (Serengdag 155.81 ha, Sherengdag 140.06 Ha, Jalim & Sanai)	1027	Open Well		25.80			28.40		30.15		31.35
	1094	Hand Pump	41.74					42.60		42.85	
	1081	Hand Pump	39.60					41.10		42.10	
	1055	Hand Pump	33.00					35.50		35.65	
	1066	Hand Pump	27.75					29.10		30.10	
	1045	Hand Pump	29.30					29.90		30.50	
Gurdari	1061	Hand Pump	28.30					25.20		25.90	
	1059	Hand Pump	38.10					35.15		36.25	
	1075	Hand Pump	27.90					28.40		29.65	
	1075	Hand Pump	28.30					30.20		30.15	
	1040	Open Well		33.90					35.15		36.65
	1041	Open Well		33.65					36.25		39.35
Kujam I, Kujam II & Amtipani Mines	1064	Hand Pump	31.50					36.10		42.00	
	1052	Hand Pump	22.35					21.05		24.60	
	1148	Hand Pump	33.40					34.20		37.45	
Chiro Kukud	1151	Hand Pump	37.60					36.20		36.00	
	1084	Hand Pump	34.20					35.60		39.50	

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