### **MINERALS & MINERALS LIMITED**

Regd. Office P.O. & Dist. - Lohardaga (Jharkhand) PIN - 835302 Phone: 06526-224016, 224112, FAX: 06526-224118

Ref No: M&M/LHD/JP (M)/MoEF/ 1241

Date: 23.11.2016

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'16-Sep'16.

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'16-Sep'16.

Hope you will find the same in order.

Thanking You

Yours Sincerely FOR Minerals & Minerals Limited

(Bijesh Kumar Jha) Agent of Mines

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi
RO, JSPCB, Ranchi
<mef@ori.nic.in>, <mef@nic.in>, <mef.or@nic.in>, mef.or@nic.in>

### Compliance of conditions laid down in Environmental Clearence PAKHAR BAUXITE MINES(15.58 Ha)

## MINERALS & MINERALS LTD.

# Period: Period: April'16-Sep'16 J-11015/123/2006-IA.II(M) Dated 24.01.2007

SI No	Conditions	Compliance Status
	Specific Conditions	
1	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Implementations of the stipulated condition are fulfilled. Mines is discontinued since Sep'14 due to second renewal case as per directive by DMO.
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.	Shallow depth mining was carried out so mining not intersected ground water. Mines is discontinued since Sep 2014 due to second renewal case as per directive by DMO.
4	The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operation.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.
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.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.
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.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.

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.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.
8	Plantation shall be raised in an area of 6.98ha 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.	This will be complied with the progress of mining activity as complied in past post resumption of mining activity.
9	The project proponent shall ensure that there shall be no discharge from the mine.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.
10	The Project proponent shall carry out regular monitoring of spring discharge and its quality near Pakhar village on long term basis.	
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.	
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.	
1.3	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. We will not use natural water/ground water for mining purpose.
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.	Mines is discontinued since Sep 2014 due to second renewal case as per directive by DMO. This will be complied with the progress of mining activity as complied in past post resumption of mining activity.
15	Drills should either be operated with dust extractors or should be equipped with water injection system.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. This will be complied with the progress of mining activity as complied in past post resumption of mining activity.
16	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.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. This will be complied with the progress of mining activity as complied in past post resumption of mining activity.
17	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	Mines is discontinued since Sep'14 due to second renewal case as per directive by DMO. All procedure for getting the lease renewal has been done & very shortly mine will be operative.
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.	due to second renewal case as per directive by DMO.  The copy of Action plan for conservation of flora and fauna (Pakhar Plateau) is attached herewith and implementation for Pakhar Plateau under implementation

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.

#### **GENERAL CONDITIONS**

SI 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	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Mines is discontinued since Sep 2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.
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.	Complied. Monitoring Reports is enclosed as Annexure.
4	Data on ambient air quality (RPM, SPM, SO <sub>2</sub> , NOx) 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.	Complied. Monitoring Reports is enclosed as Annexure.
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.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.
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.	Mines is discontinued since Sep'2014 due

15	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	Complied. Copies of the advertisement made in the local newspapers, have already been submitted to the Regional
1.4	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.	Displayed.
13	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Complied.
12	The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	
11	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar.	Mines is discontinued since Sep 2014 due to second renewal case as per directive by DMO. The funds are ear-marked for environmental protection.
10	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	This falls the category of operational mine and not project, therefore provision related to financial closure is not applicable.
9	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO.
8	Personnel working in dusty areas should wear protective respiratory devices and they should also provided with adequate training and information on safety and health aspects.  Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.
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.	Mines is discontinued since Sep'2014 due to second renewal case as per directive by DMO. The provision set herewith will be complied with the progress of mining activity as complied in past post resumption of mining activity.

clearance letter informing that the project has been Office. 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.



# Eco Ventures Pvt. Ltd.

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### Mahabal Enviro Engineers Pvt. Ltd.

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

### PAKHAR PLATEAU- ENVIRONMENTAL MONITORING REPORT

**APRIL TO JUNE 2016** 

For Mahabal Enviro Engineers Pvt. Ltd.

Vijos Pandev
SENIOR EXECUTIVE





At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, District – Ranchi 834009 Mobile No: +91 9431 102.102 / +91 9955.358.262, E-mail:mahabalranchi@gmail.com

Hindalco Industries: Environmental Monitoring report

April-June 2016

#### CONTENT

	LOCATION
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2	Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4
\$	Pakhar Plateau- Pakhar Quarry (109.507 ha. Near Shed)
4	Pakhar Plateau Pakhar Mines(109.507 ha. Yatn Shed)
F)	Pakhar Plateau- Pakhar Loading Area (109.507 ha.)
ti.	Pakhar Plateau-Near Weigh Bridge
	NOISE LEVEL
	Pakhar Near Office
2	Pakhar Mine (115.13 ha. ) Pakhar Plateau
ţ	Pakhar Mine (109.507 ha. Loading Area) Pakhar Plateau
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1	Near Poclain at Pakhar Mine (115.13 ha.)
2	Loading point near Dumper at Pakhar Mines (109 507 ha. Minerals & Minerals)
	DRINKING WATER
į	Pakhar Mine-Near Canteen
0.500000	SURFACE WATER
1	Pakhar Mine-115.13 Quarry



Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India 1000 in from Hotel Rukhmini Palace Turn Opp Toyota Show Room Near | B Sawant Bus Stap) Phone: 2582 0658/3139/1663/3154 Fax: 91-22-25823543 thane@mahabal.com



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### Hindalco Industries: Environmental Monitoring report

April-June 2016

Report no: : MEEPL/ JULY074/2016-17

Date: 18th July, 2016

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203 State: [harkhand Country: India

Sample type: AMBIENT AIR QUALITY MONITORING Marks on Sample: Location: Pakhar Plateau-Near Office

Sample collected on: 16.06.2016

Received: 20.06.2016 Registered: 20.06.2016

Test Start/End Date: 20.06.2016/23.06.2016

	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>+</sup>	100	61.2		
02.	Particulate Matter (size less than 2.5 µm) PM <sub>28</sub>	μg/m³	60	40.1		
03.	Sulphur Dioxide (SO <sub>2</sub> )	μg/m³	80	24.5		
04.	Nitrogen Dioxide (NO <sub>2</sub> )	μg/m³	80	32.5		
05.	Ammonia (NH+)	μg/m³	400	13.6		
06.	Ozone (O <sub>3</sub> )	μg/m <sup>3</sup>	180	10.2		
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.50		
08.	Lead (Pb)	µg/m	1.0	0.02		
09	Nickel (Ni)	ng/m <sup>8</sup>	20	8.9		
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.89		
11	Benzene (C <sub>6</sub> H <sub>4</sub> )	μg/m³	05	2.9		
12.	Benzo (a) Pyrene	μg/m <sup>1</sup>	01	0.40		

For Mahabal Enviro Engineers Pvt. Ltd.

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Vija Pindev

SENIOR EXECUTIVE



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Hindalco Industries: Environmental Monitoring report

April-June 2016

Report no: : MEEPL/ JULY075/2016-17

Date: 18th July, 2016

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Timdalco Industries Limited

Client Address Lohardaga Postal Code: 835203 State: fharkhand Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau-Pakhar (115.13 ha.) Quarry No. 4

Sample collected on: 16.06.2016

Received: 20.06,2016 Registered: 20.06.2016

Test Start/End Date: 20.06.2016/23.06.2016

LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4						
SI, No.	PARAMETERS	UNIT	Standard Limit	Concentration		
111.	Particulate Matter (size less than 10 μm) PM <sub>H</sub>	μg/m*	100	59.8		
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	μg/m <sup>+</sup>	60	40.1		
().3	Sulphur Dioxide (SO <sub>2</sub> )	μg/m <sup>4</sup>	80	29,8		
04.	Nitrogen Dioxide (NO <sub>2</sub> )	μg/m³	80	41.2		
05.	Ammonia (NII <sub>3</sub> )	µg/m+	400	8.90		
06.	Ozone (O3)	μg/m <sup>+</sup>	180	9.2		
0.7	Carbon Monoxide (CO)	mg/m³	02	0.51		
08.	Lead (Pb)	μg/m <sup>§</sup>	1.0	0.02		
09.	Nickel (Ni)	ng/m¹	20	8.1		
1 ()	Arsenic (As)	ng/m³	06	2.89		
11	Benzene (C <sub>6</sub> H <sub>6</sub> )	μg/m³	05	3.0		
12.	Benzo (a) Pyrene	μg/m <sup>+</sup>	01	0.51		

For Mahabal Enviro Engineers Pvt. Ltd.



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#### Hindaico Industries: Environmental Monitoring report

April-June 2016

Report no: : MEEPL/ JULY076/2016-17

Date: 18th July, 2016

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203 State: Brackhand Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed)

Sample collected on: 16.06.2016

Received: 20.06.2016 Registered: 20.06.2016

Test Start/End Date: 20.06.2016/23.06.2016

#### LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed)

SI. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM 10	μg/m³	100	53.6
02.	Particulate Matter (size less than 2.5 μm) PM <sub>2.5</sub>	μg/m³	60	38.1
03.	Sulphur Dioxide (SO <sub>2</sub> )	μg/m³	80	26.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	μg/m³	80	41.2
05.	Ammonia (NH <sub>3</sub> )	μg/m <sup>3</sup>	400	9.20
06.	Ozone (O <sub>3</sub> )	μg/m <sup>3</sup>	180	8.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.51
08.	Lead (Pb)	μg/m³	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>2</sup>	20	8.5
10.	Arsenic (As)	ng/m+	06	2.89
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	μg/m³	05	3.0
12.	Benzo (a) Pyrene	µg/m³	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.



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Hindalco Industries: Environmental Monitoring report

April-June 2016

Date: 18th July, 2016

Report no: : MEEPL/ JULY077/2016-17

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203 State: Iharkhand Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed)

Sample collected on: 17.06.2016

Received: 21.06.2016 Registered: 21 06:2016

Test Start/End Date: 21.06.2016/24.06.2016

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 μm) PM <sub>40</sub>	μg/m <sup>±</sup>	100	54.2
()2.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	μg/m³	60	39.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	μg/m³	80	29.5
04.	Nitrogen Dioxíde (NO₂)	μg/m³	80	40.7
05.	Ammonia (NH <sub>3</sub> )	μg/m³	400	8.9
t) (>-	Ozone (O <sub>3</sub> )	μg/m <sup>+</sup>	180	8.2
07.	Carbon Monoxide (CO)	mg/m³	02	0.51
08.	Lead (Pb)	μg/m³	1.0	0.04
119	Nickel (Ni)	ng/m³	20	10.1
1(),	Arsenic (As)	ng/m³	06	2.89
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	μg/m³	05	3.5
12.	Вепzo (a) Pyrene	μg/m³	01	0.51

For Mahabal Enviro Engineers Pvt. Ltd.

Vitar Pandes

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#### Hindalco Industries: Environmental Monitoring report

April-June 2016

Report no: : MEEPL/ JULY078/2016-17

Date: 18th July, 2016

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lobardaga Postal Code: 835203 State: Jharkhand Country: India

Sample type: AMBIENT AIR QUALITY MUNITORING

Marks on Sample: Location: Pakhar Plateau- 109.507 ha. Loading Area.

Sample collected on: 17.06.2016

Received: 21.06.2016 Registered: 21.06.2016

Test Start/End Date: 21.06.2016/24.06.2016

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

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
()].	Particulate Matter (size less than $10\mu m)$ PM $_{10}$	μg/m <sup>*</sup>	100	56.2
02	Particulate Matter (size less than 2.5 μm) PM <sub>2.5</sub>	μg/m <sup>1</sup>	60	34.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	μg/m³	80	24.5
04	Nitrogen Dioxide (NO <sub>2</sub> )	μg/m³	80	38.5
05.	Ammonia (NH <sub>3</sub> )	μg/m³	400	7.54
06.	Ozone (O <sub>2</sub> )	μ <b>g/m</b> 3	180	8.92
07	Carbon Monoxide (CO)	mg/m³	02	0.48
08.	Lead (Pb)	μg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	9.4
ID.	Arsenic (As)	ng/m³	06	2.92
11	Benzene (C <sub>6</sub> H <sub>6</sub> )	μg/m <sup>±</sup>	05	3.1
12.	Benzo (a) Pyrene	μg/m³	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.



Visit Pandey

SENIOR EXECUTIVE



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### Hindalco Industries: Environmental Monitoring report

April-June 2016

Date: 18th July, 2016

Report no: : MEEPL/ [ULY079/2016-17

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: 17.06.2016

Received: 21 06.2016 Registered: 21.06.2016

Test Start/End Date: 21.06.2016/24.06.2016

SI. No.	PARAMETERS	UNIT	Standard Limit	Concentration
() ]	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	μg/m³	100	58.9
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	μg/m³	60	39.5
03	Sulphur Dioxide (SO <sub>2</sub> )	μg/m'	80	30.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	μg/m <sup>+</sup>	80	41.2
05	Ammonia (NH <sub>3</sub> )	µg/m³	400	8.9
06.	Ozone (O3)	μg/m³	180	8.5
07.	Carbon Monoxide (CO)	mg/m³	02	0.45
08.	Lead (Pb)	μg/m³	1.0	0.04
(19)	Nickel (Ni)	ng/m <sup>3</sup>	20	9,9
10.	Arsenic (As)	ng/m¹	06	2.91
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	μg/m <sup>3</sup>	05	3.0
12	Benzo (a) Pyrene	μg/m <sup>3</sup>	01	0.46

For Mahabal Enviro Engineers Pvt. Ltd.

4....

Viray Pandey





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#### Hindalco Industries: Environmental Monitoring report

April-June 2016

Date: 18th July, 2016

Report no: : MEEPL/ JULY080/2016-17

Sample described by customer: Measurement of Noise

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203 State: harkhand Country: India

Sample Description: Measurement of Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 16.06.2016

Analyse Date: 16.06.2016

Location/Identification		Limit (day)	Result	Limit (night)	Result	Dates
. Pakhar Near Office	dB (A) L.,	75	48.9	70	45	16.06.2016

For Mahabal Enviro Engineers Pvt. Ltd.

And Emily

SENIOR EXECUTIVE



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



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### Hindalco Industries: Environmental Monitoring report

April-June 2016

Date: 18" July 2016

Report no: : MEEPL/ [ULY081/2016-17

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: 16.06.2016 Analyse Date: 16.06.2016

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (115 13 hal)	dB (A) Leq	75	62.0	70	41.2	16706/2016

For Mahabal Enviro Engineers Pvt. Ltd.

Virus Paraley

SENIOR EXECUTIVE



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Hindalco Industries: Environmental Monitoring report

April-June 2016

Date: 18# July 2016

Report no: : MEEPL/ JULY082/2016-17

Sample described by customer: Measurement of Noise

Chent Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Harkhand

Country, India

Sample Description: Measurement of Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 16.06.2016 Analyse Date: 16,06.2016

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mine (109.507 ha of Minerals	dB (A)	75	65.0	70	39.8	16/06/2016
& Minerals)	Lea		- 1 1 2 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2			

For Mahabal Enviro Engineers Pvt. Ltd.

Vant Pandey





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#### Hindalco Industries: Environmental Monitoring report

April-June 2016

Date: 182 [alv 2011]

Report no: : MEEPL/ JULY083/2016-17

Sample described by customer: Measurement of Noise

Chent Name: Hindalco Industries Limited

Chent Address: Lohardaga Postal Code 835203 State. Harkhand

Country: India

Sample Description: Measurement of Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 17.06.2016

Analyse Date: 17.06.2016

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhor Mine (109.507 ha. of Yatri Shed)	dB (A) Leq	75	54.5	70	42.5	<b>17/06/2016</b>

For Mahabal Enviro Engineers Pvt. Ltd.

Vnay Pandey





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### Hindalco Industries: Environmental Monitoring report

April-June 2016

Report no: : MEEPL/ JULY084/2016-17

Date: 18th July, 2016

Sample described by customer. Measurement of Noise

Chent Name: Hindalco Industries Limited

Circut Address: Lohardaga

Postal Code #35203

State | markhand

Country India

Sample Description: Measurement of Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 17.06.2016

Analyse Date: 17.06.2016

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Quary	111 / 1 1 1					
(Near Shed)	dB (A) L <sub>eq</sub>	75	52.1	70	43.5	12/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vipay Panates



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Hindalco Industries: Environmental Monitoring report

April-June 2016

Report no: : MEEPL/ JULY085/2016-17

Date: 18% hily 2016:

Sample described by customer: Measurement of Spot Noise

Client Name: Hindalco Industries Limited

Chent Address: Lohardaga Postal Code: 835203

State: Jharkhand Country India

Sample Description: Measurement of Spot Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 17.06.2016 Analysi-Date 17.06,2016

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mines	dB (A) Leq	75	64.0	17/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

Visay Pandey

SENIOR EXECUTIVE

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### Hindalco Industries: Environmental Monitoring report

Date: 18th July 2016

Report no: : MEEPL/ JULY086/2016-17

Sample described by customer: Measurement of Spot Noise

Client Name: Hindalco Industries lamited

Chent Address: Lohardaga

Postal Code: 835203

State: Jbackhand

Country: India

Sample Description: Measurement of Spot Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 17.06.2016

Analyse Date: 17.06.2016

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mines (109.507 ha. Of Minerals & Minerals) Loading point near Dumper	dB (A) L.,	75	71.2	17/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

Ynay Pandey





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Hindalco Industries: Environmental Monitoring report

April-June 2016

Date: 18th July, 2016.

Report No: MEEPL/JULY087/2016-17

Sample described by customer: DRINKING WATER-POTABILITY

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203

State: |harkhund Country: India

Sample Type: DRINKING WATER-POTABILITY
Marks on Sample: Location: Near Canteen

Quantity: 5 L X 2 No. PVC Can Sample collected on:17.06.2016

Received: 18.06.2016 Registered: 18.06.2016

Test Start/End Date: 18.06.2016/22.06.2016

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
	Colour	Hazen	<1	5 Max	APHA 22ad Ed. 2012-2120 B, 2-6
*	Odouc		Agreeable	Agreeable	IS 3025 (Part 7): 1983 Reaffirmed 2006
3	Taste		Agreeable	Agreeable	IS 3025 (Part 7): 1983 Reaffirmed 2006
1	Turbidity	NTU	0.32	J Max	APBA 22m Ed 2012, 2130 B, 2-13
T	Į:H		7.1	6.5-8.5	APHA 22sa Ed. (01.2-4500 H++B, 4-92
£1	Free Chlorides (Residual)	ing/l	<0.05	0.2 min	APHA 22 <sup>sel</sup> Ed. 2012, 4500 CI-G, 4-69
**	Total Dissolved Solids	mg/l	100	500 max	IS 3025 (Part 16) 1994 Reaffirmed 2006
31	Monochloranines	mg/l	<0.05	† t-	APHA 22ns Ed 2012 (+400) CIG, 4-69
7	Dichioramines	mg/l	< 0.05		APIIA 2258 Ed. 2012, \$5.00 CIG, 4-69
11,	Tetal hardness (as CaCO3)	mg/l	7,1	200 max	APHA 22mi Fd. 2012; (500) CIG. 4-69
1.1	Alkalınırty Total (as CaCO3)	mg/l	79	200 mas	IS 3025 (Part 237) 1986 Realtirmed 2009
12	Chloride (as CI)	ing/l	10.5	250 mas	APHA 22 <sup>nd</sup> Ed. 2012, 4500 Cl-b, 4-72
11	Sulphate (as SO4)	mg/l	6.5	200 m.ss	APHA 22% Ed. 2012, 1500 so4-e, 4-190



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Hindalco Industries: Environmental Monitoring report

April-June 2016

Continuation Sheet MEEPL/JULY087/2016-17

	t No: MEEPL/JULY087/20				Date: 18th July, 2016
Sl. No.	Parameters	Unit	Result	Acceptable Limit (1S10500:2012)	Method reference
1.4	Nitrate (as NO3)	mg/l	1.10	45 max	APHA 22 <sup>cd</sup> Ed. 2012, 4500 No. (1, 4- 125
1	Flaor de (as F)	mg/I	0.5	1 max	APHA 22nd Ed. 2012, 4500-FB & D. 4 84, 4-87
16	Boron (as B)	mg/l	0.12	0.5 max	APHA 22nd Ed. 2012, 4500-8B 4 25
17	Calcium (as Ca)	mg/l	201	75 max	APHA 22nd Ed. 2012, 3500-La-B 3-67
l×I	Magnesium (as Mg)	mg/l	6.0	30 max	APHA 22nd Ed. 2012, 3500-Mg/E 3-88
19	Ammonical Nitrogen/Total Aminonia	mg/l	<0.1		APHA 22nd Fal. 2012, 4500-N11: 1-1-115
20	Iron (as Fe)	mg/l	0.12	0.3 max	APHA 22no Ed. 2012, 3111-B. 3-18
31	Manganese (as Mn)	mg/l	N.D	0.1 mas	APHA 22nd 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-AI-B. (41.1)
23	Cadmium (as Cd)	mg/l	ND	0.003 max	APHA 22nd Ed. 2012, 3111-6, 3-18
2 I	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B. 3-18
. 1	Copper (as Cu)	mg/I	N.D.	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/i	0.15	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 22nd Ed. 2012, 3114-B, 3-38
20	Selentum (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.008	0.02 max	APHA 22nd Ed. 2012, 3111-E, 3-18
3.2	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 22nd ED. 2012. 4500-CN.C & 4-39 & 4-44
1-1	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> ED. 2012, 5540-C 0. & 5.5
45	Phenolic compounds (as C6H5OH)	mg/l	N.D	0.001 max	APHA 22nd ED. 2012, 5530-B 8 ( 5) 4753
315	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> ED. 2012, 6440, 6-03
17	Polychlorinated Biphenvis (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
133	Supplied (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-52-6-4 175 & F 4-178



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Hindalco Industries: Environmental Monitoring report

April-June 2016

Continuation Sheet MEEPL/JULY087/2016-17

	No: MEEPL/JULY087/20		C2-8/200 III -		Date: 18th July, 2016
SL No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbio	ological Analysis				
1	Total Colliforms	MPN/100mL	N.D	811	APHA 22 <sup>bd</sup> Ed, 2012, 9221-8 & C, 9-66, 9 69 and 9-67
i.	E. st. Of	MPN/100mL	ND	Absent	APHA 22 <sup>nd</sup> Ed. 2012 9221-B.& (19-66 19-94 and 9-76
Pesticide	es Residues			***************************************	A
4	p.p DDT	jig/l.	N.D	I I	US EPA 508-1505
1	op DDT	μg/1.	N.D.	l	USEPA 508-1995
1	I:p DDE	μg/1,	N.D	I	US EPA 508-1995
h.	op DDE	pg/L	ND	1	US EPA 508 1995
	PDDDD	μg/1.	N,D	l l	US EPA 508-1995
8	o.p DDD	ng/L	N.D	I amount	US EPA 508-1995
1000	y-HCH (Lindance)	μg/t.	< 0.01	2	US EPA 508-1995
10	a-HCH	μg/L	< 0.01	0.01	US EPA 508-1995
11	B-HCH.	μg/l.	N.D	0.04	US EPA 508-1995
12	I- HCH	μg/L	N,D	0.04	US EPA 508-1995
13	Butachlor	ng/L	N,D	125	US EPA 500-1995
14	Alachlor	μις/1.	N.D	20	US EPA 508-1995
15	Atrazine	rig/L	N.D	2	US EPA 508-1995
16	a Endosulfan	pg/L	N.D	0.4	US EPA 508-1995
1.7	ß Endosulfan	ng/L	N.D	0.4	US EPA 508-1993
18	Endosultan Sulphate	μg/L.	N,D	0.4	US EPA 508-1995
[ ()	Ethion	pg/L	- N.D	3	US EPA 8141A-1994
20	Malathion	rig/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	rig/L	N.D.	1	US EPA 8141A-1994
23	Phorate	, μg/l.	N.D		US EPA 8141A-1994
24	Chlorpyrifos	rig/L	N.D	30	US EPA 8141A-1994
25 26	Aldrin	rig/L	N.D	0.03	US EPA 508-1995
	Dieldrin ND- Not Detected	μg/l.	N.D	0.03	US EPA 508-1995

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

For Mahabal Enviro Engineers Pvt. Ltd.

Visas Pandes





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Hindalco Industries: Environmental Monitoring report

April-June 2016

Report No: MEEPL/JULY088/2016-17

Date: 189 July 2016

Sample described by customer: SURFACE WATER - POTABILITY

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203 State: Jharkhand Country: India

Sample Type: SURFACE WATER

Marks on Sample: Location: 115.13 Quarry

Quantity: 5 L.X2 No. PVC Can Sample collected on: 17 06:2016

Received: 18.06/2016 Registered: 18.06/2016

Test Start/End Date: 18.06.2016/22.06.2016

St. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Celeur	Hazen	<1	5 Max.	APHA 32 1 Ed. 2012, 21(2) B. 2-6
Z	Odear		Agreeable	Agreeable	IS 3025 (Part 7) 1983 Reaffirmed 2006
3	Taste		Agrecable	Agrecable	IS 3025 (Part 7) 1983. Reaffirmed 2006
1	Turbidity	NTU	0.32	1 Max	APHA 22 M Ed 2012 21 60 B, 2-13
ή,	[1]	-	7.0	6.5-8.5	APHA 22rd Fd. 2012, 45rm, H+-B, 4-92
r,	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22nd Ed. 2012 (500) CI-C, 4-69
	Total Dissolved Solids	mg/l	100	500 max	IS 3025 (Part 16) 1984 Reaffirmed 2006
i)	Monochloramines	mg/!	< 0.05	*-	APHA 22% Fit 2012 1500 CIG, 4-69
9	Dichioramines	mg/l	<0.05	1.6	APHA 22nd Ed 2012 45 no CIG, 4-69
10	Lotal hardness (as CaCO3)	mg/l	72	200 max	APHA Z2 ((Ed. 2012, 45.04) CIG, 4-69
11	Alkalmirty Total (as CaCO3)	rag/l	80	200 max	IS 3025 (Part 237) 1986 Reaffirmed 2009
12	Chloride (as CI)	mg/l	102	250 max	APHA 22 of Ed. 2012, 45080 CI-b. 4-72
13	Sulphate (as SO4)	mg/l	7.2	200 max	APHA 22 of Ed. 2012 47 00 so4 e. 4-190



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Hindalco Industries: Environmental Monitoring report

April-June 2016

Continuation Sheet MEEPL/JULY088/2016-17

rechot	t No: MEEPL/JULY088/20				Date: 18th July 2016
St. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1 4	Nitrate (as NO3)	mg/l	1.25	45 max	APHA 22nd Ed. 2012, 4500-NOA F 1- 125
15	Fluoride (as F)	mg/l	0,2	1 max	APHA 22nd Ed. 2012, 4500-FR & D. 4-84, 4-87
16	Boron (as B)	mg/l	0.24	0.5 max	APHA 22nd Ed. 2012, 4500-BB. 4-25
17	Calcium (as Ca)	mg/l	21.2	75 max	APHA 22nd Ed. 2012, 3500-Ca-8, 3 6
143	Magnesium (as Mg)	mg/I	6.0	30 max	APHA 22nd Ed. 2012, 3500 Mg. B. 434
1.4	Ammonical Nitrogen/Total Ammonia	mg/I	€0.1		APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>2</sub> +++
20	Iron (as Fe)	rng/l	0.10	0.3 max	APHA 22nd Ed. 2012, 3111-9, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 2204 Ed. 2012, 3111-8, 3-18
2.1	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22nd Ed. 2012, 3500-Al-B. 3-41
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 22nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-8, 3-18
.16	Lead (as Pb)	mg/l	Q.N	0.01 max	APHA 22nd Ed. 2012, 3111-8, 3-18
27	Zinc (as Zn)	mg/l	0.15	5 max	APHA 22nd Ed. 2012, 3111-8, 3-18
28	Arsenic (as As)	mg/l	< 0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
26	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed. 2012, 3112-B, 3-23
3.0	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-38
11	Nickel (as Ni)	mg/1	<0.008	0.02 max	APHA 22nd Ed. 2012, 3111-B, 3-1B
λ,	Mineral Oil	mg/l	ND	0.5 max	IS 3025 (Part 39): 1991. Reaffirmed 2003; ed. 2.1
1.5	Cyanide (as CN)	mg/l	N.D.	0.05 max	APHA 22 <sup>nd</sup> ED, 2012, 4500-CN C & 1- 39 & 4-44
34	Amonic detergents as MBAS	mg/l	< 0.1	0.2 max	APHA 22nd ED. 2012. 5540-CC & 5-5
}.e.	Phenolic compounds (as C6H5OH)	mg/l	ND	0.001 max	APHA 22 <sup>raf</sup> ED. 2012, 5530-R-84-5-4253
\$1+	Polynuclear aromatic bydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22™ ED. 2012, 6440, 6-9
ř"	Polychlormated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
131	Sulphide (as S)	mg/l	N I)	0.05 max	APBA 22 <sup>nd</sup> ED, 2012, 4500-S2-L   175 & F 4-178



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Branch Office:

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

Hindalco Industries: Environmental Monitoring report

April-June 2016

Continuation Sheet MEEPL/JULY088/2016-17

	Report No: MEEPL/JULY088/2016-17 Date: 18th July 2018						
SI. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference		
Microbia	ological Analysis						
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 2 2 <sup>od</sup> Ed. 2012, 9221-B & C. 0-66, 9-65 and 9-67		
	R-Coli	MPN/100ml.	(I.N	Absent	APHA 22% Ed. 2012 9221-B & F. 9-66, 3-38 and 9-76		
Pesticide	rs Residues			•	•		
1	p.p.DDT	μg/l.	N.D	T T	US EPA 508 1995		
1	op DDT	ug/L	N.D	1	US EPA 508-1995		
4	P P DOE	μg/L	N.I)	1	US EPA 508-1995		
ts.	op DDE	μg/L	N.D	1	US EPA 508-1995		
7	ppDDD	μg/L	N.D	1.	US EPA 508-1995		
ti	op DDD	µg/L	N.D		US EPA 508-1995		
\$}	y-HCH (Lindance)	ng/L	< 0.01	2	US EPA 508 1995		
10	a -HCH	μg/1.	< 0.01	0.01	US EPA 508-1995		
11	β-ИСН	µg/L	N.1)	0.04	US EPA 508 1995		
12	I- HCH	ng/l.	N.D	0.04	US EPA 508-1995		
13	Butachlor	ho g/L	N.D	125	US EPA 508 1995		
14	Alachior	μg/1,	N.D	20	US EPA 508-1995		
15	Atrazine	μg/L	N.D	2	US EPA 508-1995		
11	a Endosulfan	μg/1.	N.D	0.4	US EPA 508-1995		
1 "	3 Endosulfan	μg/l.	N D	-0.4	US EPA 508-1995		
113	Endosulfan Sulphate	μg/L	N D	0.4	US EPA 508-1995		
1-1	Ethion	μg/L	N.D	3	US EPA 8141A-1994		
31)	Malathion	µg/t.	N.D	190	US EPA 8141A-1984		
21	Methoyl Parathion	μg/l.	N.D	0.3	US EPA 8141A 1994		
22	Monocrotophos	µg/l.	N.D	I	US EPA 8141A-1994		
	Phorate	μg/L.	N.D	2	US EPA 8141A-1994		
24	Chlorpyrifos	ug/L	N D	30	US EPA 8141A-1994		
25	Aldrin	jug/L	N.D	0.03	US EPA 508-1995		
26	Dieldrin ND- Not Detected	μg/L	N D	0.03	US EPA SON 1995		

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

For Mahabal Enviro Engineers Pvt. Ltd.

Man-2

Ynav Pandey





# Eco Ventures Pvt. Ltd.

Regid Office 2/37, Sarvapnya vinor Nicar III Gate New Delhi 110016.
Corporate Office 7/8 Bhaveshwar Bhuvan Opp Porthugase Church Near Dindayal Upadnyay Garden Gokhare Road (North), Dadar (West), Mumbai 400 028, Tel. +91 22 24370520 / 6672.

€ 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

**JULY TO SEPTEMBER 2016** 

For Mahabal Enviro Engineers Pvt. Ltd.

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Anno Islandes
SENIOR EXECUTIVE





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Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

#### CONTENT

	LOCATION	***
	AMBIENT AIR QUALITY	- X - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
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)	
•	Pakhar Plateau- Pakhar Loading Area (109.507 ha.)	
b	Pakhar Plateau Near Weigh Bridge	
	NOISE LEVEL	
1	Pakhar Near Office,	
.2	Pakhar Mine (115.13 ha.) Pakhar Plateau	
Ý	Pakhar Mine (109,507 ha. Loading Area) Pakhar Plateau	
1	Pakhar Mine (109.507 Ha Yatri Shed ) Pakhar Plateau	
5,	Pakhar Quary (Near Shed)	100000
	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	
	SURFACE WATER	···
1	Pakhar Mine-115.13 Quarry	





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Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0147/2016-17

Date: 31º October, 2016

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address | Lohardaga Postal Code: #35203

State: Jharkhand Country: India

Sample type: AMBIENT AIR QUALITY MONITORING Marks on Sample: Location: Pakhar Plateau-Near Office

Sample collected on: 22.09.2016

Received: 23.09.2016 Registered: 23.09.2016

Test Start/End Date: 23.09.2016/25.09.2016

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 μm) PM <sub>10</sub>	μg/m³	100	68.1
02	Particulate Matter (size less than 2.5 μm) PM <sub>2</sub> .	μg/m	60	34.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	ng/m	80	26.3
04	Nitrogen Dioxide (NO <sub>2</sub> )	μg/m <sup>3</sup>	80	34.8
05.	Ammonia (NH <sub>3</sub> )	$\mu g/m^3$	400	14.1
06.	Ozone (O <sub>3</sub> )	μg/m <sup>±</sup>	180	17.5
07.	Carbon Monoxide (CO)	mg/m³	02	0.42
08.	Lead (Pb)	μg/m <sup>+</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m+	20	5.1
1()	Arsenic (As)	ng/m*	06	2.74
11.	Benzene (Calla)	μg/m'	05	2.5
12	Benzo (a) Pyrene	μg/m·	01	0.36

For Mahabal Enviro Engineers Pvt. Ltd.

J. -- 2 --

Vijas Pandev

SENIOR EXECUTIVE



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Hindalco Industries: Environmental Monitoring Report

Report no: : MEEPL/ OCT0148/2016-17

Date: 31st October, 2016.

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address Lohardaga Postal Code: 835203 State: Harkhand Country: India

Sample type: AMBIENT AIR QUALITY MONITURING

Marks on Sample: Location: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4

Sample collected on: 25.09.2016

Received: 26.09 2016 Registered: 26.09.2016

Test Start/End Date: 26.09.2016/28.09.2016

COCATION / IDENTIFICATION: Pakhar Plateau	<ul> <li>Pakhar (115.13 ha.) Quarry No. 4</li> </ul>
	Standard

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
Ü1	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	μg/m <sup>4</sup>	100	65.0
0.2	Particulate Matter (size less than 2.5 μm) PM <sub>2</sub> .	μg/m³	60	43.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	μg/m³	80	21.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m³	80	34.0
(15.	Ammonia (NH <sub>3</sub> )	μg/m³	400	11.5
06	Ozone (O <sub>1</sub> )	μg/m <sup>+</sup>	180	13.2
07.	Carbon Monoxide (CO)	mg/m <sup>*</sup>	02	0.48
08.	Lead (Pb)	μg/m³	1.0	0.02
09.	Nickel (Ni)	ng/m³	20	6.4
10.	Arsenic (As)	ng/m <sup>+</sup>	06	2.72
!1	Benzene (C <sub>6</sub> H <sub>6</sub> )	μg/m <sup>3</sup>	05	2.8
12.	Benzo (a) Pyrene	μg/m*	01	0.47

For Mahabal Enviro Engineers Pvt. Ltd.

Char Pandes





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Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0149/2016-17

Date: 315 October, 2016

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203 State: Thankhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed)

Sample collected on: 22.09.2016

Received: 23 09 2016 Registered: 23.09.2016

Test Start/End Date: 23.09.2016/25.09.2016

SI. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>18</sub>	μg/m³	100	59.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	μg/m³	60	34.5
013	Sulphur Dioxide (SO <sub>2</sub> )	μg/m¹	80	22.9
04.	Nitrogen Dioxide (NO.)	μg/m³	80	39.2
05.	Ammonia (NII-)	μg/m <sup>+</sup>	400	12.1
06.	Ozone (O <sub>3</sub> )	µg/m²	180	16,4
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.49
08.	Lead (Pb)	μg/m³	1.0	0.03
09,	Nickel (Ni)	ng/m³	20	6.4
10.	Arsenic (As)	ng/m³	06	2.85
11.	Benzene (CoHo)	ug/m³	05	2.8
12.	Benzo (a) Pyrene	μg/m·	01	0.41

For Mahabal Enviro Engineers Pvt. Ltd.

Visas Paintes

SENIOR EXECUTIVE



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Hindalco Industries: Environmental Monitoring Report

IULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0150/2016-12

Date: 319 October, 2015

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Fundalco Industries Limited

Client Address. Lohardaga Postal Code: 835203 State: [harkhand Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed)

Sample collected on: 25.09.2016

Received: 26.09.2016 Registered: 26.09.2016

Test Start/End Date: 26.09.2016/28.09.2016

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
Ul.	Particulate Matter (size less than 10 μm) PM <sub>10</sub>	μg/m·	100	42.9
02	Particulate Matter (size less than 2.5 µm) PM.	μg/m <sup>±</sup>	60	25.1
0.3	Salphur Dioxide (SO <sub>2</sub> )	μg/m <sup>+</sup>	80	21.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	μg/m±	80	35.8
05.	Ammonia (NH <sub>3</sub> )	μg/m³	400	11.3
06.	Ozone (O <sub>3</sub> )	μg/m <sup>q</sup>	180	17.5
07.	Carbon Monoxide (CO)	mg/m³	02	0.51
(183.	Lead (Pb)	µg/m <sup>+</sup>	1.0	0.02
0.0	Nickel (Ni)	ng/m+	20	7.2
LO.	Arsemc (As)	ng/m³	06	2.84
1 1	Benzene (C. H.)	µg/m³	05	3.1
12.	Benzo (a) Pyrene	µg/m³	01	0.49

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0151/2016-17

Date: 314 October, 2016.

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203 State: [harkhand] Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau- 109.507 ha. Loading Area.

Sample collected on: 22.09.2016

Received: 23 09 2016 Registered: 23 09 2016

Fest Start/End Date: 23.09.2016/25 09 2016

SI. No.	PARAMETERS	UNIT	Standard Limit	Concentration
() [	Particulate Matter (size less than 10 μm) PM <sub>10</sub>	μg/m³	100	61.8
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	μg/m³	60	37.3
113	Sulphur Dioxide (SO <sub>2</sub> )	μg/m³	80	23.7
04	Nitrogen Dioxide (NO <sub>c</sub> )	μg/m³	80	38.1
05.	Ammonia (NH <sub>3</sub> )	μg/m³	400	9.5
06	Ozone (O <sub>3</sub> )	μg/m³	180	13.7
07	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.45
08	Lead (Pb)	µg/m³	1.0	0.02
09	Nickel (Ni)	ng/m³	20	8.1
10	Arsenic (As)	ng/m <sup>3</sup>	06	2.90
11	Benzene (C <sub>0</sub> H <sub>6</sub> )	μg/m <sup>3</sup>	05	2.8
12	Benzo (a) Pyrene	μg/m³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Date: 31st October 2016

Report no: : MEEPL/ OCT0152/2016-17

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address Lohardaga Postal Code: 835203 State: Harkhand Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau-Near Weigh Bridge

Sample collected on: 25.09.2016

Received, 26.09.2016 Registered: 26 09 2016

Test Start/End Date: 26.09.2016/28.09.2016

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM in	ng/m+	100	63.0
02	Particulate Matter (size less than 2.5 µm) PM2	μg/m <sup>+</sup>	60	35.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	μg/m <sup>+</sup>	80	26.1
114	Nitrogen Dioxíde (NO <sub>2</sub> )	μg/m*	80	39.5
05.	Ammonia (NH <sub>3</sub> )	μg/m³	400	10.2
DG.	Ozone (O <sub>3</sub> )	μg/m²	180	13.7
07	Carbon Monoxide (CO)	mg/m <sup>4</sup>	02	0.48
08	Lead (Pb)	μg/m³	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>+</sup>	20	8.1
10.	Arsenic (As)	ng/m*	06	2.83
l i	Benzene (C <sub>6</sub> H <sub>6</sub> )	μg/m <sup>q</sup>	05	2.9
12.	Benzo (a) Pyrene	μg/m³	01	0.41

For Mahabal Enviro Engineers Pvt. Ltd.

Vitav Pandey





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# Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0153/2016-17

Date: 319 October, 2016

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: 22.09.2016

Analyse Date: 23.09,2016

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Near Office	dB (A) Leq	75	51.1	70	43.5	22.09,2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vuas Pandes

SENIOR EXECUTIVE



Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India (608 m from Hetel Rokhmini Palace Turn Upp Toyota Show Room, Near J & Sawant Bus Stop) Phone: 2582 0658/ 3139/ 1663/ 3154 Fax: 91-22-25823543 thane@mahabal.com



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Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0154/2016-17

Date: 31% October 2016.

Sample described by customer Measurement of Noise

Them Name: Hindalco Industries Limited

client Address, Lohardaga Post,d Code: 835203

State-Bharkhand Country India

Sample Description: Measurement of Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 22.09.2016 Analyse Date: 22.09,2016

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (115-13 ha.)	dB (A) L <sub>eq</sub>	75	58.9	70	46,1	22:09:2017

For Mahabal Enviro Engineers Pvt. Ltd.

Hay Pandey

SENIOR EXECUTIVE

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Hindalco Industries: Environmental Monitoring Report

Date: 315 October, 2016.

Report no: : MEEPL/ OCT0155/2016-17

Sample described by customer: Measurement of Noise

Allent Name Hindalco Industries Limited

Thent Address Lohardaga

Fostal Code, 835203

Saute Tharkhand

Lountry India

Sample Description: Measurement of Noise

Sumpling Method: Instrumental, using Sound level Metter

Data Collection Date: 22.09.2016

Analyse Date: 22.09,2016

Location/Identification	Unit	Limit (day)	Result	Lîmit (night)	Result	Dates
Pakhar Mine	200 200				1	
(109.507 ha. of Minerals	dB (A)	75	61.8	-7 D	36.2	22 09/2016
A Minerals)	l <sub>-eq</sub>	B 30		2 ZV	.,,,,,,	

For Mahabal Enviro Engineers Pvt. Ltd.

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### Hindalco Industries: Environmental Monitoring Report

IULY - SEPTEMBER 2016

Date: 31st October, 2016

Report no: : MEEPL/ OCT0156/2016-17

Sample described by customer: Measurement of Noise

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code 835203

State Barkhand

Country: India

Sample Description: Measurement of Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 22.09.2016

Analyse Date: 22.09.2016

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mine (109:507 ha. of Yatri Shed)	θΒ (Λ) L <sub>en</sub>	75	52.8	70	40.0	22.000016

For Mahabal Enviro Engineers Pvt. Ltd.

Vitay Paudey





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Hindalco Industries: Environmental Monitoring Report

Report no: : MEEPL/ OCT0157/2016-17

Date: 31 4 October, 2016

Sample described by customer: Measurement of Noise

**Client Name Hindalco Industries Limited** 

Chest Address Lohardaga

Pestal Code, 835203

State [harkhand

Country India

Sample Description: Measurement of Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 22.09.2016

Analyse Date: 22,09,2016

ocation/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Quary (Near Shed)	dB (A) Les	75	50.9	70	41.4	2209,201

For Mahabal Enviro Engineers Pvt. Ltd.

Vitay Pandey





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Hindalco Industries: Environmental Monitoring Report

**JULY - SEPTEMBER 2016** 

Report no: : MEEPL/ OCT0158/2016-17

Date: 31 f October 2016

Sample described by customer Measurement of Spot Noise

client Name. Hindalco Industries Limited

Country: India

Litent Address: Lohardaga
Postal Code 835203
State: [harkhand
Country: India

Sample Description: Measurement of Spot Noise

Sampling Method: Instrumental, using Sound level Metter

Data Collection Date: 22.09.2016
Malyse Date: 22.09.2016

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mines	dB (A) Leg	75	62.1	22 09 2016

For Mahabal Enviro Engineers Pvt. Ltd.

Amoi.

Vijav Panidey

SENIOR EXECUTIVE

Consultation of the consul

Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India (1010 m from Hotel Rukhmini Palace Turn Opp Toyota Show Room Near | B Sawaht Bus Step)
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# Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0159/2016-17

Date: 312 October: 2016

Sample described by customer: Measurement of Spot Noise

Client Name: Hindako Industries Limited

Chent Address, Lohardaga,

Postal Code 835203

State [barkhand

Country: India

Sample Description: Measurement of Spot Noise

Sampling Method: Instrumental, using Sound level Metter

Esta Collection Date: 22.09.2016

Analyse Date: 22.09.2016

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mines (109.507 ha. Of Minerals & Minerals) Loading point near Dumper	dB (A) L	75	68.5	22.00.201n

For Mahabal Enviro Engineers Pvt. Ltd.

Sees Randes





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

Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0160/2016-17

Date: 314 October, 2016

Sample described by customer: DRINKING WATER-POTABILITY

Client Name: Hindalco Industries Limited

Client Address: Lohardaga Postal Code: 835203 State: [harkhand Country: India

Sample Type: DRINKING WATER-POTABILITY Marks on Sample: Location: Near Canteen

Quantity: 5 L X 2 No. PVC Can Sample collected on:22.09.2016

Received: 22.09.2016 Registered: 22.09.2016

Test Start/End Date: 22:09:2016/24:09:2016

Sl. No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
}	Calain	Hazen -	<u>&lt;</u> 1	5 Max	APHA 22st Ed. 2012, 2120 B. 2-6s
, t	Odear		Agreeable	Agreeable	IS 3025 (Part 7): 1463 Reaffirmed 2006
ş	Liste		Agreeable	Agreeable	IS 3025 (Part 7): 1903 Reaffirmed 2006
ţ.	Turbulity.	NTU	0.28	1 Max	APHA 22 8 Ed. 2012, 3130 B, 2-13
ţ	pil		7,0	0.5-8.5	APHA 22 Ed 2011 (5m) H+B, 4-92
78	Free Chlorales (Residual)	mg/l	<0.05	02 min	APHA 22% Ed. 2012. \$100 CI-G, 4-69
7	Total Dissolved Soluls	mg/l	ยร	500 max	IS 3025 (Part 16) (1981) Reaffirmed 2006
d	Monochkorangues :	mg/l	< 0.05	4	APHA 22* Fet, 2012; (500) CIG, 4-69
t.	Dichieramines	mg/l	< 0.05	-	APHA 2266 Ed. 2012, 4500 CIG, 4-69
l i i	Total hardness (as catars)	mg/I	6/4	200 m.is	APHA 22et EJ 3012 45 iii. CIG, 4-69
] [	Alkalimirty Total (as CaCO3)	mg/l	68	200 max	IS 3025 (Part 2 l=) (1-40) Reaffirmed 2009s
1.7	Chloride (as CI)	mg/I	9.1	250 max	APBA 2284 Ed. 2013, 4500 CI-b, 4-72
į i	Sulphate (as \$04)	mg/l	4.8	200 max	APHA 22et Ed 2013 17 in sp4-e, 4-190



Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India 11300 in from Hotel Rushimini Palace Turn Opp Toyota Shaw Roam Near J B Sawani Rush Vicini Phone: 2582-0658/3139/1663/3154 Fax: 91-22-25823543 thane@mahabal.com



# Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:
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Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Continuation Sheet MEEPL/OCT0160/2016-17

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Date: 318 October 2016 Method reference
14	Nitrate (as NO3)	mg/l	1 02	45 max	APHA 22mt Ed. 2012, 4500 NO.1 F 4 125
15.	Fluoride (as F)	mg/l	0.2	l max	APHA 22ml Ed. 2012, 4500 Fh 8 7), 4, 84, 4-87
i ti	Boron (as B)	mg/l	9.67	0.5 max	APHA 22nd Ed. 2012, 4500 BB, 1-25
ľ.	Calcium (as Ca)	ing/i	185	75 max	APHA 22rd Ed. 2012. 3500 Carts. 3 Ec.
18	Magnesium (as Mg)	mg/I	5.1	30 max	APHA 22nd Ed. 2012, 3500-Mg/B, 3-8
143	Ammonical Nitrogen/Total Ammonia	mg/I	<0 I	The state of the s	APHA 22 <sup>nd</sup> Ed. 2012, 4500 NH3 F, 1 115
207	fron (as Fe)	nig/1	0.12	0.3 max	APHA 22nd Ed. 2012, 3111 B, 3-18
11	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111 B, 3-18
34	Alummum (as Al)	nig/l	0.01	0.03 max	APHA 22nd Ed. 2012, 3500-AI-B, 3-61
23	Cadmium (as Cd)	mg/I	N.O	0.003 max	APHA 22nd Ed. 2012, 3111-B 3 18
. i	Chromium Total (as Cc)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-E, 3-18
117	Copper (as Cu)	mg/f	N.D	0.05 max	APHA 22nd Ed. 2012, 3111 B. V. DR
7.	Lead (as Ph)	nig/l	N.D	0.01 max	APHA 22nd Ed 2012 3111 B A 18
•	Zinc (as Zn)	nig/l	0.13	5 max	APHA 22nd Ed. 2012, 5117, B. 3,18
28	Arsenic (as As)	mg/l	0.006	U01 max	APHA 22 <sup>64</sup> Ed. 2012, 3114-0, 3-38
20	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed 2012 (112 B + 23
SU	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)	ing/l	< 0.008	0.02 max	APHA 22nd Ed 2012 3111-B 4-18
	Mineral Oil	nogal	N.D	0 5 max	IS 3025 (Part 39): 1991. Reaffirmed 2003; ed. 2.1
53	Cyanide (as CN)	mg/I	N.O	0.05 max	APHA 22nd ED. 2012 (\$60 (N), 8 ) 39 & 4-44
53	Anionic detergents as MBAS	mg/l	≪0.1	0.2 max	APHA 22nd ED. 2012, 5540 C C & 5-5.3
15.	Phenolic compounds (as C6H5OH)	mg/l	N.D	0.001 max	APHA 22nd ED. 2012, 5530 B & C S 4753
3(1)	Polymuclear aromatic bydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22nd ED, 2012, 644ff (6.493)
¢??	Polychlorinated Bipheoyls (PGBs)	mg/l	N D	0 0005 max	USEPA Method 8082
5 <b>K</b>	Sulphide (as 5)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED 2012, 4500-52-04- 175 & F4-178



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Hindalco Industries: Environmental Monitoring Report

JULY - SEPTEMBER 2016

Continuation Sheet MEEPL/ OCT0160/2016-17

St. No.	io: : MEEPL/ OCT0160/				ate: 314 October, 301
	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbio	logical Analysis				
	Total Colliforms	MPN/100mL	Q.R	<1.1	APHA 22% Ed. 201; 9221-8 & C. 9506, 9305 and 9-67
*	E-Colt	MPN/100mL	N D	Absent	APHA 2259 Ed. 2017 9221-B.&.C. 9.66, 9.69 and 9-76
Pesticide	s Residues				
3	p.p DDT	μg/L	N.D		US EPA 509-1995
4	o.p DDT	μg/L	ND	1	US EPA 508 1995
5	p.p DDE	μg/L	N.D	1	US EPA 508-1995
£,	G.P DDE	μg/L	N.D	T T	US EPA 508-1993
	p p DDD	μg/1,	N.D	The state of the s	US EPA 508-1995
	e.p 000	pg/L	N.D	I	US EPA 508-1995
	y-HCH (Lindance)	μg/L	<0.01	2	US EPA 508-1995
11)	α-HCH	pg/L	<0.01	0.01	US EPA 50n-1995
11	B-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	5- HCH	μg/L	N.O	0.04	US EPA 508-1995
1.4	Butachlor	μg/L	N,D	125	US EPA 508-1995
; ;	Alachlor	μg/L	N.D	20	US EPA 508-1995
15	Atrazme	μg/l.	O.N	·	US EPA 508-1995
16	a Endosulfan	μg/L	N.D	0.4	US EPA 508-1995
17	ß Endosulfan	μg/L	N.D	(),4	US EPA 508-1995
1.64	Endosullan Sulphate	µg/L	N.D	(1,4	US EPA 508-1995
1-7	Ethion	FB/F	N.D		US EPA 8141A-1973
20	Malathion	pg/L	N.D	190	US EPA 8141A-1994
21	Methoyi Parathion	PB/L	N.D	0.3	US EPA 8141A 1994
22	Monocrotopho:	pg/f.	N D	1	US EPA 8141A 1994
23	Phorate	1:g/1.	N.D.	2	US EPA 8141A 1994
J.1	Chlorpyrifos	PB/L	N D	30	US EPA 8141A-1004
25	Aldrin	pg/L	N.D	0.03	US EPA 508 1995
20	Dieldrin N.D. Not Detected	μg/L	N.D	0.03	US EPA 508 1995

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

For Mahabal Enviro Engineers Pvt. Ltd.

Muna 2

May Pandey

SENIOR EXECUTIVE



Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India 1600 m from Hotel Rickhmini Palace Furn Opp Toyota Show Roam Near | B Sawant Bus Shept Phone: 2582 0658/3139/1663/3154 Fax: 91-22-25823543 thane@mahabal.com

Date: 05.09.16

# 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

th Journalis

(B.K. Mahapatra)
Convenor (Quality & Environment)

# PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-16 to SEP-16

NAME OF THE MINES	MINING LEASE AREA (In HA)	MINED OUT AREA	BACK FILLED AREA (in HA)	PRODUCTION (In MT)	OVERBURDEN (In Cu.M)
Shrengdag Bauxite Mines	155.81	2.90	2.81	137435.00	420085.00
Gurdari Bauxite Mines	584.19	5.40	5.10	169330.00	279253.00
Jalim & Sanai	12.14	0.51	0.20	24170.00	26587.00
Serangdag	140.06	00:0	00:00	0.00	00:00
Pakhar Buxite Mines	115.13	3.01	3.57	130110.00	166727.48
Pakhar Buxite Mines	8.09	0.00	00:0	00'0	00:00
Kujam-I	80.87	2.47	2.47	86870.00	101222.20
Kujam-II	157.38	4.18	4.33	150150.00	197828.91
Amtipani	190.95	4.99	3.19	114005.00	135519.46
Chiro-Kukud	152.57	1.41	1.21	40415.00	94780.30
Orsa Bauxite Mines	196.36	00:00	00:00	00:0	00:00
Hisri New	14.55	0.73	0.54	36358.00	25610.00
Bhusar	65.31	00:00	00:0	00:00	00:0
Bagru	75.41	0.00	00.00	00:00	00:0
Minerals & Minerals Limited					
Pakhar Buxite Mines	109.51	3.45	4.06	154100.00	196818.79
Pakhar Buxite Mines	15.58	00:00	0.00	00:00	00:00
Bimarla Bauxite Mines	134.37	2.71	1.25	52675.00	63084.44

# Monitored water level (FY 2016-17)

34 B N2000 12			Mo	nsoon	Post	Monsoon
Location (Mines)	Elevation (Mtr)	Well type	Inside ML	Outside ML	Inside ML	Outside ML
	905	Open Well		21.32		22.70
	910	Open Well	THE COLUMN TO TH	24.38		24.56
Bagru Plateau (Hisri new,	915	Open Well		29.00		28.43
Bagru & Bhusar )	903	Open Well		22.81		33.15
	909	Open Well		20.15		28.72
	1000	Open Well		24.93		22.65
Pakhar Gr. Of Mines (115.13,109.507,15.58,8.0	1083	Hand Pump	35.35		31.60	
Sherengdag Plateau (Serangdag 155.81 ha, Sherengdag 140.06 Ha, Jalim & Sanai)	1027	Open Well		25.80		28.40
	1094	Hand Pump	41.74		39.55	_32_2000
	1081	Hand Pump	39.60		31.30	
	1055	Hand Pump	33.00		27.50	
	1066	Hand Pump	27.75		26.25	
	1045	Hand Pump	29.30	900000000000000000000000000000000000000	27.70	
	1061	Hand Pump	28.30		24.90	
Gurdan	1059	Hand Pump	38.10		36.15	84 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
	1075	Hand Pump	27.90		26.75	
***************************************	1075	Hand Pump	28.30		29.30	
	1040	Open Well		33.90		21.85
Kujam I, Kujam II &	1041	Open Well		33.65		24.80
Amtipani Mines	1064	Hand Pump	31.50		28.60	
	1052	Hand Pump	22.35			21.05
THE CONTRACTOR CONSTRUCTION OF THE CONTRACTOR OF	1148	Hand Pump	33.40		28.30	
Chiro Kukud	1151	Hand Pump	37.60	200	31.80	
# - 6	1084	Hand Pump	34.20		33.15	

### FOREST PROTECTION PLAN

Considering the various measures proposed above, there would be requirement of various types of equipment and improvement in the infrastructures in forests. The proposed forest protection plan is related to the strengthening of forest department. Considering these facts various activities which are necessary for the forest protection plan are described in the following paragraphs:

- For the improvement of vigilance and measures to check poaching, check posts and
  watch towers will be needed. In order to strengthen the working capacity the officers of
  the State Forest/Wildlife Department they must be provided with necessary equipment
  that would increase their capability and efficiency. Equipment such as camera, wireless,
  binoculars and other minor equipments (altimeter, spot-scope, search lights, sleeping
  bags, and health kits etc)
- The construction of inspection paths for more effective and meaningful patrolling of the staff should be undertaken.
- Improvement of vigilance by procurement of field vehicles and motorbikes
- Creation of veterinary facilities and rescue camps for healthcare of wild animals and for controlling diseases. For this purpose it is essential to maintain a stock of medicines in addition to setting up of a mobile-rescue-cum-publicity-van.
- Provision of fire lines within critical areas to protect the forest from accidental fires.

### Safeguard Measures

- Strict restrictions shall be imposed on the workers at project sites to ensure that they
  would not harvest any species/produce from the natural forests and cause any danger
  or harm to the animals and birds in the wild.
- Minimum levels of noise during mining activities shall be maintained and no activities shall be carried out at night.
- To avoid the deterioration of water quality and release of pollutants into the water courses, project authorities would provide proper sanitation facilities and garbage disposal bins to the workers areas.

- The interference of human population would be kept to a minimum in the adjacent forested areas and it would be ensured that the contractors do not set up labour colonies in the vicinity of forests and wilderness areas.
- The project authorities will be bound by the rules and regulations of the Wildlife Protection Acts (1972), Biological Diversity Act (2002), Forest Act (1980), Environment Protection Act (1986), guidelines of State Biodiversity Conservation Strategy Action Plans (SBCSAP) for the preservation of habitats and protection of wild animals.

Apart from the above the management will also comply with the following conditions given by forest department while give permission for transportation of trucks carrying Bauxite Ore

- 1. A permanent pillar will be established within in the mine lease area at 7.5m from the forest boundary
- 2. No mining activity will be carried out in forest area
- 3. Maintenance of the forest road shall be carried out by the company at their own cost in presence (supervision) of forest department employees
- 4. Company shall ensure necessary air and noise pollution control measures
- 5. Daily water sprinkling shall be carried out on the forest road
- 6. Transportation through forest road shall be closed during night time
- Company and its employees will cooperate in safety and management of forest and wildlife and will not disturb / harm the forest and wildlife
- 8. Company shall cooperate in controlling forest fire
- 9. Social developmental activities shall be carried out in surroundings of the lease area
- 10. Every vehicle used for transportation of bauxite through this forest road shall be registered for travelling on the forest road from the forest department