

Ref No: HIL/LHD/ JP (M)/MoEF/106

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 Orsa (196.36ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period Oct'16 to March'17.

Ref: Environmental Clearance letter no J-11015/241/2006-IA II(M) dated 17th May 2007


Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Orsa (196.36 ha)** Bauxite Mining project of M/s Hindalco located in Gumla, 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

ORSA BAUXITE MINES

Period: Oct'16-March'17

J-11015/241/2006-IA.II (M) Dated 17.5.2007

Sl No	Conditions	Compliance Status
Specific Conditions		
1	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter OF Goa foundation Vs Union of India in writ petition (civil) no 460 of 2004, as may be applicable to this project	Will be complied.
2.	Environmental Clearance is subject to obtaining clearance from Wildlife (Protection) Act '1972 from the competent authority.	Wild life Management plan has been submitted to Chief Wildlife Warden.
3.	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Will be implemented.
4	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
5	Mining shall not intersect groundwater. The mine working shall be restricted to above 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 will be carried out at shallow depth, at no point of time mining activities will intersect the ground water table. Mining is yet to start.
6	The project proponent shall ensure that the mining shall be carried out in small blocks and at a given point of time active mining shall not be more than 2.0 ha.	Mining will be carried out in small blocks. Mining is yet to start.
7.	The project proponent shall ensure that no natural water course shall be obstructed due to any mining operations.	It will be ensured, Mining is yet to start.
8	Top soil, if any, shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Top soil will be stacked separately, Mining is yet to start. Sequential backfilling and reclamation of the mined out area will be exercised during mining operation. Whenever backfilling will be done to the mined out area, subsoil will be used for backfilling to reclaim and restore the damage area upto the extent possible.

9.	The overburden generated during the initial year shall be kept as temporary dump. Concurrent backfilling starts from the 2 nd year onwards and there shall be no external dump at the end of the mine life.	Will be complied. Mining is yet to start.
10.	The entire excavated area of 155 ha shall be reclaimed ,out of which 131 ha land shall be returned to rayats for agricultural purpose and in 24 ha plantation shall be raised. 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 month basis.	Will be complied. Mining is yet to start.
11	<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>	Will be complied. Mining is yet to start.
12	Dimension of the retaining wall at the OB benches within the mine to check run-off and siltation should be based on rainfall data.	Will be complied. Mining is yet to start.
13	Plantation shall be raised in an area of 24.0 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.	Will be implemented parallel to the progress of mining activity. Mining is yet to start.
14	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.	Will be complied. Mining is yet to start.

15	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.	Will be complied. Mining is yet to start.
16	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Agreed.
17	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.	Agreed.
18	Drills should either be operated with dust extractors or should be equipped with water injection system.	Agreed.
19	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.	Blasting at Mines will be at fixed blasting period of 12.00 Noon to 1.00 PM on working days. All the precautionary and mitigative measures to control ground vibration and to arrest generation of fly rocks will be exercised.
20	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	There is no proposal for enhancement of production.
21	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	There will be no effluent discharge from Mine, hence ETP will not be required to install. The sewage water from domestic uses will be treated through septic tanks and soak-pits.
22	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Leopard, Indian Wolf, Indian elephant, Indian small civet, Indian Python, etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared	Wildlife Management plan has been submitted to Chief Wildlife Warden, Jharkhand vide letter no 75(vivid)/940 dated 22.10.2008.

	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.	
23	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.	Will be complied as applicable.

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	Will be complied with.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Will be complied with Mining is yet to start.
3	Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Mining is yet to start. Report of nearby areas attached.
4	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Mining is yet to start. Report of nearby areas attached.
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.	Will be complied. Mining is yet to start.

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.	Will be complied. Mining is yet to start.
7	Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Will be complied. Mining is yet to start.
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.	Will be complied. Mining is yet to start.
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.	Complied.
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.	Will be complied as applicable.
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.	Complied with.
12	The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Agreed upon.

13	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests its Regional Office, Bhubneshwar CPCB and State Pollution Control Board.	Duly submitted.
14	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.
15	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.
16	The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Already done and copies submitted.



Eco Ventures Pvt. Ltd.

Annexure-1

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Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.
E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

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

ORSA & CHIRO PLATEAU- ENVIRONMENTAL MONITORING REPORT

JANUARY TO MARCH 2017

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

CONTENT

	LOCATION
	AMBIENT AIR QUALITY
1	Chirokukad Weigh Bridge
2	Kukad Village
3	Rajendrapur
4	Orsa Village
5	Near Chiro Kukud Mines Office
6	Near Saraidih Hospital
	NOISE LEVEL
1	Chiro Kukad Mining Area
	SPOT NOISE LEVEL
1	Near Poclain at Chiro Kukad Mine (152.57 ha.)
	DRINKING WATER
1	Chiro Kukad Mines





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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Report no: MEEPL/APRIL0161/2016-17	Date: 20 th April, 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: Chiro Kukad Weigh Bridge	
Sample collected on: 31.03.2017	

LOCATION / IDENTIFICATION: ChiroKukad Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	70.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	34.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	11.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	20.5
05.	Ammonia (NH ₃)	µg/m ³	400	16.3
06.	Ozone (O ₃)	µg/m ³	180	15.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.54
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.8
10.	Arsenic (As)	ng/m ³	06	2.7
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Report no: MEEPL/APRIL0162/2016-17	Date: 20 th April, 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: Kukad Village	
Sample collected on: 31.03.2017	

LOCATION / IDENTIFICATION: Kukad Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	48.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	23.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	9.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	17.2
05.	Ammonia (NH ₃)	µg/m ³	400	10.3
06.	Ozone (O ₃)	µg/m ³	180	15.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.40
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.1
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Report no: MEEPL/APRIL0163/2016-17	Date: 20 th April, 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: Rajendrapur	
Sample collected on: 31.03.2017	

LOCATION / IDENTIFICATION: Rajendrapur				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	50.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	8.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	17.7
05.	Ammonia (NH ₃)	µg/m ³	400	12.1
06.	Ozone (O ₃)	µg/m ³	180	16.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.38
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	2.9
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Report no: MEEPL/APRIL0164/2016-17	Date: 20 th April, 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: Orsa Village	
Sample collected on: 31.03.2017	

LOCATION / IDENTIFICATION: Orsa Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	53.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	7.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	15.4
05.	Ammonia (NH ₃)	µg/m ³	400	13.1
06.	Ozone (O ₃)	µg/m ³	180	16.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.41
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.9
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.10
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Report no: MEEPL/APRIL0165/2016-17	Date: 20th April, 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: Near ChiroKukud Mines Office	
Sample collected on: 31.03.2017	

LOCATION / IDENTIFICATION: Near Chiro Kukud Mines Office				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	58.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	8.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	15.3
05.	Ammonia (NH ₃)	µg/m ³	400	11.7
06.	Ozone (O ₃)	µg/m ³	180	16.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.48
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.0
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Report no: MEEPL/APRIL0166/2016-17	Date: 20 th April, 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: Near Saraidih Hospital	
Sample collected on: 31.03.2017	

LOCATION / IDENTIFICATION: Near Saraidih Hospital				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	51.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	23.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	7.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	12.8
05.	Ammonia (NH ₃)	µg/m ³	400	10.2
06.	Ozone (O ₃)	µg/m ³	180	14.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	2.7
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.28

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Report no: MEEPL/APRIL0167/2016-17	Date: 20 th April, 2017
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: 31.03.2017	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Chiro Kukad Mining Area	dB (A) L_{eq}	75	40.8	70	35.7	31/03/2017

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Report no: MEEPL/APRIL0168/2016-17	Date: 20th April, 2017
Sample described by customer: Measurement of Spot Noise	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: Measurement of Spot Noise	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 31.03.2017	

Location/Identification	Unit	Limit (day)	Result	Dates
Chiro Kukad Mines (152.57 ha.) Near Poclairn	dB (A) Leq	75	62.5	31/03/2017

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

Report no: MEEPL/APRIL0169/2016-17	Date: 20th April, 2017
Sample described by customer : DRINKING WATER-POTABILITY	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: DRINKING WATER-POTABILITY	
Marks on Sample: Location: Chiro Kukad Mines Drinking Water	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 31.03.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.32	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	6.9	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	1 max	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	86	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO ₃)	mg/l	59	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	64	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	15.7	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO ₄)	mg/l	11.2	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Continuation Sheet
MEEPL/APRIL0169/2016-17

Report no: MEEPL/APRIL0169/2016-17				Date: 20 th April, 2017	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Nitrate (as NO ₃)	mg/l	0.92	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.16	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.13	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	15.8	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	1.8	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115
20	Iron (as Fe)	mg/l	0.10	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.01	0.02 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	N.D	0.001 max	APHA 22 nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-S2-C 4-175 & F 4-178



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Hindalco Industries: Environmental Monitoring Report

JAN. – MAR. 2017

Continuation Sheet
MEEPL/APRIL0169/2016-17

Report no: MEEPL/APRIL0169/2016-17				Date: 20 th April, 2017	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
Pesticides Residues					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindance)	µg/L	<0.01	2	US EPA 508-1995
10	α-HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	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	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
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ORSA & CHIRO PLATEAU- ENVIRONMENTAL MONITORING REPORT

OCTOBER TO DECEMBER 2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

CONTENT

	LOCATION
	AMBIENT AIR QUALITY
1	Chirokukad Weigh Bridge
2	Kukad Village
3	Rajendrapur
4	Orsa Village
5	Near Chiro Kukud Mines Office
	NOISE LEVEL
1	Chiro Kukad Mining Area
	SPOT NOISE LEVEL
1	Near Poclain at Chiro Kukad Mine (152.57 ha.)
	DRINKING WATER
1	Chiro Kukad Mines





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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Report no: : MEEPL/ JAN0189/2016-17	Date: 30 th 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: Chiro Kukad Weigh Bridge	
Sample collected on: 22.12.2016	

LOCATION / IDENTIFICATION: ChiroKukad Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	71.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	42.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	21.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	31.5
05.	Ammonia (NH ₃)	µg/m ³	400	15.6
06.	Ozone (O ₃)	µg/m ³	180	17.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.62
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	7.2
10.	Arsenic (As)	ng/m ³	06	2.7
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Report no: : MEEPL/ JAN0190/2016-17	Date: 30th 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: Kukad Village	
Sample collected on: 22.12.2016	

LOCATION / IDENTIFICATION: Kukad Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	45.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	23.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	14.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	24.5
05.	Ammonia (NH ₃)	µg/m ³	400	10.5
06.	Ozone (O ₃)	µg/m ³	180	17.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.45
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	6.2
10.	Arsenic (As)	ng/m ³	06	2.7
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Report no: : MEEPL/ JAN0191/2016-17	Date: 30 th 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: Rajendrapur	
Sample collected on: 22.12.2016	

LOCATION / IDENTIFICATION: Rajendrapur				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	16.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	28.5
05.	Ammonia (NH ₃)	µg/m ³	400	12.5
06.	Ozone (O ₃)	µg/m ³	180	17.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.43
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	6.2
10.	Arsenic (As)	ng/m ³	06	2.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.34

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Report no: : MEEPL/ JAN0192/2016-17

Date: 30th 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: Orsa Village

Sample collected on: 22.12.2016

LOCATION / IDENTIFICATION: Orsa Village

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	55.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	21.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	35.2
05.	Ammonia (NH ₃)	µg/m ³	400	13.5
06.	Ozone (O ₃)	µg/m ³	180	16.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.45
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	6.2
10.	Arsenic (As)	ng/m ³	06	2.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.12
12.	Benzo (a) Pyrene	µg/m ³	01	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Report no: : MEEPL/ JAN0193/2016-17	Date: 30 th 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: Near ChiroKukud Mines Office	
Sample collected on: 22.12.2016	

LOCATION / IDENTIFICATION: Near ChiroKukud Mines Office				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 μm) PM ₁₀	$\mu\text{g}/\text{m}^3$	100	62.5
02.	Particulate Matter (size less than 2.5 μm) PM _{2.5}	$\mu\text{g}/\text{m}^3$	60	34.5
03.	Sulphur Dioxide (SO ₂)	$\mu\text{g}/\text{m}^3$	80	23.5
04.	Nitrogen Dioxide (NO ₂)	$\mu\text{g}/\text{m}^3$	80	34.5
05.	Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	400	11.5
06.	Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	180	16.9
07.	Carbon Monoxide (CO)	mg/m^3	02	0.62
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.03
09.	Nickel (Ni)	ng/m^3	20	6.5
10.	Arsenic (As)	ng/m^3	06	2.5
11.	Benzene (C ₆ H ₆)	$\mu\text{g}/\text{m}^3$	05	3.5
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Report no. : MEEPL/ JAN0194/2016-17	Date: 30th January , 2017
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: 22.12.2016	
Analyze Date: 23.12.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Chiro Kukad Mining Area	dB (A) Leq	75	52.5	70	42.5	22/12/2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Report no : MEEPL/ JAN0195/2016-17	Date: 30 th January , 2017
Sample described by customer: Measurement of Spot Noise	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: Measurement of Spot Noise	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 22.12.2016	
Analyze Date: 23.12.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Chiro Kukad Mines (152.57 ha.) Near Poclain	dB (A) L_{eq}	75	64.0	22/12/2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Report no : MEEPL/ JAN0196/2016-17	Date: 30 th January , 2017
Sample described by customer : DRINKING WATER-POTABILITY	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: DRINKING WATER-POTABILITY	
Marks on Sample: Location: Chiro Kukad Mines Drinking Water	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 22.12.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.32	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	6.9	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	98	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO ₃)	mg/l	52	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	60	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	13.5	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO ₄)	mg/l	10.5	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries: Environmental Monitoring Report

OCT- DEC 2016

Continuation Sheet
MEEPL/JAN0196/2016-17

Report no: : MEEPL/ JAN0196/2016-17				Date: 30 th January , 2017	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Nitrate (as NO ₃)	mg/l	1.0	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.20	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.13	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	16.5	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	2.5	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115
20	Iron (as Fe)	mg/l	0.11	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.01	0.02 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	N.D	0.001 max	APHA 22 nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-S2-C 4-175 & F 4-178



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Hindalco Industries: Environmental Monitoring Report

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Continuation Sheet
MEEPL/JAN0196/2016-17

Report no: : MEEPL/ JAN0196/2016-17					Date: 30 th January , 2017
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
Pesticides Residues					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10	α -HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	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.

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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).

SI 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

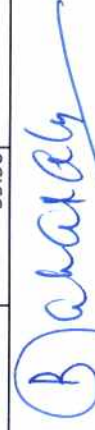
**Part of OB removed cost.

(B.K. Mahapatra)

Convenor (Quality & Environment)

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
	1000	Open Well		24.93					25.15		25.85
Pakhar Gr. Of Mines (115.13,109.507,15.58,8.	1083	Hand Pump	35.35								
	1027	Open Well		25.80				34.2			35.45
Sherengdag Plateau (Serengdag 155.81 ha, Sherengdag 140.06 Ha, Jalim & Sanai)	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
	1061	Hand Pump	28.30					25.20			25.90
Gurdari	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			23.50
	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



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