



Ref No: HIL/LHD/JP (M)/MoEF/ 1252

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 Amtipani Bauxite Mining project of M/s Hindalco Industries Limited located in Dist- Gumla, Jharkhand for the period April'16-Sep'16.**

Ref: **Environmental Clearance letter no J-11015/241/2005-IA II (M) dated 14th August 2006**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Amtipani** Bauxite Mining project of M/s Hindalco located in Gumla, Jharkhand for the period **April'16-Sep'16**.

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
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Compliance of conditions laid down in Environmental Clearance
AMTIPANI BAUXITE MINES (190.95 Ha)
Period: April'16-Sep'16

MoEF Environment Clearance ref: No J - 11015/241/2005-IA.II (M) dated 14 Aug'06

Sl No	Conditions	Compliance Status
Specific Conditions		
1	All the conditions stipulated by the State Pollution Control Board in their NOC should be effectively implemented.	Implementations of the stipulated conditions are fulfilled.
2	The mining operations shall not intersect groundwater table. Prior approval of the MoEF and CGWA shall be obtained for mining below water table.	The mining operation is confined within shallow depth (20 m max) and as per the previous study conducted by authorized agency [Center for Ground Water Studies, Kolkata (WB)] the ground water level is in the range of 80-100m from ground level.
3	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.	This provision has been taken care of during land acquisition with permission of competent authority i.e. concerned Deputy Commissioner (D.C.) and consent of Raiyat (Land Owner) for 20 years period and the land so acquired will be return as per the norms set by D.C. in land purchased agreement. (Documents already submitted).
4	Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Top soil is being stacked separately with proper slope & is being and will be used for reclamation and rehabilitation at appropriate time.
5	The waste generated in the initial period shall be dumped temporarily and backfilled in the mined out area. There shall be no permanent external OB dump in the project area. Concurrent backfilling should start from the fifth year onwards. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on six monthly basis.	Concurrent backfilling of the waste in worked out quarry is being practiced. Also, the Wastes generated previously & stacked separately are being used for backfilling. Monitoring and management of rehabilitation is continuing through supervision.

6	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil and mineral dump. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly 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 settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	<p>This is in progress with the progress of mining activity. Catch drains, siltation ponds, Garland drains, settling ponds and toe walls are constructed as per suitability.</p>
7	<p>Plantation shall be raised in an area of 79.3 ha including a green belt of adequate width by planting the native species around the ML area, roads, etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1500 plants per ha.</p>	<p>Progressive plantation is under progress. During 2016-17 around 6500 plantation carried out. Green belt development programme is in progress with progress of mining activities.</p>
8	<p>The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.</p>	<p>Study on Water resource evaluation and their development potential has been carried out. We are in the process to finalize the issue of implementation of suitable conservation measure in consultation with CGWB. A water harvesting plan submitted at Ground water Board, Ranchi for approval. Rain water harvesting is being carried out at mined out pit.</p>
9	<p>Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year - pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground Water Authority and Regional Director Central Ground Water Board.</p>	<p>This is being monitored in all season. Report enclosed.</p>
10	<p>Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.</p>	<p>Rainwater harvested during rainy season is being used for sprinkling on haul roads and raising plantation. We are using</p>

		water harvested by us and not stream water/surface water bodies. As per the terms and conditions in Mining lease deed, we have the liberty to use water.
11	The project proponent shall monitor the spring discharge on long term basis (at least one major spring) both in terms of quantity and quality of water and records maintained. Six monthly report should be submitted to the Ministry of Environment and Forests and its Regional Office located at Bhubneshwar.	Is being monitored. Six monthly report being submitted to the Regional Office of MoEF.
12	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	Regular maintenance of vehicles are being undertaken to minimize vehicular emission. All measures are being taken to control vehicular emission. The vehicles being covered with a tarpaulin while transportation of mineral as required.
13	Drills should either be operated with dust extractors or should be equipped with water injection system	Wet drilling is being done interminately in the drill holes for dust suppression by pumping water.
14	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented	Blasting time is fixed for Lunch Time i.e. 12.00 Noon -1.00 PM All efforts are being taken to mitigate impact of blasting.
15	Consent to operate should be obtained from SPCB prior to start of production of mine	Consent to operate has been obtained prior to start of production.
16	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	There is no effluent discharge from Mine; hence ETP has not been installed. The sewage water from domestic uses is being collected through individual septic tanks & soak pits. Sullage is collected to an integrated soak pit.
17	Land ouster and land loser/affected people should be compensated and rehabilitated as per the National Policy on Resettlement and Rehabilitation of project Affected Families (NPRR), 2003	Land ouster and land loser/affected people are being compensated and rehabilitated as per the statute.
18	The higher benches of the excavated void to be converted into water reservoir shall be terraced and afforested to stabilize the slopes. Peripheral fencing shall be done along the excavated area.	Implementation process is in progress.
19	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Progressive mine Closure Plan along with mining scheme has been approved by IBM. Final Mine Closure Plan will be submitted in due time.

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 & Forests.	Being adhered to.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Excavation of OB and Bauxite is being done as per the approved mining plan/scheme and obtained EC capacity. Quantum of mineral and OB excavated during the FY 2016-17 (April to Sep) is annexed.
3	Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife departments.	A plan has been prepared and being implemented for conservation of flora and fauna.
4	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Ambient air monitoring stations established and monitoring is being undertaken in consultation with State Pollution Control Board. Monitoring report annexed.
5	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhopal and the State Pollution Control Board / Central Pollution Control Board once in six months.	Monitoring report annexed.
6	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Mobile water tanker with sprinkling facility has been provided along haul roads, loading, unloading & at transfer points to arrest dust emission.
7	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Complied. PPEs are provided to workers.
8	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time.	Presently, there is no effluent discharge from Mine.

	Oil and grease trap should be installed before discharge of workshop effluents.	
9	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	PPE's provided. Periodic training on safety & occupational health is being imparted to workers and health checks up conducted.
10	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	A separate environmental management cell with suitable qualified personnel already formed and informed. (Annexed)
11	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.	Progressive mine Closure Plan along with mining scheme has been approved by IBM, Ranchi. This is an operating Mine, hence provision related to Financial closure not applicable.
12	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.	Separate budget is being prepared for the purpose and expenditure is being reported to the Ministry. (Annexed)
13	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Vide Point no. 11 above.
14	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 and is being done.
15	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom and suggestion / representation has been received while processing the proposal.	Complied.
16	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.	Displayed.
17	The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of	Complied. (Documents already submitted).

<p>the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.</p>	
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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

NETARHAT PLATEAU- ENVIRONMENTAL MONITORING REPORT

JULY TO SEPTEMBER 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

JULY - SEPTEMBER 2016

CONTENT

	LOCATION
	AMBIENT AIR QUALITY
1	Quarry 6B Gurdari Mines
2	Weigh Bridge Gurdari Mines
3	Kujam II Weigh Bridge
4	Kujam II Quarry
5	Kujam I Quarry I
6	Kujam I Quarry II
7	Amptipani Mines (Working Pit)
8	Amptipani Mines – Mines Office
	NOISE LEVEL
1	Gurudari Pit (584.19 ha.) Netarhat Plateau
2	Kujam-I (80.87 ha.) Netarhat Plateau
3	Kujam-II (157.38 ha.) Netarhat Plateau
4	Amptipani Mines Pit
	SPOT NOISE LEVEL
1	Poclain at Haralagda Pit
2	Dumper at Working Pit
3	Compressor Near Quarry 4 at Kujam-II
4	Drill Rig at Working Pit Kujam-I
5	Dumper at Working Pit (Amptipani Mines 190.95 ha.)



Head Office: Plot No. F-7, Road No. 21, Wagle Estate, Thane West - 400604, Maharashtra, India
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Hindalco Industries : Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no. : MEEPL/ OCT0176/2016-17	Date: 31 st October, 2016
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: Quarry 6B Gurdari Mines	
Sample collected on: 30.09.2016	
Received: 01.10.2016	
Registered: 01.10.2016	
Test Start/End Date: 02.10.2016/04.10.2016	

LOCATION / IDENTIFICATION: Quarry 6B Gurdari Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	54.0
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	17.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	28.1
05.	Ammonia (NH ₃)	µg/m ³	400	12.7
06.	Ozone (O ₃)	µg/m ³	180	15.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.52
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	5.8
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.6
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

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0177/2016-17	Date: 31 st October, 2016
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <i>Weigh Bridge Gurdari Mines</i>	
Sample collected on: <i>30.09.2016</i>	
Received: <i>01.10.2016</i>	
Registered: <i>01.10.2016</i>	
Test Start/End Date: <i>02.10.2016/04.10.2016</i>	

LOCATION / IDENTIFICATION: Weigh Bridge Gurdari Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	49.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	18.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	27.9
05.	Ammonia (NH ₃)	µg/m ³	400	12.1
06.	Ozone (O ₃)	µg/m ³	180	16.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.59
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	5.3
10.	Arsenic (As)	ng/m ³	06	2.52
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

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0178/2016-17	Date: 31 st October, 2016
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <i>Kujam II Weigh Bridge</i>	
Sample collected on: 27.09.2016	
Received: 28.09.2016	
Registered: 28.09.2016	
Test Start/End Date: 28.09.2016/30.09.2016	

LOCATION / IDENTIFICATION: Kujam II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	58.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	18.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	30.1
05.	Ammonia (NH ₃)	µg/m ³	400	13.7
06.	Ozone (O ₃)	µg/m ³	180	17.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.59
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	6.9
10.	Arsenic (As)	ng/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no. : MEEPL/ OCT0179/2016-17	Date: 31 st October, 2016
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: Kujam II Quarry	
Sample collected on: 27.09.2016	
Received: 28.09.2016	
Registered: 28.09.2016	
Test Start/End Date: 28.09.2016/30.09.2016	

LOCATION / IDENTIFICATION: Kujam II Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	51.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	16.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	28.5
05.	Ammonia (NH ₃)	µg/m ³	400	15.9
06.	Ozone (O ₃)	µg/m ³	180	14.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.61
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	7.2
10.	Arsenic (As)	ng/m ³	06	2.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.1
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

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0180/2016-17	Date: 31 st October, 2016
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <i>Kujam I Quarry I</i>	
Sample collected on: <i>27.09.2016</i>	
Received: <i>28.09.2016</i>	
Registered: <i>28.09.2016</i>	
Test Start/End Date: <i>28.09.2016/30.09.2016</i>	

LOCATION / IDENTIFICATION: Kujam I Quarry I				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	49.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	22.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	18.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	26.7
05.	Ammonia (NH ₃)	µg/m ³	400	15.1
06.	Ozone (O ₃)	µg/m ³	180	20.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.60
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	7.3
10.	Arsenic (As)	ng/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.38

For Mahabal Enviro Engineers Pvt. Ltd.

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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: Kujam I Quarry II	
Sample collected on: 27.09.2016	
Received: 28.09.2016	
Registered: 28.09.2016	
Test Start/End Date: 28.09.2016/30.09.2016	

LOCATION / IDENTIFICATION: Kujam I Quarry II				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	57.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	21.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	29.2
05.	Ammonia (NH ₃)	µg/m ³	400	13.1
06.	Ozone (O ₃)	µg/m ³	180	20.5
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	7.1
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	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0182/2016-17	Date: 31 st October, 2016
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <i>Amtipani Mines (Working Pit)</i>	
Sample collected on: 29.09.2016	
Received: 30.09.2016	
Registered: 30.09.2016	
Test Start/End Date: 30.09.2016/02.10.2016	

LOCATION / IDENTIFICATION: Amtipani Mines (Working Pit)				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	71.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	40.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	25.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	37.0
05.	Ammonia (NH ₃)	µg/m ³	400	13.4
06.	Ozone (O ₃)	µg/m ³	180	12.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.49
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	8.1
10.	Arsenic (As)	ng/m ³	06	1.73
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.39

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0183/2016-17	Date: 31 st October, 2016
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: <i>Amtipani Mines – Mines Office</i>	
Sample collected on: 29.09.2016	
Received: 30.09.2016	
Registered: 30.09.2016	
Test Start/End Date: 30.09.2016/02.10.2016	

LOCATION / IDENTIFICATION: Amtipani Mines – Mines Office				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	67.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	22.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	35.0
05.	Ammonia (NH ₃)	µg/m ³	400	12.1
06.	Ozone (O ₃)	µg/m ³	180	10.5
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	8.2
10.	Arsenic (As)	ng/m ³	06	1.7
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

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M/S Hindalco Industries Ltd.

Environmental Monitoring report

April - June 2016

Report no: : MEEPL/ JULY001/2016-17	Date: 18 th July, 2016
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: Amtipani Mines (Working Pit)	
Sample collected on: 21.06.2016	
Received: 25.06.2016	
Registered: 25.06.2016	
Test Start/End Date: 27.06.2016/29.06.2016	

LOCATION / IDENTIFICATION: Amtipani Mines (Working Pit)				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	65.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	43.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	28.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	35.4
05.	Ammonia (NH ₃)	µg/m ³	400	12.1
06.	Ozone (O ₃)	µg/m ³	180	9.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.47
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	9.8
10.	Arsenic (As)	ng/m ³	06	1.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.50

For Mahabal Enviro Engineers Pvt. Ltd.

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M/S Hindalco Industries Ltd.

Environmental Monitoring report

April - June 2016

Report no: : MEEPL/ JULY002/2016-17	Date: 18 th July, 2016
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: Amtipani Mines – Mines Office	
Sample collected on: 22.06.2016	
Received: 25.06.2016	
Registered: 27.06.2016	
Test Start/End Date: 27.06.2016/29.06.2016	

LOCATION / IDENTIFICATION: Amtipani Mines – Mines Office				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	58.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	37.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	28.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	39.5
05.	Ammonia (NH ₃)	µg/m ³	400	9.57
06.	Ozone (O ₃)	µg/m ³	180	9.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.49
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	9.8
10.	Arsenic (As)	ng/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.49

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no. : MEEPL/OCT0184/2016-17	Date: 31 st 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: 30.09.2016	
Analyse Date: 01.10.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Gurudari Pit (584.19 ha.) Netarhat Plateau	dB (A) _{Leq}	75	59.2	70	47.5	30/09/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0185/2016-17	Date: 31 st 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: 27.09.2016	
Analyse Date: 28.09.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Kujam-I (80.87 ha.) Netarhat Plateau	dB (A) L_{eq}	75	56.4	70	40.9	27.09.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no. : MEEPL/ OCT0186/2016-17	Date: 31 st 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: 27.09.2016	
Analyse Date: 28.09.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Kujam-II (157.38 ha.) Netarhat Plateau	dB (A) L_{eq}	75	58.1	70	52.7	27.09.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no. : MEEPL/ OCT0191/2016-17	Date: 31 st 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: 29.09.2016	
Analyse Date: 30.09.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Amtipani Mines Pit	dB (A) L_{eq}	75	61.8	70	59.2	29/09/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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M/S Hindalco Industries Ltd.

Environmental Monitoring report

April - June 2016

Report no: : MEEPL/ JULY003/2016-17	Date: 18 th July, 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: 22.06.2016	
Analyse Date: 11.07.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Amtipani Mines Pit	dB (A) L_{eq}	75	61.8	70	52.5	22/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no. : MEEPL/ OCT0187/2016-17	Date: 31st October, 2016
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: 30.09.2016	
Analyse Date: 01.10.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Gurudari Mines (584.19 ha.) Poclain at Haralagda Pit	dB (A) L_{eq}	75	67.3	30.09.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no. : MEEPL/ OCT0188/2016-17	Date: 31st October, 2016
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: 29.09.2016	
Analyse Date: 30.09.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Amtipani Mines Dumper at Working Pit	dB (A) L_{eq}	75	62.0	29/09/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no. : MEEPL/ OCT0189/2016-17	Date: 31st October, 2016
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: 27.09.2016	
Analyse Date: 28.09.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Kujam-II Mines (157.38 ha.) Compressor at Quarry No.4	dB (A) L_{eq}	75	72.4	27.09.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0190/2016-17	Date: 31 st October, 2016
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: 27.09.2016	
Analyse Date: 28.09.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Kujam-I Mines (80.87 ha.) Drill rig at Working Pit	dB (A) Leq	75	68.5	27.09.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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M/S Hindalco Industries Ltd.

Environmental Monitoring report

April - June 2016

Report no: : MEEPL/ JULY004/2016-17	Date: 18 th July, 2016
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: 22.06.2016	
Analyse Date: 11.07.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Amtipani Mines (190.95 ha.) Dumper at Working Pit	dB (A) L_{eq}	75	66.2	22/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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M/S Hindalco Industries Ltd.

Environmental Monitoring report

April - June 2016

Report no: : MEEPL/ JULY005/2016-17	Date: 18 th July, 2016
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: Drinking Water of Amtipani Camp	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 22.06.2016	
Received: 25.06.2016	
Registered: 25.06.2016	
Test Start/End Date: 27.06.2016/30.06.2016	

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	0.10	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.0	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	172	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	42	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	65	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	17.5	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO ₄)	mg/l	15.9	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190



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Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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E-mail: mahabalranchi@gmail.com

M/S Hindalco Industries Ltd.

Environmental Monitoring report

April - June 2016

Continuation Sheet MEEPL/ JULY005/2016-17

14	Nitrate (as NO ₃)	mg/l	1.29	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.13	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	17.1	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	4.2	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115
20	Iron (as Fe)	mg/l	0.16	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	0.014	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-C.N.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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M/S Hindalco Industries Ltd.

Environmental Monitoring report

April - June 2016

Continuation Sheet
MEEPL/ JULY005/2016-17

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	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	Methoysl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23	Phorate	µg/L	N.D	2	US EPA 8141A-1994
24	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A-1994
25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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M/S Hindalco Industries Ltd.

Environmental Monitoring report

April - June 2016

Report no: : MEEPL/ JULY006/2016-17	Date: 18 th July, 2016
Sample described by customer : SURFACE WATER	
Client Name: Hindalco Industries Limited	
Client Address : Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: SURFACE WATER	
Marks on Sample: Location: Amitipani Mines (190.95 ha.) Rain Water harvesting pond	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 22.06.2016	
Received: 25.06.2016	
Registered: 25.06.2016	
Test Start/End Date: 27.06.2016/30.06.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<2	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.18	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.5	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	195	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	50	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	72	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	10.9	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO ₄)	mg/l	6.2	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190



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Environmental Monitoring report

April - June 2016

Continuation Sheet
MEEPL/JULY006/2016-17

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
14	Nitrate (as NO ₃)	mg/l	1.79	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.47	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.15	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	19.4	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	4.1	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	0.09	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	0.019	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	0.42	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	0.0005max	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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Environmental Monitoring report

April - June 2016

Continuation Sheet
MEEPL/JULY006/2016-17

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	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.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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

The composite cost during the year 2016-17 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha), Pakhar (8.09 Ha), Pakhar (35.12Ha), Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.97 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud, Orsa pat(196.36 Ha), Bhusar (65.31 Ha)& Bimarla Bauxite Mines (134.52 Ha).

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

**Part of OB removed cost.

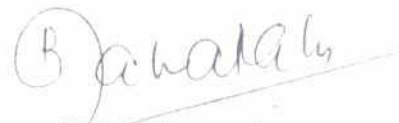

(B.K. Mahapatra)
Convener (Quality & Environment)

Date: 05.09.16

Office Order

Environmental Cell has been re-constituted at Amtipani Bauxite Mines (Area 190.95 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. Manoj Kumar Singh (Coordinator)
2. Mr. Abhijit Majhi (Member)
3. Mr Ajoy Singh (Member)
4. Mr A.P. Singh (Member)



(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 (In HA)	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
Serengdag	140.06	0.00	0.00	0.00	0.00
Pakhar Buxite Mines	115.13	3.01	3.57	130110.00	166727.48
Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
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	0.00	0.00	0.00	0.00
Hisri New	14.55	0.73	0.54	36358.00	25610.00
Bhusar	65.31	0.00	0.00	0.00	0.00
Bagru	75.41	0.00	0.00	0.00	0.00
Minerals & Minerals Limited					
Pakhar Buxite Mines	109.51	3.45	4.06	154100.00	196818.79
Pakhar Buxite Mines	15.58	0.00	0.00	0.00	0.00
Bimarla Bauxite Mines	134.37	2.71	1.25	52675.00	63084.44

Monitored water level (FY 2016-17)

Location (Mines)	Elevation (Mtr)	Well type	Monsoon		Post Monsoon	
			Inside ML	Outside ML	Inside ML	Outside ML
Bagru Plateau (Hisri new, Bagru & Bhusar)	905	Open Well		21.32		22.70
	910	Open Well		24.38		24.56
	915	Open Well		29.00		28.43
	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	
	1081	Hand Pump	39.60		31.30	
	1055	Hand Pump	33.00		27.50	
	1066	Hand Pump	27.75		26.25	
Gurdari	1045	Hand Pump	29.30		27.70	
	1061	Hand Pump	28.30		24.90	
	1059	Hand Pump	38.10		36.15	
	1075	Hand Pump	27.90		26.75	
	1075	Hand Pump	28.30		29.30	
Kujam I, Kujam II & Amtipani Mines	1040	Open Well		33.90		21.85
	1041	Open Well		33.65		24.80
	1064	Hand Pump	31.50		28.60	
	1052	Hand Pump	22.35			21.05
Chiro Kukud	1148	Hand Pump	33.40		28.30	
	1151	Hand Pump	37.60		31.80	
	1084	Hand Pump	34.20		33.15	