



Ref No: HIL/LHD/JP (M)/MoEF/ 1248

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 Shrengdag (155.81 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period April'16-Sep'16.**

Ref: **Environmental Clearance letter no J-11015/125/2006-IA II(M) dated 13th April 2007**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Shrengdag (155.81 ha) 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
<mef@ori.nic.in>, <mef@nic.in>, <mef.or@nic.in>, mef.or@nic.in

Compliance of conditions laid down in Environmental Clearance

SHRENGDAG BAUXITE MINES(155.81 Ha)

Period: April'16-Sep'16

J-11015/125/2006-IA.II (M)Dated 13.4.2007

Sl No	Conditions	Compliance Status
Specific Conditions		
1	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Implementations of the stipulated conditions are fulfilled.
2	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	Mining Lease is granted by the State Govt. after due consideration and Cabinet approval on recommendation of DC who is the competent authority to give permission for using the agricultural land for non-agricultural purpose
3	The exploration shall be completed within 2.5 years and thereafter the proponent shall come up with a firm proposal for mining, based on the estimated reserves. The reclamation plan, post mine land use and progressive greenbelt development plan shall also be prepared and submitted with the revised proposal.	Mining is going on as per duly approved mining plan. The reclamation plan, post mine land use and progressive greenbelt development plan have been covered in Mining Plan/Mining scheme which is approved by IBM.
4	Mining shall not intersect groundwater. The mine working shall be restricted to ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	Mining is being done at shallow depth. As per the survey, the ground water table is reported at 45-60 m below ground level. Hence there will be no intersecting of the ground water table due to mining activities.
5	The Project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operations.	It is being ensured. No natural water course has been obstructed as yet.
6	Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Top soil is being stacked properly with proper slope as and when required for its use for reclamation and rehabilitation. Sequential backfilling and reclamation of the mined out area are being exercised during mining operation..
7	The waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. Monitoring and	Overburden and waste rock from the mining pit are being used for back filling. Backfilling and plantation detail provided in

	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.	Annexure. (Enclosed Annexure).
8	<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>	<p>No run off is being generated from mining activities. However, to collect and manage rainwater during monsoon, part of mined out area is used as settling tank. Settled water is being used for sprinkling of quarry, roads, green belt development, etc.</p> <p>Catch drain , siltation pond , garland drain is being maintained and constructed with the progress of mining activity as and when required.</p>
9	Plantation shall be raised in an area of 70.68 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.	<p>Progressive plantation is being carried out in and around the ML area .</p> <p>Around 1500 plantation carried out during the FY2016-17.</p>
10	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	<p>A plan has already been prepared on the basis of discussions with Scientists of State unit office of Central Ground Water Board, Ranchi to implement suitable conservation measures to augment ground water resources in the area and is also submitted to the Regional Director, Central Ground Water Board, Patna, for any suggestions. Recommendation of CGWB shall be implemented to augment the ground water resources of the area. Copy of letter already submitted to regional office.</p> <p>As on date we are carrying out suitable conservation measures to augment ground</p>

		water resources in the mining area viz. catch drain, siltation pond, garland drain, contour bunds etc
11	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground water Authority and Regional Director Central Ground Water Board.	It is being monitored. Monitoring report is enclosed as Annexure
12	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Rainwater harvested during rainy season is being used for sprinkling on haul roads and raising plantation. Spring water is drawn from the down the hill pockets ponds for drinking purposes. Hence, as per the terms and conditions in Part III, Clause 6 of Mining lease deed, we have obtained permission from the Deputy Commissioner for drawl of water from the surface water bodies. Water cess is being paid to JSPCB on regular basis. No water from natural sources are being used for mining purposes.
13	Water monitoring both for quality and quantity shall be carried out at four locations namely one spring and three streams. Sixmonthly report should be submitted to the Ministry of Environment and Forest and its Regional Office located at Bhubneshwar.	Analysis of water quality at four locations is being carried out. Analysis data for period of reporting is enclosed in Annexure .
14	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	To keep vehicular emissions in control, company vehicles are periodically checked and repaired as and when required. All the transporters have been instructed to obtain PUC for their vehicles from the competent authority and submit to the concerned officer for verification.
15	Drills should either be operated with dust extractors or should be equipped with water injection system.	Wet drilling is being done in the drill holes for dust suppression.
16	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for	Blasting at Mines is done at fixed blasting period i.e. 12.00 Noon to 1.00 PM on working days. Mobile mining activities are

	control of ground vibration and to arrest fly rocks and boulders should be implemented.	not being practiced during blasting. All the precautionary and mitigative measures to control ground vibration and to arrest fly rocks is being exercised.
17	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	There is no proposal for production enhancement as of now.
18	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	There is no effluent from mine, hence ETP has not been installed. The sewage water from domestic uses is being collected through individual Septic Tank and Soak Pits.
19	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Indian Python, <i>Presbytis phayrei</i> , <i>Melururus ursinus</i> etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	Action plan for conservation of flora and fauna spotted in the study area was prepared after due consultation with the local forest Dept. Implementation is in process. The measures like boundary pillars, fire watcher at forest boundary, transportation of bauxite during day time only etc are under implementation
20	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	Final Mine Closure Plan of surrendered (part) area duly approved by Indian Bureau of Mines. Final mine closure plan along with details of corpus fund will be submitted to MoEF in due time.

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	Being adhered to.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Excavation of Over Burden and Bauxite is being done as per the approved calendar plan. Details of excavation, quantum of mineral, OB, etc have been furnished for the financial year 2016-17 is Annexed

3	Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Monitoring locations have been fixed after due consultation of SPCB and regular monitoring is being carried out. Monitoring Reports is enclosed as Annexure
4	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Monitoring locations have been fixed after due consultation of SPCB. Monitoring Reports is enclosed as Annexure
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Two nos. of water tanker have been provided for sprinkling of water on haul roads and are generally being engaged at the places where active mining is in progress to contain fugitive dust. Water spraying at loading, unloading, etc is also being done..
6	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs.	Noise monitoring is being done regularly at various locations of the work zone area. Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and ear muffs.
7	Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There is no effluent discharge from Mine. Workshop has an Oil Catchment Pit to trap oil and grease. It is being ensured to make it operational and effective as and when required and accordingly the O&M department is taking its due care.
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.	Complied. Use of Personal Protective Equipment (PPE) by the individuals is being ensured. All the mine workers are being regularly and periodically sent to our own hospital for health checkup for any contraction of diseases due to exposure in dusty and noisy areas. Training on safety, health and environmental aspects of mining is being regularly imparted through VT centre and

		also through various other training programmes conducted by the State Government, recognized agencies, etc.
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.	Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively. Copy enclosed
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.	Not applicable, as this is an operating mine.
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.	Statement of budgetary provision and actual expenses for the year 2016-17 for environmental protection measure is enclosed. Separate funds earmarked for environmental protection measures.
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.
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 Officer, Bhubaneshwar, Central Pollution Control Board 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	Complied. Copies, of the advertisement made in the local newspapers, have already been submitted to the Regional Office.

<p>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

SHERENG DAG 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
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2	Sherengdag Plateau- Jalim & Sanai Mines Pit
3	Sherengdag Plateau-Sherengdag A Mines Pit
4	Sherengdag Plateau-Sherengdag B Mines Pit
5	Sherengdag Plateau- Nav Prathmik Vidyalay (Dhanka Toli)
6	Sherengdag Plateau-Sherengdag B Village
	NOISE LEVEL
1	Near Weigh Bridge
2	Shrengdag A Mines Pit
	SPOT NOISE LEVEL
1	Near Poclain Shrengdag Mines (155.81 ha.)
	DRINKING WATER
1	Sherengdag Mines Office



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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0137/2016-17	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: Sherengdag Plateau - <i>Sherengdag Weight 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: Sherengdag Plateau - <i>Sherengdag Weight Bridge</i>				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	64.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	39.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	27.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	34.9
05.	Ammonia (NH ₃)	µg/m ³	400	13.7
06.	Ozone (O ₃)	µg/m ³	180	17.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.1
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	4.7
10.	Arsenic (As)	ng/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no: : MEEPL/ OCT0138/2016-17	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: Sherengdag Plateau - <i>Jalim & Sanai Mines Pit</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: Sherengdag Plateau - <i>Jalim & Sanai Mines Pit</i>				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 μm) PM ₁₀	$\mu\text{g}/\text{m}^3$	100	49.1
02.	Particulate Matter (size less than 2.5 μm) PM _{2.5}	$\mu\text{g}/\text{m}^3$	60	29.7
03.	Sulphur Dioxide (SO ₂)	$\mu\text{g}/\text{m}^3$	80	25.9
04.	Nitrogen Dioxide (NO ₂)	$\mu\text{g}/\text{m}^3$	80	32.4
05.	Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	400	12.5
06.	Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	180	16.1
07.	Carbon Monoxide (CO)	mg/m^3	02	0.1
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.02
09.	Nickel (Ni)	ng/m^3	20	4.3
10.	Arsenic (As)	ng/m^3	06	2.3
11.	Benzene (C ₆ H ₆)	$\mu\text{g}/\text{m}^3$	05	2.1
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0139/2016-17	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: Sherengdag Plateau - <i>Sherengdag A Mines Pit</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: Sherengdag Plateau - <i>Sherengdag A Mines Pit</i>				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	50.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	34.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	22.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	33.7
05.	Ammonia (NH ₃)	µg/m ³	400	14.2
06.	Ozone (O ₃)	µg/m ³	180	15.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.1
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	4.1
10.	Arsenic (As)	ng/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.4

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0140/2016-17	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: Sherengdag Plateau-Sherengdag B Mines Pit	
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: Sherengdag Plateau - Sherengdag B Mines Pit				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	46.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	18.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	16.4
05.	Ammonia (NH ₃)	µg/m ³	400	13.5
06.	Ozone (O ₃)	µg/m ³	180	16.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.3
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	4.7
10.	Arsenic (As)	ng/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0141/2016-17	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: Sherengdag Plateau – Nav Prathmik Vidyalay (Dhanka Toli)	
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: Sherengdag Plateau- Nav Prathmik Vidyalay (Dhanka Toli)				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	37.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	19.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	22.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	34.7
05.	Ammonia (NH ₃)	µg/m ³	400	13.1
06.	Ozone (O ₃)	µg/m ³	180	16.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.3
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	4.9
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

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/ OCT0142/2016-17	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: Sherengdag Plateau- Sherengdag B Village	
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: Sherengdag Plateau- Sherengdag B Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	41.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	18.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	31.7
05.	Ammonia (NH ₃)	µg/m ³	400	12.2
06.	Ozone (O ₃)	µg/m ³	180	16.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.4
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	3.4
10.	Arsenic (As)	ng/m ³	06	1.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no. : MEEPL/ OCT0143/2016-17	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: 27.09.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Near Weigh Bridge - Shrengdag Plateau	dB (A) Leq	75	55.9	70	46.2	27/09/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no : MEEPL/ OCT0144/2016-17	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: 27.09.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Sherengdag A Mines Pit	dB (A) Leq	75	69.5	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/ OCT0145/2016-17	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: 28.09.2016	
Analyse Date: 28.09.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Sherengdag Mines (155.81 ha.) Sherengdag Plateau Near Poclairn	dB (A) Leq	75	70.4	28/09/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY - SEPTEMBER 2016

Report no. : MEEPL/ OCT0146/2016-17	Date: 31st October, 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: Sherengdag Mines Office	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 27.09.2016	
Received: 27.09.2016	
Registered: 27.09.2016	
Test Start/End Date: 28.09.2016/30.09.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	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	0.1	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.2	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	73.4	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	59.2	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	71.8	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	20.7	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO ₄)	mg/l	4.9	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Continuation Sheet
MEEPL/OCT0146/2016-17

Report no: : MEEPL/ OCT0146/2016-17				Date: 31 st October, 2016	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Nitrate (as NO ₃)	mg/l	1.18	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.02	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.03	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	19	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	2.0	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	0.01	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

JULY - SEPTEMBER 2016

Continuation Sheet
MEEPL/ OCT0146/2016-17

Report no: : MEEPL/ OCT0146/2016-17				Date: 31 st October, 2016	
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
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.

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

APRIL TO JUNE 2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

CONTENT

	LOCATION
	AMBIENT AIR QUALITY
1	Sherengdag Plateau-Sherengdag Weight Bridge
2	Sherengdag Plateau- Jalim & Sanai Mines Pit
3	Sherengdag Plateau-Sherengdag A Mines Pit
4	Sherengdag Plateau-Sherengdag B Mines Pit
5	Sherengdag Plateau- Jalim & Sanai Village
6	Sherengdag Plateau-Sherengdag B Village
	NOISE LEVEL
1	Near Weigh Bridge
2	Shrengdag A Mines Pit
	SPOT NOISE LEVEL
1	Near Poclain Shrengdag Mines (155.81 ha.)
	DRINKING WATER
1	Sherengdag Mines Office
	SOIL ANALYSIS
1	Sherengdag A Mines Pit



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY062/2016-17	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: Sherengdag Plateau - <i>Sherengdag Weight Bridge</i>	
Sample collected on: 22.06.2016	
Received: 26.06.2016	
Registered: 26.06.2016	
Test Start/End Date: 26.06.2016/29.06.2016	

LOCATION / IDENTIFICATION: Sherengdag Plateau - <i>Sherengdag Weight Bridge</i>				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 μm) PM ₁₀	$\mu\text{g}/\text{m}^3$	100	51.0
02.	Particulate Matter (size less than 2.5 μm) PM _{2.5}	$\mu\text{g}/\text{m}^3$	60	38.9
03.	Sulphur Dioxide (SO ₂)	$\mu\text{g}/\text{m}^3$	80	24.5
04.	Nitrogen Dioxide (NO ₂)	$\mu\text{g}/\text{m}^3$	80	30.1
05.	Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	400	10.5
06.	Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	180	12.5
07.	Carbon Monoxide (CO)	mg/m^3	02	0.1
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.01
09.	Nickel (Ni)	ng/m^3	20	5.2
10.	Arsenic (As)	ng/m^3	06	2.3
11.	Benzene (C ₆ H ₆)	$\mu\text{g}/\text{m}^3$	05	2.0
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY063/2016-17	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: Sherengdag Plateau - <i>Jalim & Sanai Mines Pit</i>	
Sample collected on: 22.06.2016	
Received: 26.06.2016	
Registered: 26.06.2016	
Test Start/End Date: 26.06.2016/29.06.2016	

LOCATION / IDENTIFICATION: Sherengdag Plateau - <i>Jalim & Sanai Mines Pit</i>				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 μm) PM ₁₀	$\mu\text{g}/\text{m}^3$	100	45.9
02.	Particulate Matter (size less than 2.5 μm) PM _{2.5}	$\mu\text{g}/\text{m}^3$	60	33.5
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	31.5
05.	Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	400	11.9
06.	Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	180	13.5
07.	Carbon Monoxide (CO)	mg/m^3	02	0.1
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.01
09.	Nickel (Ni)	ng/m^3	20	5.2
10.	Arsenic (As)	ng/m^3	06	2.3
11.	Benzene (C ₆ H ₆)	$\mu\text{g}/\text{m}^3$	05	2.1
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.4

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY064/2016-17	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: Sherengdag Plateau - <i>Sherengdag A Mines Pit</i>	
Sample collected on: 23.06.2016	
Received: 27.06.2016	
Registered: 27.06.2016	
Test Start/End Date: 27.06.2016/30.06.2016	

LOCATION / IDENTIFICATION: Sherengdag Plateau - <i>Sherengdag A Mines Pit</i>				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	42.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	25.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	31.5
05.	Ammonia (NH ₃)	µg/m ³	400	12.1
06.	Ozone (O ₃)	µg/m ³	180	11.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.1
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	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.5

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY065/2016-17	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: Sherengdag Plateau-Sherengdag B Mines Pit	
Sample collected on: 23.06.2016	
Received: 27.06.2016	
Registered: 27.06.2016	
Test Start/End Date: 27.06.2016/30.06.2016	

LOCATION / IDENTIFICATION: Sherengdag Plateau - Sherengdag B Mines Pit				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	39.8
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	24.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	29.8
05.	Ammonia (NH ₃)	µg/m ³	400	13.1
06.	Ozone (O ₃)	µg/m ³	180	12.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.4
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	5.2
10.	Arsenic (As)	ng/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.4

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY067/2016-17	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: Sherengdag Plateau - Jalim & Sanai Village	
Sample collected on: 23.06.2016	
Received: 27.06.2016	
Registered: 27.06.2016	
Test Start/End Date: 27.06.2016/30.06.2016	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Jalim & Sanai Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	32.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	23.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	32.5
05.	Ammonia (NH ₃)	µg/m ³	400	14.5
06.	Ozone (O ₃)	µg/m ³	180	16.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.3
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	ng/m ³	20	5.2
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY068/2016-17	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: Sherengdag Plateau- Sherengdag B Village	
Sample collected on: 23.06.2016	
Received: 27.06.2016	
Registered: 27.06.2016	
Test Start/End Date: 27.06.2016/30.06.2016	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag B Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	33.5
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	25.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	35.1
05.	Ammonia (NH ₃)	µg/m ³	400	16.2
06.	Ozone (O ₃)	µg/m ³	180	19.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.4
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	ng/m ³	20	5.3
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.4

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY069/2016-17	Date: 18th 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: 23.06.2016	
Analyse Date: 23.06.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Near Weigh Bridge - Shrengdag Plateau	dB (A) L _{eq}	75	53.6	70	49.0	23/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY070/2016-17	Date: 18th 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: 22.06.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Sherengdag A Mines Pit	dB (A) Leq	75	66.2	70	50.5	22/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no. : MEEPL/ JULY071/2016-17	Date: 18th 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 Spot Noise	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 23.06.2016	
Analyse Date: 23.06.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Sherengdag Mines (155.81 ha.) Sherengdag Plateau Near Poclairn	dB (A) Leq	75	68.1	23/06/2016

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY072/2016-17	Date: 18th 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: Sherengdag Mines Office	
Sample collected on: 22.06.2016	
Quantity: 5 L X 2 No. PVC Can	
Received: 23.06.2016	
Registered: 23.06.2016	
Test Start/End Date: 23.06.2016/26.06.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	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	0.1	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.1	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	38.5	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	52.1	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	65.2	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	18.3	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO ₄)	mg/l	5.2	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Continuation Sheet
MEEPL/JULY072/2016-17

Report no: : MEEPL/ JULY072/2016-17				Date: 18 th July, 2016	
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
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	0.02	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.03	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	22	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	2.1	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	0.10	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	0.02	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-S ₂ -C 4-175 & F 4-178



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Continuation Sheet
MEEPL/JULY074/2016-17

Report no : MEEPL/ JULY072/2016-17				Date: 18 th July, 2016	
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.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY073/2016-17	Date: 18 th July, 2016
Sample Description: Soil Analysis	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type:	
Marks on Sample: Location: Sherendag A Mines Pit	
Sample collected on: 23.06.2016	
Received: 26.06.2016	
Registered: 26.06.2016	
Test Start/End Date: 26.06.2016/30.06.2016	

PARAMETER		UNIT	Location
Colour	--	-	Gray
Texture	--	-	Loamy Sand
Bulk Density	--	gm/cm ³	1.0
Water Holding Capacity	--	%	20.1
pH	--	-	5.20
Electrical Conductivity	--	µs/cm	125
Organic Carbon	--	%	0.53
Organic Matter	--	%	0.91
Available Nitrogen	--	mg/kg	120
Available Phosphorus	--	mg/kg	23.5
Available Potassium	--	mg/kg	283
Exchangeable Calcium	Ca	meq/100gm	35.2
Exchangeable Magnesium	Mg	meq/100gm	1.89
Exchangeable Sodium	Na	meq/100gm	1.92
Exchangeable Potassium	K	meq/100gm	1.92
Total Exchangeable Bases		meq/100gm	34.5
Manganese	Mn	mg/kg	0.69
Arsenic	As	mg/kg	4.50
Silica	SiO ₂	%	70.2
Aluminum	Al ₂ O ₃	%	4.12
Iron	Fe ₂ O ₃	%	50.2
Calcium	CaO	%	9.90
Magnesium	MgO	%	1.23
Sodium	Na ₂ O	%	0.80
Potassium	K ₂ O	%	0.49
Sulphate	SO ₄	%	0.85

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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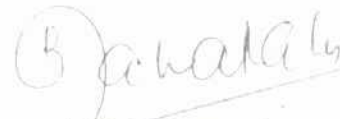


BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2016-17

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)
Convenor (Quality & Environment)

Date: 05.09.16

Office Order

Environmental Cell has been re-constituted at Shrengdag Bauxite Mines (Area 155.81 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. A. Anabarsu – Mines Manager (Coordinator)
2. Mr. Tathagota Das (Geologist) Member
3. Mr. Satish Kumar (Foreman) Member
4. Mr. C S Prasad (Foreman) 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
Serangdag	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	