



Ref No: HIL/LHD/JP (M)/MoEF/ 1254

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 Kujam-II 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-11015/297/2011M(M) dated 21<sup>st</sup> July 2015.**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Kujam-II (157.38Ha)** 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  
Kujam II Bauxite Mines (157.38 Ha) -Capacity 3.0 LTPA  
Period:Period: April'16-Sep'16

**MoEF & CC Environment Clearance No...J-11015/297/20114AM (M)dated 21.07.2015**

Sl no	Specific Conditions	Compliance
I	Implementation of all the conditions as specified in earlier EC vide no. J-11015/242/2005-1A.II (M), dated 14.08.2006 and shall be complied by M/s Hindalco Industries Limited.	Implemented. Certified compliance reports duly submitted to MoEF Regional Office, Ranchi.
li	Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court of Jharkhand and any other Court of Law, if any, as may be applicable to this project.	Agreed.
lii	The environmental clearance is valid for 13 years as the life of mine is 13 years.	Agreed, This may extend subject to enhancement of reserve in due course of mining.
Iv	Environmental clearance is subject to obtaining clearance, if any, under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	Not applicable to this project.
V	The Project Proponent shall obtain Consent to Operate from the State Pollution Control Board, Jharkhand and effectively implement all the conditions stipulated therein.	Consent to Operate has been obtained for enhanced production capacity. Applied online as per statutory of JSPCB. Conditions are being complied.
Vi	No mining activities will be allowed in forest area for which the Forest Clearance is not available.	There is no forest area involved within the lease.
Vii	Project Proponent has to conduct a study from an Institution of Repute on the impact of Bauxite dust on Crop Productivity for agricultural land located around mines and	Agreed. We are in the process of consultation with Birsa Agricultural University to conduct the study.

	mitigation measures to be implemented by Project Proponent to reduce the impact.	
Viii	Project Proponent has to implement the Recommendation by the Institute for Crops most suited in this environment and training to the farmers to switch over to new cropping system which will sustain nutrient loading.	Agreed. We are in the process of consultation with Birsa Agricultural University to conduct the study.
Ix	Implementation of the Recommendations of National Institute of Miners Health for ensuring good occupational environment for mine workers.	Occupational health study is being done as per the recommendation of the 10 <sup>th</sup> & 11 <sup>th</sup> safety committee proposal.
X	Use of mechanical devices with total mechanization and reducing use of explosives.	Being explored.
Xi	Concurrent reclamation of mined out areas.	Concurrent back filling/ reclamation is being carried out in mined out areas.
Xii	Use of effective sprinkler system to suppress fugitive dust on haul road and other transport road and comprehensive study for slope stabilization of mine benches and OB dumps in one year.	Effective water sprinkling is being done to suppress fugitive dust on haul road by mobile water tanker during dry season.
xiii	Implementation of Action Plan on the issues raised during the Public Hearing. The proponent shall complete all the tasks as per the action plan submitted with the budgetary provisions during the public hearing held on 11.07.2013. The issues raised during Public Hearing were discussed during the Meeting, which inter-alia, included, local employment, regular water spraying to prevent pollution and socio economic development i.e. water facilities, medical and education etc. As per the villager's requirements, it was informed by the Proponent that they would prefer to take care of local employment, assistance in medical, drinking water and education facilities etc. These have been incorporated in the action plan with budgetary provisions.	Being implemented as per the issues raised during the Public Hearing dated 11.07.2013.
xiv	Implementation of Recommendation of	Regular type compliance is being



	Compliance Report by Regional Office of Ministry of Environment, Forest and Climate Change.	done.
xv	Washing of all transport vehicles should be done inside the mining lease.	Being complied.
xvi	A comprehensive ore evacuation plan for all existing mines of the Project Proponent in the area may be made by streamlining transport of ore based on proper study.	Evacuation plan has been prepared and transport has been streamlined.
xvii	Regular and periodical medical examination of the workers engaged in the project shall be carried out and records maintained; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smokers, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly.	Regular and periodical medical examination of the workers engaged in the project is being carried out and records are maintained.
xviii	Implementation of Environment Management Policy of the Company w.r.t, judicious use of Mineral resources for growth & development synchronizing mining & environment with prosperity.	Environment Management Policy of the Company w.r.t, judicious use of Mineral resources for growth & development synchronizing mining & environment with prosperity is being implemented.
xix	Specific programmes be initiated especially covering education, health care, livelihood generation, infrastructure development & promotion of sports & culture for SC/ST population; Regular monitoring of ground water table to be carried out, as also the depth of water available in the network of existing wells, by constructing new piezometers as required.	All these aspects are covered under CSR activities being carried out in and around the area.  Regular monitoring of water table is being done at the points and report submitted to JSPCB and MoEF & CC.
xx	Effective safeguard measures, such as regular water sprinkling, shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul roads, loading and unloading points and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Regular water sprinkling is being carried out in critical areas such as haul roads, loading and unloading points and transfer points. Ambient Air Quality parameters are found within the norms prescribed by the Central Pollution Control Board in this regard.

xxi	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. Occupational health and safety measures for workers who are having some ailments like BP, diabetes, or are habitual smokers, should have health check-up once in six months.	Pre-placement medical examination and periodical medical examination of the workers engaged in the project are being carried out and records maintained as per statute.
xxii	Stratified layer system of plantation to be adopted in consultation with the State Govt., which would effectively mitigate the additional dust, sound and vibration.	Plantation is being carried out in consultation with local forest Dept. Around 3000 saplings have been planted during 2016-17 within this lease.
xxiii	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and ground water for the project.	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 for drinking purposes. Water cess is being paid regularly to Jharkhand State Pollution Control Board.  No natural water resource/ground water is being used for mining purpose.
xxiv	The mining operations shall be restricted to above ground water table and it should not intersect groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment, Forest and Climate Change and Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	The mining operations will be restricted to above ground water table only.
xxv	The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded. Project should obtain 'PUC' certificate from all the vehicles from	Mobile water tanker with sprinkling facility has been provided along haul roads, loading, unloading & at transfer points to arrest dust emission.  Regular maintenance of vehicles are undertaken to minimize vehicular emission. All measures are being



	authorized pollution testing centre.	taken to control vehicular emission. Vehicles with PUC only are allowed to ply for transportation of Bauxite.  Bauxite transportation are being carried out through covered trucks.
xxvi	There shall be planning, developing and implementing facility of rainwater harvesting measures on long term basis in consultation with Regional Director, Central Groundwater Board and implementation of conservation measures to augment ground water resources in the area in consultation with Central Ground Water Board.	A detail rain water harvesting plan to augment ground water has been prepared and submitted to Ground water Board. Viz Water harvesting pond, garland drain, recharge pit etc are crated for augmentation of ground water.
xxvii	Regular monitoring of ground water table to be carried out at the upstream and depth of water available in the dug well is to be measured. Monitoring to be done by establishing a network of existing wells and constructing new piezometers.	Monitoring of ground water table is being carried out regularly and reported along with six monthly compliance report.
xxviii	Monitoring of Ambient Air Quality to be carried out based on the Notification 2009, as amended from time to time by the Central Pollution Control Board.	Monitoring of Ambient Air Quality is being done as per statute.
xxix	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations.	No natural watercourse and/or water resources will be obstructed due to any mining operations.
xxx	The top soil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time. The maximum height of the dumps shall not exceed 8m and width 20 m and overall slope of the dumps shall be maintained to 45°. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated	Top soil is being stacked separately & used for reclamation and rehabilitation at appropriate time.  The over burden (OB) are being stacked at earmarked site not being kept for long time. The height of the dump is maintained and stabilized as per statute.  Monitoring and management of rehabilitated areas is continuing through supervision.

	<p>area shall be backfilled and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office located at Ranchi on six monthly basis.</p>	
xxxii	<p>Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. The drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps to prevent run off of water and flow of sediments directly into the river and other water bodies 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 sit material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.</p>	<p>Drains, settling tank, catch drains and siltation ponds of appropriate size are being maintained around the mine working, mineral and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. Harvested water is being used for watering the mine area, roads, green belt development etc.</p>
xxxiii	<p>Dimension of the retaining wall at the toe of over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall data.</p>	<p>Retaining wall at the toe of over burden dumps and OB benches within the mine to check run-off is being provided as per necessity.</p>
xxxiiii	<p>Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease</p>	<p>Regular water sprinkling is being carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul road, loading and unloading point and transfer points. Ambient Air Quality parameters found within the norms prescribed by the Central Pollution Control Board in this regard.</p>



	shall be carried out and records maintained.	
xxxiv	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented. Drills shall either be operated with dust extractors or equipped with water injection system.	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.
xxxv	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, Mobile toilets, mobile SIP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Necessary infrastructures are in place.
xxxvi	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest and Climate Change. 5 years in advance of final mine closure for approval.	A Final Mine Closure Plan along with details of Corpus Fund will be submitted to the Ministry of Environment, Forest and Climate Change in appropriate time for approval.

Sl no	Specific Conditions	Compliance
i	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment, Forest and Climate Change.	No change in mining technology and scope of working will be made without prior approval of the Ministry of Environment, Forest and Climate Change.
ii	No change in the calendar plan including excavation, quantum of bauxite ore and waste should be made.	Being adhered to.
iii	The critical parameters such as PM10 (size less than 10 micro meter), PM2.5 (size less than 2.5 micro meter), NO in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of	Monitoring of AAQ and water quality is being done as per statute and the monitored data is being uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain.



	<p>discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS))}. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The circular No. J-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change, which is available on the website of the Ministry <a href="http://www.envfor.nic.in">www.envfor.nic.in</a> shall also be referred in this regard for its compliance.</p>	
iv	<p>Four ambient air quality-monitoring stations should be established in the core zone as well as buffer zone for PM10, PM2.5, SO2 &amp; NOx monitoring. Location of the stations should be decided based on the ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. Data on ambient air quality should be regularly submitted to the Ministry including its Regional Office located at Ranchi and the State Pollution Control Board/Central Pollution Control Board once in six month.</p>	<p>Ambient air monitoring stations established and monitoring is being undertaken in consultation with State Pollution Control Board. Monitoring report annexed.</p>
v	<p>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.</p>	<p>Mobile water tanker with sprinkling facility has been provided along the haul roads, loading, unloading &amp; at transfer points to arrest dust emission.</p>
vi	<p>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.</p>	<p>Necessary measures are being implemented to control of noise levels below 85 dBA.</p> <p>PPEs are provided to workers.</p>
vii	<p>Regular monitoring of water quality upstream and downstream of water</p>	<p>Regular monitoring of water quality upstream and downstream of water bodies</p>

	bodies shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Groundwater Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Board.	is being carried out and record of monitoring data maintained and submitted to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, State Pollution Control Board and Central Pollution Board.
viii	Regular monitoring of ground water level and quality shall be carried out in constructing new piezometers during the mining operation. The monitoring shall 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 Ministry of Environment, Forest and Climate Change and its Regional Office, Ranchi, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Regular monitoring of ground water level and quality is being carried out and reported.
ix	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 19m May, 1993 and 31' December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Presently, there is no effluent discharge from Mine.
x	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.	As it is operating mines -PPE's provided. Periodic training on safety & occupational health is being imparted to workers and health checks up conducted.
xi	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 has been established under the control of a Senior Executive. (Copy enclosed)



xii	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 Ranchi.	The fund earmarked for environmental protection measures is being kept in separate account. Year wise expenditure is being reported to the Ministry and its Regional Office located at Ranchi.
xiii	The project authorities should inform to the Regional Office located at Ranchi regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	This is an operative mines hence provision related to financial closure is not applicable.
xiv	The Regional Office of this Ministry located at Ranchi 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.
xv	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Pollution Control Board and State Pollution Control Board.	Six monthly report on the status of the EC is being duly and timely submitted.
xvi	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Pollution Control Board and State Pollution Control Board,	Six monthly report on the status of the EC is being duly and timely submitted.
xvii	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.	Copy of Clearance letter submitted to concerned Panchayat.

xviii	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.	Copy of the clearance letter provided to the concerned Offices.
xix	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 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, Forest and Climate Change at <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located Ranch'.	Published in two newspapers widely circulated (Hindustan and DainikJagran) on 27.07.2015. Paper cutting enclosed.





# *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
	<b>AMBIENT AIR QUALITY</b>
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
	<b>NOISE LEVEL</b>
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
	<b>SPOT NOISE LEVEL</b>
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.)



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(600 m from Hotel Rukhmini Palace Turn Opp Toyota Show Room. Near J B Sawant Bus Stop)  
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**Hindalco Industries : Environmental Monitoring Report**

**JULY – SEPTEMBER 2016**

<b>Report no: : MEEPL/ OCT0176/2016-17</b>	<b>Date: 31<sup>st</sup> October, 2016</b>
<b>Sample described by customer: AMBIENT AIR QUALITY MONITORING</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample: Location: <b>Quarry 6B Gurdari Mines</b>	
Sample collected on: <b>30.09.2016</b>	
Received: <b>01.10.2016</b>	
Registered: <b>01.10.2016</b>	
Test Start/End Date: <b>02.10.2016/04.10.2016</b>	

LOCATION / IDENTIFICATION: Quarry 6B Gurdari Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	54.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	17.4
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	28.1
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.7
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	15.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.52
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	5.8
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.1
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.6
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring Report**

**JULY - SEPTEMBER 2016**

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

LOCATION / IDENTIFICATION: Weigh Bridge Gurdari Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	49.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	25.0
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	18.4
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	27.9
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	16.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.59
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.02
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	5.3
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.52
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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# Mahabal Enviro Engineers Pvt. Ltd.

## Branch Office:

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E-mail:mahabalranchi@gmail.com

**Hindalco Industries : Environmental Monitoring Report**

**JULY – SEPTEMBER 2016**

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

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring Report**

**JULY – SEPTEMBER 2016**

<b>Report no. :</b> MEEPL/ OCT0179/2016-17	<b>Date:</b> 31 <sup>st</sup> October, 2016
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample: Location: <b>Kujam II Quarry</b>	
Sample collected on: <b>27.09.2016</b>	
Received: <b>28.09.2016</b>	
Registered: <b>28.09.2016</b>	
Test Start/End Date: <b>28.09.2016/30.09.2016</b>	

LOCATION / IDENTIFICATION: Kujam II Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	51.8
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29.6
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	16.2
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	28.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	15.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	14.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.61
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	7.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.1
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY - SEPTEMBER 2016

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

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

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2016

Report no: : MEEPL/ OCT0181/2016-17	Date: 31 <sup>st</sup> 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 II</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 I Quarry II				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 $\mu\text{m}$ ) PM <sub>10</sub>	$\mu\text{g}/\text{m}^3$	100	57.5
02.	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) PM <sub>2.5</sub>	$\mu\text{g}/\text{m}^3$	60	33.7
03.	Sulphur Dioxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	21.4
04.	Nitrogen Dioxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	80	29.2
05.	Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	400	13.1
06.	Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	180	20.5
07.	Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	02	0.62
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.03
09.	Nickel (Ni)	$\text{ng}/\text{m}^3$	20	7.1
10.	Arsenic (As)	$\text{ng}/\text{m}^3$	06	2.5
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	$\mu\text{g}/\text{m}^3$	05	3.2
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.35

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring Report**

**JULY – SEPTEMBER 2016**

Report no: : MEEPL/ OCT0182/2016-17	Date: 31 <sup>st</sup> 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 <sub>10</sub>	µg/m <sup>3</sup>	100	71.9
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	40.4
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	25.7
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	37.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	13.4
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	12.9
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.49
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.1
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.73
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.9
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	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 <sup>st</sup> 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 <sub>10</sub>	µg/m <sup>3</sup>	100	67.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	35.4
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	22.9
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	35.0
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	12.1
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	10.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.45
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	1.7
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.0
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring Report**

**JULY - SEPTEMBER 2016**

<b>Report no. :</b> MEEPL/OCT0184/2016-17	<b>Date:</b> 31 <sup>st</sup> October, 2016
<b>Sample described by customer:</b> Measurement of Noise	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Metter</b>	
Data Collection Date: <b>30.09.2016</b>	
Analyse Date: <b>01.10.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Gurudari Pit (584.19 ha.) Netarhat Plateau	dB (A) $L_{eq}$	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**

<b>Report no. : MEEPL/ OCT0185/2016-17</b>	<b>Date: 31<sup>st</sup> October, 2016</b>
<b>Sample described by customer: Measurement of Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Metter</b>	
Data Collection Date: <b>27.09.2016</b>	
Analyse Date: <b>28.09.2016</b>	

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**

<b>Report no. : MEEPL/ OCT0186/2016-17</b>	<b>Date: 31<sup>st</sup> October, 2016</b>
<b>Sample described by customer : Measurement of Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Metter</b>	
Data Collection Date: <b>27.09.2016</b>	
Analyse Date: <b>28.09.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Kujam-II (157.38 ha.) Netarhat Plateau	dB (A) Leq	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**

<b>Report no. : MEEPL/ OCT0187/2016-17</b>	<b>Date: 31<sup>st</sup> October, 2016</b>
Sample described by customer: <b>Measurement of Spot Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>30.09.2016</b>	
Analyse Date: <b>01.10.2016</b>	

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring Report**

**JULY – SEPTEMBER 2016**

<b>Report no. : MEEPL/ OCT0188/2016-17</b>	<b>Date: 31<sup>st</sup> October, 2016</b>
Sample described by customer: <b>Measurement of Spot Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: <b>29.09.2016</b>	
Analyse Date: <b>30.09.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
<b>Antipani Mines</b> Dumper at Working Pit	dB (A) <sub>Leq</sub>	75	62.0	29/09/2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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# Mahabal Enviro Engineers Pvt. Ltd.

## Branch Office:

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

Mobile No: +91 9431.102.102 / +91 9955.358.262,

E-mail: mahabalranchi@gmail.com

**Hindalco Industries : Environmental Monitoring Report**

**JULY – SEPTEMBER 2016**

<b>Report no. : MEEPL/ OCT0189/2016-17</b>	<b>Date: 31<sup>st</sup> October, 2016</b>
<b>Sample described by customer : Measurement of Spot Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Metter</b>	
Data Collection Date: <b>27.09.2016</b>	
Analyse Date: <b>28.09.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
<b>Kujam-II Mines (157.38 ha.) Compressor at Quarry No.4</b>	dB (A) Leq	75	72.4	27.09.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring Report**

**JULY – SEPTEMBER 2016**

<b>Report no. : MEEPL/ OCT0190/2016-17</b>	<b>Date: 31<sup>st</sup> October, 2016</b>
<b>Sample described by customer : Measurement of Spot Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Metter</b>	
Data Collection Date: <b>27.09.2016</b>	
Analyse Date: <b>28.09.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
<b>Kujam-I Mines (80.87 ha.)</b> Drill rig at Working Pit	dB (A) $L_{eq}$	75	68.5	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 <sup>st</sup> 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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# Eco Ventures Pvt. Ltd.

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Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,  
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

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

## Mahabal Enviro Engineers Pvt. Ltd.

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

### NETARHAT 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
	<b>AMBIENT AIR QUALITY</b>
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
	<b>NOISE LEVEL</b>
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
	<b>SPOT NOISE LEVEL</b>
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.)
	<b>DRINKING WATER</b>
1	Near Office Gurdari
2	Kajum I Quarry
3	Kajum II (Office)
4	Amptipani Quarry
	<b>SURFACE WATER QUALITY</b>
1	Gurdari Mines (584.19 ha.) Rain Water harvesting pond
2	Kujam-I Mines (80.87 ha.) Rain Water harvesting pond
3	Kujam-II Mines (157.38 ha.) .Rain Water harvesting pond
4	Amitipani Mines (190.95 ha.) Rain Water harvesting pond







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**Hindalco Industries : Environmental Monitoring report**

**APRIL-JUNE 2016**

<b>Report no: :MEEPL/ JULY026/2016-17</b>	<b>Date: 18<sup>th</sup> July, 2016</b>
<b>Sample described by customer: AMBIENT AIR QUALITY MONITORING</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample: Location: <b>Quarry 6B Gurdari Mines</b>	
Sample collected on: <b>20.06.2016</b>	
Received: <b>23.06.2016</b>	
Registered: <b>23.06.2016</b>	
Test Start/End Date: <b>23.06.2016/25.06.2016</b>	

LOCATION / IDENTIFICATION: Quarry 6B Gurdari Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	42.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	31.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	22.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	30.2
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	11.2
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	13.2
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.56
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.03
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	7.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.1
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	2.7
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

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SENIOR EXECUTIVE



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

<b>Report no :</b> MEEPL/ JULY027/2016-17	<b>Date:</b> 18 <sup>th</sup> July, 2016
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample: Location: <b>Weigh Bridge Gurdari Mines</b>	
Sample collected on: <b>20.06.2016</b>	
Received: <b>23.06.2016</b>	
Registered: <b>23.06.2016</b>	
Test Start/End Date: <b>23.06.2016/26.06.2016</b>	

LOCATION / IDENTIFICATION: Weigh Bridge Gurdari Mines				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	40.0
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29.8
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	23.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	27.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	13.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	16.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.70
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	7.9
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.8
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.2
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.34

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY028/2016-17	Date: 18 <sup>th</sup> 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: Kujam II Weigh Bridge	
Sample collected on: 21.06.2016	
Received: 27.06.2016	
Registered: 27.06.2016	
Test Start/End Date: 27.06.2016/29.06.2016	

LOCATION / IDENTIFICATION: Kujam II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	44.2
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	35.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	23.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	26.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	14.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	17.8
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.72
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.2
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.0
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.1
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.38

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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

<b>Report no :</b> MEEPL/ JULY029/2016-17	<b>Date:</b> 18 <sup>th</sup> July, 2016
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample: Location: <b>Kujam II Quarry</b>	
Sample collected on: <b>21.06.2016</b>	
Received: <b>23.06.2016</b>	
Registered: <b>23.06.2016</b>	
Test Start/End Date: <b>23.06.2016/27.06.2016</b>	

LOCATION / IDENTIFICATION: Kujam II Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	42.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	31.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	22.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	28.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	16.9
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	19.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.75
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.06
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.6
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.6
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.

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SENIOR EXECUTIVE



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**Hindalco Industries : Environmental Monitoring report**

**APRIL-JUNE 2016**

<b>Report no. :</b> MEEPL/ JULY030/2016-17	<b>Date:</b> 18 <sup>th</sup> July, 2016
<b>Sample described by customer:</b> AMBIENT AIR QUALITY MONITORING	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample: Location: <b>Kujam I Quarry I</b>	
Sample collected on: <b>21.06.2016</b>	
Received: <b>23.06.2016</b>	
Registered: <b>23.06.2016</b>	
Test Start/End Date: <b>23.06.2016/27.06.2016</b>	

LOCATION / IDENTIFICATION: Kujam I Quarry I				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	43.6
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	33.5
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	23.5
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	28.5
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	17.6
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	19.5
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.75
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.06
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	8.6
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.3
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.6
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring report**

**APRIL-JUNE 2016**

<b>Report no. : MEEPL/ JULY031/2016-17</b>	<b>Date: 18<sup>th</sup> July, 2016</b>
<b>Sample described by customer: AMBIENT AIR QUALITY MONITORING</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Type: <b>AMBIENT AIR QUALITY MONITORING</b>	
Marks on Sample: Location: <b>Kujam I Quarry II</b>	
Sample collected on: <b>21.06.2016</b>	
Received: <b>23.06.2016</b>	
Registered: <b>23.06.2016</b>	
Test Start/End Date: <b>23.06.2016/27.06.2016</b>	

LOCATION / IDENTIFICATION: Kujam I Quarry II				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM <sub>10</sub>	µg/m <sup>3</sup>	100	42.1
02.	Particulate Matter (size less than 2.5 µm) PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	31.2
03.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	29.1
04.	Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	25.6
05.	Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	14.5
06.	Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	180	20.1
07.	Carbon Monoxide (CO)	mg/m <sup>3</sup>	02	0.78
08.	Lead (Pb)	µg/m <sup>3</sup>	1.0	0.04
09.	Nickel (Ni)	ng/m <sup>3</sup>	20	7.5
10.	Arsenic (As)	ng/m <sup>3</sup>	06	2.6
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	05	3.7
12.	Benzo (a) Pyrene	µg/m <sup>3</sup>	01	0.37

For Mahabal Enviro Engineers Pvt. Ltd.

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# Mahabal Enviro Engineers Pvt. Ltd.

## Branch Office:

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**Hindalco Industries : Environmental Monitoring report**

**APRIL-JUNE 2016**

<b>Report no. : MEEPL/ JULY032/2016-17</b>	<b>Date: 18<sup>th</sup> July, 2016</b>
<b>Sample described by customer: Measurement of Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Metter</b>	
Data Collection Date: <b>20.06.2016</b>	
Analyse Date: <b>20.06.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Gurudari Pit (584.19 ha.) Netarhat Plateau	dB (A) Leq	75	62.1	70	49.5	20/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report no: : MEEPL/ JULY033/2016-17	Date: 18 <sup>th</sup> 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: 21.06.2016	
Analyse Date: 21.06.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Kujam-I (80.87 ha.) Netarhat Plateau	dB (A) L <sub>eq</sub>	75	53.2	70	42.5	21.06.2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

<b>Report no. :</b> MEEPL/ JULY034/2016-17	<b>Date:</b> 18 <sup>th</sup> July, 2016
<b>Sample described by customer :</b> 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: 21.06.2016	
Analyse Date: 21.06.2016	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Kujam-II (157.38 ha.) Netarhat Plateau	dB (A) $L_{eq}$	75	50.5	70	55.3	21.06.2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

<b>Report no. : MEEPL/ JULY035/2016-17</b>	<b>Date: 18<sup>th</sup> July, 2016</b>
Sample described by customer: <b>Measurement of Spot Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 21.06.2016	
Analyse Date: 21.06.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
Gurudari Mines (584.19 ha.) Poclain at Haralagda Pit	dB (A) $L_{eq}$	75	64.2	21.06.2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

<b>Report no. : MEEPL/ JULY036/2016-17</b>	<b>Date: 18<sup>th</sup> July, 2016</b>
Sample described by customer: <b>Measurement of Spot Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: Instrumental, using Sound level Metter	
Data Collection Date: 21.06.2016	
Analyse Date: 21.06.2016	

Location/Identification	Unit	Limit (day)	Result	Dates
<b>Amtipani Mines</b> Dumper at Working Pit	dB (A) $L_{eq}$	75	60.1	21/06/2016

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring report**

**APRIL-JUNE 2016**

<b>Report no. : MEEPL/ JULY037/2016-17</b>	<b>Date: 18<sup>th</sup> July, 2016</b>
<b>Sample described by customer : Measurement of Spot Noise</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Metter</b>	
Data Collection Date: <b>21.06.2016</b>	
Analyse Date: <b>21.06.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
<b>Kujam-II Mines (157.38 ha.)</b> Compressor at Quarry No.4	dB (A) $L_{eq}$	<b>75</b>	<b>62.2</b>	<b>21.06.2016</b>

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring report**

**APRIL-JUNE 2016**

<b>Report no :</b> MEEPL/ JULY038/2016-17	<b>Date:</b> 18 <sup>th</sup> July, 2016
<b>Sample described by customer :</b> Measurement of Spot Noise	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: <b>Lohardaga</b>	
Postal Code: <b>835203</b>	
State: <b>Jharkhand</b>	
Country: <b>India</b>	
Sample Description: <b>Measurement of Spot Noise</b>	
Sampling Method: <b>Instrumental, using Sound level Metter</b>	
Data Collection Date: <b>21.06.2016</b>	
Analyse Date: <b>21.06.2016</b>	

Location/Identification	Unit	Limit (day)	Result	Dates
<b>Kujam-I Mines (80.87 ha.)</b> Drill rig at Working Pit	dB (A) Leq	75	59.5	21.06.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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**Hindalco Industries : Environmental Monitoring report**

**APRIL-JUNE 2016**

<b>Report no. : MEEPL/ JULY039/2016-17</b>	<b>Date: 18<sup>th</sup> July, 2016</b>
Sample described by customer : <b>DRINKING WATER-POTABILITY</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: <b>DRINKING WATER-POTABILITY</b>	
Marks on Sample: Location: <b>Drinking Water of Gurdari Mine Office</b>	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 10.02.2016	
Received: 11.02.2016	
Registered: 11.02.2016	
Test Start/End Date: 12.02.2016/16.02.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.12	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	6.8	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	152	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	39.8	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	61.2	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	12.5	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	16.9	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries : Environmental Monitoring report

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## Continuation Sheet MEEPL/JULY039/2016-17

14	Nitrate (as NO <sub>3</sub> )	mg/l	1.35	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.14	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.14	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	12.5	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	4.0	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.12	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.014	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.006	0.02 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-CNC & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-S2-C 4-175 & F 4-178



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Continuation Sheet  
MEEPL/JULY039/2016-17

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
<b>Pesticides Residues</b>					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindance)	µg/L	<0.01	2	US EPA 508-1995
10	α-HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	ε-HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
16	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23	Phorate	µg/L	N.D	2	US EPA 8141A-1994
24	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A-1994
25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE







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**Hindalco Industries : Environmental Monitoring report**

**APRIL-JUNE 2016**

<b>Report No: MEEPL/MAR 040/2015-16</b>	<b>Date: 31<sup>st</sup> March 2016</b>
<b>Sample Description: DRINKING WATER-POTABILITY</b>	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: <b>DRINKING WATER-POTABILITY</b>	
Marks on Sample: Location: <b>Drinking Water Kujam-I Mines (80.87 Ha.) Netarhat Plateau</b>	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 21.06.2016	
Received: 21.06.2016	
Registered: 21.06.2016	
Test Start/End Date: 21.06.2016/24.06.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.21	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.3	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	160	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Mono-chloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	59	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	65	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	15.5	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	6.3	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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# Mahabal Enviro Engineers Pvt. Ltd.

## Branch Office:

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E-mail: mahabalaranchi@gmail.com

Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

## Continuation Sheet MEEPL/MAR 040/2015-16

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	0.08	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.25	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.16	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	15.2	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	4.0	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.10	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.05	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.01	0.02 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-S2-C 4-175 & F 4-178



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

## Continuation Sheet MEEPL/MAR 040/2015-16

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
<b>Pesticides Residues</b>					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10	α-HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	δ-HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
16	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23	Phorate	µg/L	N.D	2	US EPA 8141A-1994
24	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A-1994
25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey  
SENIOR EXECUTIVE



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report No: <b>MEEPL/MAR 041/2015-16</b>	Date: <b>31<sup>st</sup> March 2016</b>
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-PORTABILITY	
Marks on Sample: Location: Drinking Water Kujam-II Mines (157.38. Ha.) Netarhat Plateau	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 11.02.2016	
Received: 12.02.2016	
Registered: 12.02.2016	
Test Start/End Date: 12.02.2016/16.02.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.12	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.2	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	170	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-G, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-G, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	79	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-G, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	69.2	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	14.5	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	11.0	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

## Continuation Sheet MEEPL/MAR 041/2015-16

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	2.0	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.22	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.07	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	16.5	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	7.1	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.12	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.01	0.02 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-S2-C 4- 175 & F 4-178



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Continuation Sheet  
MEEPL/MAR 041/2015-16

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





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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Report No: MEEPL/MAR 042/2015-16	Date: 31 <sup>st</sup> March 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: Gurdari Mines(584.19 ha.) Rain Water harvesting Pond	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 11.02.2016	
Received: 12.02.2016	
Registered: 12.02.2016	
Test Start/End Date: 12.02.2016/16.02.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.40	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.0	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	200	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	62	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	61	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	12.0	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	11.2	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

## Continuation Sheet MEEPL/MAR 042/2015-16

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	1.20	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.33	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.12	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	21.2	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	3.2	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.03	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	N.D	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as Hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.01	0.02 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> Ed. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> Ed. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-S <sub>2</sub> -C 4-175 & F 4-178



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Continuation Sheet  
MEEPL/MAR 042/2015-16

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



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

<b>Report No:</b> MEEPL/MAR 043/2015-16	<b>Date:</b> 31 <sup>st</sup> March 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	
Received: 08.02.2016	
Registered: 08.02.2016	
Marks on Sample: Location:Kujam-I Mines (80.87 ha.) .Rain Water harvesting pond	
Sample collected on:08.02.2016	
Quantity: 5 L X 2 No. PVC Can	
Test Start/End Date: 08.02.2016/13.02.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.2	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.4	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	155	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	42	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	65	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	9.0	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	5.1	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries : Environmental Monitoring report

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## Continuation Sheet MEEPL/MAR 043/2015-16

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	0.2	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.09	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.29	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	29.0	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	3.0	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.1	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	N.D	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.07	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.01	0.02 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> ED. 2012, 4500-S2-C 4- 175 & F 4-178



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Continuation Sheet  
MEEPL/MAR 043/2015-16

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



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

<b>Report No: MEEPL/MAR 044/2015-16</b>	<b>Date: 31<sup>st</sup> March 2016</b>
Sample described by customer : SURFACE WATER	
Client Name: <b>Hindalco Industries Limited</b>	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: SURFACE WATER	
Marks on Sample: Location: <b>Kujam-II Mines (157.38 ha.) Rain Water harvesting pond</b>	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 21.06.2016	
Received: 21.06.2016	
Registered: 21.06.2016	
Test Start/End Date: 21.06.2016/24.06.2016	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.39	1 Max	APHA 22 <sup>nd</sup> Ed. 2012, 2130-B, 2-13
5	pH	--	7.1	6.5-8.5	APHA 22 <sup>nd</sup> Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	91	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO <sub>3</sub> )	mg/l	52	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO <sub>3</sub> )	mg/l	50	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	13.5	250 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO <sub>4</sub> )	mg/l	11.0	200 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-so4-e, 4-190



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Hindalco Industries : Environmental Monitoring report

APRIL-JUNE 2016

Continuation Sheet  
MEEPL/MAR 044/2015-16

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO <sub>3</sub> )	mg/l	1.20	45 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NO <sub>3</sub> -E, 4-125
15	Fluoride (as F)	mg/l	0.14	1 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.24	0.5 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	30.9	75 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	7.2	30 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 <sup>nd</sup> Ed. 2012, 4500-NH <sub>3</sub> -F, 4-115
20	Iron (as Fe)	mg/l	0.09	0.3 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 <sup>nd</sup> Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.15	5 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 3112-B, 3-18
30	Mercury (as Hg)	mg/l	N.D	0.01 max	APHA 22 <sup>nd</sup> Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.01	0.02 max	APHA 22 <sup>nd</sup> Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 <sup>nd</sup> Ed. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	N.D	0.001 max	APHA 22 <sup>nd</sup> Ed. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 <sup>nd</sup> Ed. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 <sup>nd</sup> Ed. 2012, 4500-S <sub>2</sub> -C 4-175 & F 4-178



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APRIL-JUNE 2016

Continuation Sheet  
MEEPL/MAR 044/2015-16

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
<b>Microbiological Analysis</b>					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22 <sup>nd</sup> Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
<b>Pesticides Residues</b>					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10	α -HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	δ- HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
16	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	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



Date: 05.09.16

**Office Order**

Environmental Cell has been re-constituted at Kujam II Bauxite Mines (Area 157.38 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. V. S. Singh Mines Manager (Coordinator)
2. Mr. Mahendra Bhagat –Foreman (Member)
3. Mr. Gupteshwar Choudury -Foreman (Member)



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



**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)

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
<b>Minerals &amp; Minerals Limited</b>					
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	