

HIL/LHD/ENV/MoEF/869

Date: 26.11.2020

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'20 to September'20.

Ref: Environmental Clearance letter no J-11015/297/2011M (M) dated 21st July 2015.

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Kujam-II (157.38 ha)** Bauxite Mining project of **M/s Hindalco Industries Limited** located in Gumla, Jharkhand for the period April'20 to September'20. The lease detail is as below.

Lease area (ha)	Production Capacity (MT)	Lease Period
157.38	300000	24.03.2006 to 23.03.2056

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED


(Basudev Gangopadhyay)
GM (Geology & Environment)

Enclosure: - As Above

CC: ro.ranchi-mef@gov.in, mef@ori.nic.in, mef@nic.in, mef.or@nic.in, mccb.cpcb@nic.in, zolkatta.cpcb@nic.in, ranchiispcb@gmail.com, roranchi47@gmail.com

Name of the Project : **Kujam II Bauxite Mine (157.38 ha)**
M/s Hindalco Industries Ltd

Environment Clearance No & date : **J-11015/297/2011-IA.II (M) dated 21.07.2015**

Period of compliance Report : **From 1st April 2020 to 30th September 2020**

S 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 by Regional Office, Ranchi.
ii	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.	Noted.
iii	The environmental clearance is valid for 13 years as the life of mine is 13 years.	Noted, This may extend subject to enhancement of reserve in due course of mining in line with EIA notification as applicable.
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.	We understand this is not applicable to this project. Mine is located outside eco sensitive zone.
v	The Project Proponent shall obtain Consent to Operate from the State Pollution Control Board, Jharkhand and effectively implement all the conditions stipulated therein.	Existing consent to Operate is valid till 31 Dec 2020. We have applied on line renewal of CTO for further validity in JSPCB portal.
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 mitigation measures to be implemented by Project Proponent to reduce the impact.	Study conducted and report prepared. It may be noted that agriculture activity is being carried out in nearby areas and no adverse effect of mining operation is noticed. Mitigation measures suggested in study report is being implemented.
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.	Study conducted and report prepared. It may be noted that agriculture activity is being carried out in nearby areas and no adverse effect of mining operation is noticed. Mitigation measures suggested in study report is being implemented.

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 safety conference proposal.
x	Use of mechanical devices with total mechanization and reducing use of explosives.	We are using Nonel for blasting and the use of explosive is optimum. Rock breaker is being used to reduce the use of explosive. Soft strata is being completely excavated without use of any explosive. We are also exploring use of eccentric ripper for excavation of hard strata to reduce the use of explosive.
xi	Concurrent reclamation of mined out areas.	Concurrent back filling/ reclamation are 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. No external dump as on date.
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 Compliance Report by Regional Office of Ministry of Environment, Forest and Climate Change.	Recommendations by Regional Office, Ranchi are being complied.
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 prepared and transport has been streamlined. SOP are framed and in place.
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 project is being carried out and records are being maintained.
xviii	Implementation of Environment Management Policy of the Company w.r.t, judicious use of Mineral	Environment Management Policy of the Company w.r.t, judicious use of Mineral

	resources for growth & development synchronizing mining & environment with prosperity.	resources for growth & development synchronizing mining & environment with prosperity is being implemented. Mining is being carried out in a scientific and eco-friendly manner as per Mining Plan.
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. Piezometer has been installed to regular monitoring of ground water.
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. Total 2063 nos. of saplings have been planted during FY 2020-21 within this lease. In addition to this agricultural activities (bio plantation) is going on reclaimed land. Green belt development programme is in progress with progress of mining activities.
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. No natural water resource/ground water is being used for mining purpose. No Objection Certificate (NOC) for ground water abstraction for Kujam II mines has been obtained for drinking purpose only.
xxiv	The mining operations shall be restricted to above	The mining operations are restricted to

	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.	above ground water table only and in future also same will be adhered to.
xxv	The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUCC 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 authorized pollution testing centre.	Mobile water tanker with sprinkling facility has been provided a long 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 taken to control vehicular emission. The vehicles are being covered with tarpaulin while transportation of mineral.
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 suitable measures like water harvesting pond, garland drain etc. are created for augmentation of ground water in Mine.
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 reports. Piezometer has been installed to regular monitoring of ground water.
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.	AAQM monitoring report is carried out regularly. Report is attached as Annexure-1.
xxix	The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations.	It is being ensured that no natural water course and/or water resource is being and 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 area	Top soil is being stacked separately & used for reclamation and rehabilitation at appropriate time. There is no external OB dump. The excavated area are being back filled concurrently and back filled area is used for afforestation/agricultural activity as required Monitoring and management of rehabilitated areas is continuing through supervision.

	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.	
xxxii	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 de silted 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 de silted at regular intervals.	<p>No run-off is generated from mining activities. However, to collect & manage rain water during monsoon, part of mined out area is used as settling tank for the runoff. Rain water stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary.</p> <p>Catch drains, Garland drains of appropriate size have been constructed both around the mine pit to prevent run off of water and flow of sediments directly into the agricultural field and water bodies.</p> <p>Sump of adequate capacity is being provided and maintained as required.</p> <p>There is no external OB dump.</p>
xxxiii	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.	There is no external dump within mine lease area as on date. Hence not applicable.
xxxiiii	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 shall be carried out and records maintained.	<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> <p>The quality parameter of the surface water has been monitored, report is attached as Annexure I</p>
xxxv	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	<p>Blasting time is fixed during Lunch Time i.e. 1.00 PM -2.00 PM. Controlled blasting method is in practice. Ground vibration study has been conducted by IIT, Kharagpur.</p> <p>All efforts are being taken to mitigate</p>

	system.	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 STP, 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.	Local laborers are employed who resides nearby mines. Necessary infrastructures for office staff are in place at Netarhat plateau. Toilets constructed under CSR programmes. Drinking water, mobile health care facility are provided under CSR programmes.
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 as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same. Based on present resource estimate and peak rated production capacity mentioned in EC, the tentative balance life is around 6 years. However, after completion of further detailed exploration, the resources estimate vis-à-vis balance life of the mine may change based on final resource estimate, EC capacity and cut-off grade at that point of time.

General Conditions

S No	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.	Noted.
ii	No change in the calendar plan including excavation, quantum of bauxite ore and waste should be made.	Calendar plan including excavation, quantum of bauxite ore and waste is being done as per IBM approved mining plan scheme. Report is attached herewith as Annexure 4.
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 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	Monitoring of AAQ and water quality is being done. 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. Report is attached as Annexure 1.

	Ministry of Environment, Forest and Climate Change, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	
iv	Four ambient air quality-monitoring stations should be established in the core zone as well as buffer zone for PM10, PM2.5, SO2 & 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.	We have already established four ambient air quality monitoring stations in core zone as well as buffer zone. Monitoring is being carried out and reported to concern authorities. Report is attached as Annexure 1.
v	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Mobile water tanker with sprinkling facility has been provided along the haul roads, loading, unloading & at transfer points to arrest dust emission.
vi	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.	Necessary measures are being implemented to control of noise levels below 85 dB (A). PPEs are provided to workers.
vii	Regular monitoring of water quality upstream and downstream of water 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 Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Board.	Water quality upstream and downstream of water bodies are being monitored, report is attached as Annexure_1.
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.	We are not using ground water for any mining purpose. There is no chance of intersection of ground water table during mining operation at present and in future. Piezometer has been installed for monitoring of ground water level. Water quality and level report are attached herewith as Annexure 1.
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.	There is no industrial wastewater generation within mine lease area. We are not discharging any waste water outside mine lease area. Effluent treatment mechanism (Oil-grease trap) are

	Oil and grease trap should be installed before discharge of workshop effluents.	provided where the maintenance of machine is carried out.
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 such as safety shoes, ear plug, goggles are being 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 attached as Annexure 3.
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.	Year wise expenditure is being reported to the ministry and its Regional Office located at Ranchi. Report is attached as Annexure 2.
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.	Noted & 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 reports on 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	Six monthly report on the status of the EC is being duly and timely submitted.

	Board and State Pollution Control Board,	
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 concern 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 http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Ranchi	Published in two newspapers widely circulated (Hindustan and Dainik Jagran) on 27.07.2015. Paper cutting enclosed.



Signature



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

KUIAM – II BAUXITE MINE ENVIRONMENTAL MONITORING REPORT

APRIL 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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CONTENT

	LOCATION – KUJAM – II
	AMBIENT AIR QUALITY – CORE ZONE
1	Kujam – II Weigh Bridge
2	Jawadih Quarry
3	Nawatoli Quarry
4	Bhattipat
	AMBIENT NOISE
	SPOT NOISE
	DG STACK EMISSION
	DRINKING WATER ANALYSIS
	STREAM WATER – UP STREAM & DOWN STREAM
1	Dhardhari Nala





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0449/2020-21	Date: 11 th May, 2020
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: 20.04.2020	

LOCATION / IDENTIFICATION: Kujam – II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	84
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	43
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.9
05.	Ammonia (NH ₃)	µg/m ³	400	6.5
06.	Ozone (O ₃)	µg/m ³	180	10.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	µg/m ³	20	2.4
10.	Arsenic (As)	µg/m ³	06	2.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.24

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0450/2020-21 Date: 11th May, 2020

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: *Jawadih Quarry*

Sample collected on: *20.04.2020*

LOCATION / IDENTIFICATION: Jawadih Quarry

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	90
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	43
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.7
05.	Ammonia (NH ₃)	µg/m ³	400	4.9
06.	Ozone (O ₃)	µg/m ³	180	9.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.38
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	2.3
10.	Arsenic (As)	µg/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0451/2020-21	Date: 11 th May, 2020
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: Nawatoli Quarry	
Sample collected on: 20.04.2020	

LOCATION / IDENTIFICATION: Nawatoli Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	84.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	38
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.2
05.	Ammonia (NH ₃)	µg/m ³	400	5.7
06.	Ozone (O ₃)	µg/m ³	180	10.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	2.2
10.	Arsenic (As)	µg/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0452/2020-21	Date: 11 th May, 2020
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: Bhattipat	
Sample collected on: 20.04.2020	

LOCATION / IDENTIFICATION: Bhattipat				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	73.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	36.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.8
06.	Ozone (O ₃)	µg/m ³	180	10.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	2.9
10.	Arsenic (As)	µg/m ³	06	2.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

April 2020

Report No: MEEPL/MAY/0465/2020-21	Date: 11 th May, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Dipa Kujam Village	
Sample collected on: 22.04.2020	

LOCATION / IDENTIFICATION: Near Dipa Kujam Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	65.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.7
05.	Ammonia (NH ₃)	µg/m ³	400	3.4
06.	Ozone (O ₃)	µg/m ³	180	10.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	2.8
10.	Arsenic (As)	µg/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

April 2020

Report No: MEEPL/MAY/0466/2020-21	Date: 11 th May, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Chathasari Village	
Sample collected on: 22.04.2020	

LOCATION / IDENTIFICATION: Near Chathasari Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	56.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.8
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	8.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	2.7
10.	Arsenic (As)	µg/m ³	06	2.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

April 2020

Report No: MEEPL/MAY/0467/2020-21	Date: 11 th May, 2020
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>Near Shakuapani Village</i>	
Sample collected on: 22.04.2020	

LOCATION / IDENTIFICATION: Near Shakuapani Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	23.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	3.8
06.	Ozone (O ₃)	µg/m ³	180	9.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.23
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	2.5
10.	Arsenic (As)	µg/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.24

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

April 2020

Report No: MEEPL/MAY/0468/2020-21	Date: 11 th May, 2020
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>Near Pakri Gada Village</i>	
Sample collected on: 22.04.2020	

LOCATION / IDENTIFICATION: Near Pakri Gada Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	54
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.4
05.	Ammonia (NH ₃)	µg/m ³	400	4.7
06.	Ozone (O ₃)	µg/m ³	180	8.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	2.6
10.	Arsenic (As)	µg/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0453/2020-21	Date: 11 th May, 2020
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: 20.04.2020	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result
Kujam – II Bauxite Mines	dB (A) _{Leq}	75	66.4	70	59.5

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0454/2020-21

Date: 11th May, 2020

Sample described by customer : Measurement of Spot Noise

Client Name: **Hindalco Industries Limited**

Client Address: **Lohardaga**

Postal Code: **835203**

State: **Jharkhand**

Country: **India**

Sample Description: **Measurement of Spot Noise**

Sampling Method: **Instrumental, using Sound level Metter**

Data Collection Date: **20.04.2020**

Location/Identification	Unit	Limit (day)	Result
Kujam-II Mines (157.38 ha.) Compressor at Quarry No.4	dB (A) L_{eq}	75	74.7

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0455/2020-21			Date: 11 th May, 2020	
Sample described as: FLUE GAS				
Name of the Industry: M/S HINDALCO INDUSTRIES LIMITED				
Address: Mines Division, Lohardaga, Jharkhand, Pin-835302				
Date & time of Sampling: 23.04.2020				
Sampling Site: Kujam - II Mines Office				
A. General Information about Stack <ul style="list-style-type: none"> Stack connected to: DG-Set (20 KVA) Emission due to Burning of H.S.D Material OF construction: PCC Capacity. 20 KVA 				
B. Physical characteristics of stack <ul style="list-style-type: none"> Height of the stack (a) from ground level: 1.465 m Diameter of the Stack at Sampling point: 0.20 m Height of the sampling point from GL. 1.465 m 				
C. Analysis/Characteristic of Stock <ul style="list-style-type: none"> Fuel used: H.S.D Fuel Consumption: 2.5 lt/hr 				
D. Analysis Report				
Sl. No.	PARAMETERS	PROTOCOL	RESULTS	Limits as per MoEF G.S.R.448(E)
1.	Temperature of Emission (°C)	IS 11255 Part: 3 1985 (Realf 2008)	320	---
2.	Barometric pressure (mm of Hg)	IS 11255 Part: 3 1985 (Realf 2008)	754	---
3.	Velocity of Gas (m/Sec)	IS 11255 Part: 3 1985 (Realf 2008)	7.7	---
4.	Quantity of Gas flow (Nm ³ /hr)	IS 11255 Part: 3 1985 (Realf 2008)	418	---
5.	Concentration of CO ₂ (% v/v)	IS 11255 Part: 3 1985 (Realf 2008)	3.4	5.0
6.	Concentration of CO (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2008)	0.64	--
7.	Concentration of SO ₂ (mg/Nm ³)	USEPA-6C	63.9	--
8.	Concentration of NO ₂ (gm/kw-h)	USEPA-7E	1.82	9.2
9.	Concentration of Particulate Matters (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2003)	0.19	0.3
E. Pollution Control Device Details of pollution control devices attached with the stack: Nil				
F. Remarks: Nil				

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0456/2020-21	Date: 11 th May, 2020
Sample described by customer : DRINKING WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: DRINKING WATER	
Marks on Sample: Location: Kujam – II Drinking Water	
Sample collected on: 20.04.2020	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.2	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	6.8	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+ -B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	124	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO ₃)	mg/l	26.9	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	30.1	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	5.8	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO ₄)	mg/l	4.5	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Continuation Sheet

MEEPL/MAY/0456/2020-21

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO ₃)	mg/l	1.4	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.12	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.10	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	27	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	1.6	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115
20	Iron (as Fe)	mg/l	0.15	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.02	0.02 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-CNC & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	N.D	0.001 max	APHA 22 nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-S2-C 4-175 & F 4-178





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Continuation Sheet
MEEPL/MAY/0456/2020-21

S.No	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method Reference
Microbiological Analysis					
1.	Total Colliforms	MPN/100 mL	N.D	<1.1	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69
2.	E-Coli	MPN/100 mL	N.D	Absent	APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9-76
Pesticides Residues					
3.	p,p DDT	µg/L	N.D	1	US EPA 508-1995
4.	o,p DDT	µg/L	N.D	1	US EPA 508-1995
5.	p,p DDE	µg/L	N.D	1	US EPA 508-1995
6.	o,p DDE	µg/L	N.D	1	US EPA 508-1995
7.	p,p DDD	µg/L	N.D	1	US EPA 508-1995
8.	o,p DDD	µg/L	N.D	1	US EPA 508-1995
9.	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10.	α-HCH	µg/L	<0.01	0.02	US EPA 508-1995
11.	β-HCH	µg/L	N.D	0.03	US EPA 508-1995
12.	δ-HCH	µg/L	N.D	0.03	US EPA 508-1995
13.	Butachlor	µg/L	N.D	120	US EPA 508-1995
14.	Alachlor	µg/L	N.D	20	US EPA 508-1995
15.	Atrazine	µg/L	N.D	2.1	US EPA 532-2000
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	0.3	US EPA 508-1995
19.	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20.	Malathion	µg/L	N.D	185	US EPA 8141A -1994
21.	Methyl Parathion	µg/L	N.D	0.4	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	26	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 water is not contaminated.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Report No.: MEEPL/MAY/0457/2020-21	Date: 11 th May, 2020
Sample described by customer : STREAM WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: STREAM WATER	
Marks on Sample: Location: Dhardhari Nala	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 20.04.2020	

Sl. No.	Parameters	Unit	Result UP STREAM	Result DOWN STREAM	Acceptable Limit (IS 10500:2012)	Method Reference
1	Colour	Hazen	<2	<2	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.32	0.32	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	6.8	6.8	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	378	399	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	35	41	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	42	45	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	31	35	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO ₄)	mg/l	25.6	25.9	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.21	0.21	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	6.6	6.5	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

April 2020

Continuation Sheet MEEPL/MAY/0457/2020-21

Sl. No.	Parameters	Unit	Result UP STREAM	Result DOWN STREAM	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.13	0.14	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	8.9	9.1	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.07	0.07	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.02	0.02	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
24	Mercury (as hg)	mg/l	N.D	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-CNC & 4-39 & 4-44
26	Manganese (as Mn)	mg/l	N.D	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.3	7.3	7-8	APHA 20 th ED. Method 4500-og.

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

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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KUIAM – II BAUXITE MINE ENVIRONMENTAL MONITORING REPORT

MAY 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

MAY 2020

CONTENT

	LOCATION – KUJAM – II
	AMBIENT AIR QUALITY – CORE ZONE
1	Kujam – II Weigh Bridge
2	Jawadih Quarry
3	Nawatoli Quarry
4	Bhattipat





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

MAY 2020

Report no: MEEPL/JUNE/0382/2020-21	Date: 17 th June, 2020
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: 19.05.2020	

LOCATION / IDENTIFICATION: Kujam – II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	88.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	43.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.9
05.	Ammonia (NH ₃)	µg/m ³	400	5.8
06.	Ozone (O ₃)	µg/m ³	180	9.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.36
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	µg/m ³	20	2.3
10.	Arsenic (As)	µg/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

MAY 2020

Report no: MEEPL/JUNE/0383/2020-21

Date: 17th June, 2020

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: *Jawadih Quarry*

Sample collected on: *19.05.2020*

LOCATION / IDENTIFICATION: Jawadih Quarry

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	93.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	47.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.1
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	8.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	µg/m ³	20	2.6
10.	Arsenic (As)	µg/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.34

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

MAY 2020

Report no: MEEPL/JUNE/0384/2020-21	Date: 17 th June, 2020
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: Nawatoli Quarry	
Sample collected on: 19.05.2020	

LOCATION / IDENTIFICATION: Nawatoli Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	80.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	4.4
06.	Ozone (O ₃)	µg/m ³	180	9.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	2.2
10.	Arsenic (As)	µg/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

MAY 2020

Report no: MEEPL/JUNE/0385/2020-21	Date: 17 th June, 2020
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: Bhattipat	
Sample collected on: 19.05.2020	

LOCATION / IDENTIFICATION: Bhattipat				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	67.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.3
05.	Ammonia (NH ₃)	µg/m ³	400	3.6
06.	Ozone (O ₃)	µg/m ³	180	8.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.9
10.	Arsenic (As)	µg/m ³	06	1.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

MAY 2020

Report no: MEEPL/JUNE/0417/2020-21	Date: 17 th June, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Dipa Kujam Village	
Sample collected on: 23.05.2020	

LOCATION / IDENTIFICATION: Near Dipa Kujam Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	61.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.2
05.	Ammonia (NH ₃)	µg/m ³	400	2.6
06.	Ozone (O ₃)	µg/m ³	180	8.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	1.9
10.	Arsenic (As)	µg/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

MAY 2020

Report no: MEEPL/JUNE/0418/2020-21	Date: 17 th June, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Chathasari Village	
Sample collected on: 23.05.2020	

LOCATION / IDENTIFICATION: Near Chathasari Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	64.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.6
05.	Ammonia (NH ₃)	µg/m ³	400	2.6
06.	Ozone (O ₃)	µg/m ³	180	8.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	1.7
10.	Arsenic (As)	µg/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

MAY 2020

Report no: MEEPL/JUNE/0419/2020-21	Date: 17 th June, 2020
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>Near Shakuapani Village</i>	
Sample collected on: 23.05.2020	

LOCATION / IDENTIFICATION: Near Shakuapani Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	57.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	23.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.9
05.	Ammonia (NH ₃)	µg/m ³	400	2.8
06.	Ozone (O ₃)	µg/m ³	180	9.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.8
10.	Arsenic (As)	µg/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

MAY 2020

Report no: MEEPL/JUNE/0420/2020-21	Date: 17 th June, 2020
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>Near Pakri Gada Village</i>	
Sample collected on: 23.05.2020	

LOCATION / IDENTIFICATION: Near Pakri Gada Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	55.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.6
05.	Ammonia (NH ₃)	µg/m ³	400	4.3
06.	Ozone (O ₃)	µg/m ³	180	8.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.28
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	1.6
10.	Arsenic (As)	µg/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.3

For Mahabal Enviro Engineers Pvt. Ltd.

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KUIAM – II BAUXITE MINE ENVIRONMENTAL MONITORING REPORT

JUNE 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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CONTENT

	LOCATION – KUJAM – II
	AMBIENT AIR QUALITY – CORE ZONE
1	Kujam – II Weigh Bridge
2	Jawadih Quarry
3	Nawatoli Quarry
4	Bhattipat





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JUNE 2020

Report no: MEEPL/JULY/0402/2020-21	Date: 20 th July, 2020
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: 18.06.2020	

LOCATION / IDENTIFICATION: Kujam – II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	91.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	46.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.9
05.	Ammonia (NH ₃)	µg/m ³	400	5.7
06.	Ozone (O ₃)	µg/m ³	180	9.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	2.3
10.	Arsenic (As)	µg/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JUNE 2020

Report no: MEEPL/JULY/0403/2020-21

Date: 20th July, 2020

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: *Jawadih Quarry*

Sample collected on: **18.06.2020**

LOCATION / IDENTIFICATION: Jawadih Quarry

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	94.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	42.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.9
05.	Ammonia (NH ₃)	µg/m ³	400	5.3
06.	Ozone (O ₃)	µg/m ³	180	8.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.36
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	2.9
10.	Arsenic (As)	µg/m ³	06	1.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JUNE 2020

Report no: MEEPL/JULY/0404/2020-21	Date: 20 th July, 2020
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: Nawatoli Quarry	
Sample collected on: 18.06.2020	

LOCATION / IDENTIFICATION: Nawatoli Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	84.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	36.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.5
06.	Ozone (O ₃)	µg/m ³	180	9.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	1.8
10.	Arsenic (As)	µg/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JUNE 2020

Report no: MEEPL/JULY/0405/2020-21	Date: 20 th July, 2020
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: Bhattipat	
Sample collected on: 18.06.2020	

LOCATION / IDENTIFICATION: Bhattipat				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	70.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
06.	Ozone (O ₃)	µg/m ³	180	9.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.28
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	1.7
10.	Arsenic (As)	µg/m ³	06	2.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Gurdari

Environmental Monitoring Report

JUNE 2020

Report no: MEEPL/JULY/0447/2020-21	Date: 20 th July, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Dipa Kujam Village	
Sample collected on: 20.06.2020	

LOCATION / IDENTIFICATION: Near Dipa Kujam Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	57.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	8.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.3
10.	Arsenic (As)	µg/m ³	06	1.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.37

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

JUNE 2020

Report no: MEEPL/JULY/0448/2020-21	Date: 20 th July, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Chathasari Village	
Sample collected on: 20.06.2020	

LOCATION / IDENTIFICATION: Near Chathasari Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	60.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	26.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	1.9
06.	Ozone (O ₃)	µg/m ³	180	8.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.1
10.	Arsenic (As)	µg/m ³	06	1.7
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

JUNE 2020

Report no: MEEPL/JULY/0449/2020-21	Date: 20 th July, 2020
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>Near Shakhupani Village</i>	
Sample collected on: 22.06.2020	

LOCATION / IDENTIFICATION: Near Shakhupani Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	54.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	21.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	1.9
06.	Ozone (O ₃)	µg/m ³	180	9.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.3
10.	Arsenic (As)	µg/m ³	06	1.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.28

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

JUNE 2020

Report no: MEEPL/JULY/0450/2020-21	Date: 20 th July, 2020
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>Near Pakri Gada Village</i>	
Sample collected on: 22.06.2020	

LOCATION / IDENTIFICATION: Near Pakri Gada Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	49.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	20.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.8
05.	Ammonia (NH ₃)	µg/m ³	400	1.3
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.8
10.	Arsenic (As)	µg/m ³	06	1.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.28

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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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 / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.
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KUIAM – II BAUXITE MINE ENVIRONMENTAL MONITORING REPORT

JULY 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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CONTENT

	LOCATION – KUJAM – II
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kujam – II Weigh Bridge
2	Jawadih Quarry
3	Nawatoli Quarry
4	Bhattipat
B.	RUNOFF WATER ANALYSIS
C.	DRINKING WATER ANALYSIS





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JULY 2020

Report No. : MEEPL/AUG/0407/2020-21	Date: 10th August, 2020
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: 20.07.2020	

LOCATION / IDENTIFICATION: Kujam – II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	76.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	40.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.1
05.	Ammonia (NH ₃)	µg/m ³	400	5.9
06.	Ozone (O ₃)	µg/m ³	180	7.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.34
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	µg/m ³	20	2.3
10.	Arsenic (As)	µg/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JULY 2020

Report No. : MEEPL/AUG/0408/2020-21

Date: 10th August, 2020

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: *Jawadih Quarry*

Sample collected on: **20.07.2020**

LOCATION / IDENTIFICATION: Jawadih Quarry

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	75.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	40.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	6.6
05.	Ammonia (NH ₃)	µg/m ³	400	4.5
06.	Ozone (O ₃)	µg/m ³	180	7.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	1.9
10.	Arsenic (As)	µg/m ³	06	1.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JULY 2020

Report No. : MEEPL/AUG/0409/2020-21	Date: 10 th August, 2020
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: Nawatoli Quarry	
Sample collected on: 20.07.2020	

LOCATION / IDENTIFICATION: Nawatoli Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	69.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.7
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	5.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	1.7
10.	Arsenic (As)	µg/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JULY 2020

Report No. : MEEPL/AUG/0410/2020-21	Date: 10 th August, 2020
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: Bhattipat	
Sample collected on: 20.07.2020	

LOCATION / IDENTIFICATION: Bhattipat				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	56.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.1
05.	Ammonia (NH ₃)	µg/m ³	400	3.8
06.	Ozone (O ₃)	µg/m ³	180	5.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	1.4
10.	Arsenic (As)	µg/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Gurdari

Environmental Monitoring Report

JULY 2020

Report no: MEEPL/AUG/0384/2020-21	Date: 10 th August, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Dipa Kujam Village	
Sample collected on: 23.07.2020	

LOCATION / IDENTIFICATION: Near Dipa Kujam Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	42.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	20.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.2
05.	Ammonia (NH ₃)	µg/m ³	400	2.8
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.9
10.	Arsenic (As)	µg/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Gurdari

Environmental Monitoring Report

JULY 2020

Report no: MEEPL/AUG/0385/2020-21	Date: 10 th August, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Chathasari Village	
Sample collected on: 23.07.2020	

LOCATION / IDENTIFICATION: Near Chathasari Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	46.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	23.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.1
05.	Ammonia (NH ₃)	µg/m ³	400	2.3
06.	Ozone (O ₃)	µg/m ³	180	5.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.28
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	µg/m ³	20	1.4
10.	Arsenic (As)	µg/m ³	06	1.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

JULY 2020

Report no: MEEPL/AUG/0386/2020-21	Date: 10 th August, 2020
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>Near Shakhupani Village</i>	
Sample collected on: 23.07.2020	

LOCATION / IDENTIFICATION: Near Shakhupani Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	44.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	18.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.5
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	5.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	1.4
10.	Arsenic (As)	µg/m ³	06	0.97
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Gurdari

Environmental Monitoring Report

JULY 2020

Report no: MEEPL/AUG/0387/2020-21	Date: 10 th August, 2020
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>Near Pakri Gada Village</i>	
Sample collected on: 23.07.2020	

LOCATION / IDENTIFICATION: Near Pakri Gada Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	40.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	16.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	1.6
06.	Ozone (O ₃)	µg/m ³	180	4.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.2
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	µg/m ³	20	1.3
10.	Arsenic (As)	µg/m ³	06	0.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JULY 2020

Report No. : MEEPL/AUG/0411/2020-21				Date: 10th August, 2020	
Sample described by customer: Runoff Water					
Client Name: Hindalco Industries Limited					
Client Address: Lohardaga					
Postal Code: 835203					
State: Jharkhand					
Country: India					
Sample Type: Runoff Water – Surface Water					
Marks on Sample: Location: Kujam II Bauxite Mines					
Quantity: 4 liters.					
Sample collected on: 20.07.2020					
Sl. No.	Analysis	Method	Result	Unit	Limits
1.	pH	APHA 22 nd Ed. 2012, 4500-H+-B,4-92	7.3	mg/l	5.5-9.0
2.	Total Suspended Solids	APHA 22 nd EDN: 2012-2540	70	mg/l	100
3.	BOD @ 27°C	IS 3025 (Part 44): 1993, RA2003, Amd.1	7.2	mg/l	30
4.	COD	IS 3025 (Part 58): 1993, RA2006, Amd.1	33	mg/l	250
5.	Oil & Grease	IS 3025(PART 39): 1991 RA 2003,Ed 2.1	<5.0	mg/l	10
6.	Total Dissolved Solids	APHA 22 ND EDN 2012-2540	1610	mg/l	2100
7.	Aluminium (as Al)	APHA 22 nd EDN 2012-3120B	1.0	mg/l	3
8.	Calcium (as Ca)	APHA 22 nd EDN 2012-3120B	8.1	mg/l	75
9.	Iron (as Fe)	APHA 22 nd EDN 2012-3120B	0.88	mg/l	3
10.	Temperature		16.7	°C	Shall not exceed 5°C above the receiving water temperature

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JULY 2020

Report No. : MEEPL/AUG/0412/2020-21	Date: 10 th August, 2020
Sample described by customer : DRINKING WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: DRINKING WATER	
Marks on Sample: Location: Kujam - II Drinking Water	
Sample collected on: 20.07.2020	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.2	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	6.8	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+ -B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	124	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Dichloramines	mg/l	<0.05	--	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO ₃)	mg/l	26.9	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinity Total (as CaCO ₃)	mg/l	30.1	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	5.8	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO ₄)	mg/l	4.5	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JULY 2020

Continuation Sheet

MEEPL/AUG/0412/2020-21

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO ₃)	mg/l	1.4	45 max	APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125
15	Fluoride (as F)	mg/l	0.12	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.10	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	27	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	1.6	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115
20	Iron (as Fe)	mg/l	0.15	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22 nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.02	0.02 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-CNC & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22 nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	N.D	0.001 max	APHA 22 nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22 nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-S2-C 4-175 & F 4-178





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

JULY 2020

Continuation Sheet
MEEPL/AUG/0412/2020-21

S.No	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method Reference
Microbiological Analysis					
1.	Total Colliforms	MPN/100 mL	N.D	<1.1	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69
2.	E-Coli	MPN/100 mL	N.D	Absent	APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9-76
Pesticides Residues					
3.	p,p DDT	µg/L	N.D	1	US EPA 508-1995
4.	o,p DDT	µg/L	N.D	1	US EPA 508-1995
5.	p,p DDE	µg/L	N.D	1	US EPA 508-1995
6.	o,p DDE	µg/L	N.D	1	US EPA 508-1995
7.	p,p DDD	µg/L	N.D	1	US EPA 508-1995
8.	o,p DDD	µg/L	N.D	1	US EPA 508-1995
9.	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10.	α-HCH	µg/L	<0.01	0.02	US EPA 508-1995
11.	β-HCH	µg/L	N.D	0.03	US EPA 508-1995
12.	δ-HCH	µg/L	N.D	0.03	US EPA 508-1995
13.	Butachlor	µg/L	N.D	120	US EPA 508-1995
14.	Alachlor	µg/L	N.D	20	US EPA 508-1995
15.	Atrazine	µg/L	N.D	2.1	US EPA 532-2000
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	0.3	US EPA 508-1995
19.	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20.	Malathion	µg/L	N.D	185	US EPA 8141A -1994
21.	Methyl Parathion	µg/L	N.D	0.4	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	26	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 water is not contaminated.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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KUIAM – II BAUXITE MINE ENVIRONMENTAL MONITORING REPORT

AUGUST 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Kujam – II

Environmental Monitoring Report

AUGUST 2020

CONTENT

	LOCATION – KUJAM – II
	AMBIENT AIR QUALITY – CORE ZONE
1	Kujam – II Weigh Bridge
2	Jawadih Quarry
3	Nawatoli Quarry
4	Bhattipat





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

AUGUST 2020

Report no: MEEPL/SEP/0392/2020-21	Date: 15 th September, 2020
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: 21.08.2020	

LOCATION / IDENTIFICATION: Kujam – II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	31.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	15.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.3
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	5.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	µg/m ³	20	1.3
10.	Arsenic (As)	µg/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

AUGUST 2020

Report no: MEEPL/SEP/0393/2020-21	Date: 15 th September, 2020
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: Jawadih Quarry	
Sample collected on: 21.08.2020	

LOCATION / IDENTIFICATION: Jawadih Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	25.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	16.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.3
05.	Ammonia (NH ₃)	µg/m ³	400	3.6
06.	Ozone (O ₃)	µg/m ³	180	5.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.06
09.	Nickel (Ni)	µg/m ³	20	1.3
10.	Arsenic (As)	µg/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

AUGUST 2020

Report no: MEEPL/SEP/0394/2020-21	Date: 15 th September, 2020
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: Nawatoli Quarry	
Sample collected on: 21.08.2020	

LOCATION / IDENTIFICATION: Nawatoli Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	20.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	12.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.2
05.	Ammonia (NH ₃)	µg/m ³	400	3.9
06.	Ozone (O ₃)	µg/m ³	180	5.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.21
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	1.6
10.	Arsenic (As)	µg/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.23

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

AUGUST 2020

Report no: MEEPL/SEP/0395/2020-21	Date: 15 th September, 2020
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: Bhattipat	
Sample collected on: 21.08.2020	

LOCATION / IDENTIFICATION: Bhattipat				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	18.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	11.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.2
06.	Ozone (O ₃)	µg/m ³	180	4.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	1.4
10.	Arsenic (As)	µg/m ³	06	0.7
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.21

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

AUGUST 2020

Report no: MEEPL/SEP/0427/2020-21	Date: 15 th September, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Dipa Kujam Village	
Sample collected on: 24.08.2020	

LOCATION / IDENTIFICATION: Near Dipa Kujam Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	21.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	11.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	2.6
06.	Ozone (O ₃)	µg/m ³	180	4.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.4
10.	Arsenic (As)	µg/m ³	06	0.73
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.81
12.	Benzo (a) Pyrene	µg/m ³	01	0.16

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

AUGUST 2020

Report no: MEEPL/SEP/0428/2020-21	Date: 15 th September, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Chathasari Village	
Sample collected on: 24.08.2020	

LOCATION / IDENTIFICATION: Near Chathasari Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	20.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.7
05.	Ammonia (NH ₃)	µg/m ³	400	1.5
06.	Ozone (O ₃)	µg/m ³	180	4.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.18
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	0.9
10.	Arsenic (As)	µg/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.18

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

AUGUST 2020

Report no: MEEPL/SEP/0429/2020-21	Date: 15 th September, 2020
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>Near Shakuapani Village</i>	
Sample collected on: 24.08.2020	

LOCATION / IDENTIFICATION: Near Shakuapani Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	24.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	8.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	1.6
06.	Ozone (O ₃)	µg/m ³	180	4.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.15
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	µg/m ³	20	1.0
10.	Arsenic (As)	µg/m ³	06	0.75
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

AUGUST 2020

Report no: MEEPL/SEP/0430/2020-21	Date: 15 th September, 2020
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>Near Pakri Gada Village</i>	
Sample collected on: 24.08.2020	

LOCATION / IDENTIFICATION: Near Pakri Gada Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	22.7
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	2.8
06.	Ozone (O ₃)	µg/m ³	180	5.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.19
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.1
10.	Arsenic (As)	µg/m ³	06	0.80
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.18

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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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 / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.
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KUIAM – II BAUXITE MINE ENVIRONMENTAL MONITORING REPORT

SEPTEMBER 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

SEPTEMBER 2020

CONTENT

	LOCATION – KUJAM – II
	AMBIENT AIR QUALITY – CORE ZONE
1	Kujam – II Weigh Bridge
2	Jawadih Quarry
3	Nawatoli Quarry
4	Bhattipat





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Hindalco Industries : Kujam – II

Environmental Monitoring Report

SEPTEMBER 2020

Report No. : MEEPL/OCT/0432/2020-21	Date: 16th October, 2020
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: 18.09.2020	

LOCATION / IDENTIFICATION: Kujam – II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	23.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	17.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.4
05.	Ammonia (NH ₃)	µg/m ³	400	4.7
06.	Ozone (O ₃)	µg/m ³	180	5.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.04
09.	Nickel (Ni)	µg/m ³	20	2.5
10.	Arsenic (As)	µg/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

SEPTEMBER 2020

Report No. : MEEPL/OCT/0433/2020-21

Date: 16th October, 2020

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: *Jawadih Quarry*

Sample collected on: **18.09.2020**

LOCATION / IDENTIFICATION: Jawadih Quarry

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	28.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	18.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.4
05.	Ammonia (NH ₃)	µg/m ³	400	5.6
06.	Ozone (O ₃)	µg/m ³	180	6.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.17
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	µg/m ³	20	1.9
10.	Arsenic (As)	µg/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

SEPTEMBER 2020

Report No. : MEEPL/OCT/0434/2020-21	Date: 16th October, 2020
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: Nawatoli Quarry	
Sample collected on: 18.09.2020	

LOCATION / IDENTIFICATION: Nawatoli Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	25.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	16.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.2
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	7.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.13
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	µg/m ³	20	2.7
10.	Arsenic (As)	µg/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.17

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Kujam – II

Environmental Monitoring Report

SEPTEMBER 2020

Report No. : MEEPL/OCT/0435/2020-21	Date: 16th October, 2020
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: Bhattipat	
Sample collected on: 18.09.2020	

LOCATION / IDENTIFICATION: Bhattipat				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	17.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
06.	Ozone (O ₃)	µg/m ³	180	7.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.16
08.	Lead (Pb)	µg/m ³	1.0	0.05
09.	Nickel (Ni)	µg/m ³	20	1.8
10.	Arsenic (As)	µg/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.19

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

SEPTEMBER 2020

Report No. : MEEPL/OCT/0457/2020-21	Date: 16th October, 2020
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Near Dipa Kujam Village	
Sample collected on: 21.09.2020	

LOCATION / IDENTIFICATION: Near Dipa Kujam Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	24.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	11.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
06.	Ozone (O ₃)	µg/m ³	180	6.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.15
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	µg/m ³	20	1.1
10.	Arsenic (As)	µg/m ³	06	0.94
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.15

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Gurdari

Environmental Monitoring Report

SEPTEMBER 2020

Report No. : MEEPL/OCT/0458/2020-21 Date: 16th October, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: **Hindalco Industries Limited**
Client Address: **Lohardaga**
Postal Code: **835203**
State: **Jharkhand**
Country: **India**
Sample Type: **AMBIENT AIR QUALITY MONITORING**
Marks on Sample: Location: **Near Chathasari Village**
Sample collected on: **21.09.2020**

LOCATION / IDENTIFICATION: Near Chathasari Village

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	17.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	8.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.9
05.	Ammonia (NH ₃)	µg/m ³	400	4.5
06.	Ozone (O ₃)	µg/m ³	180	5.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.09
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.0
10.	Arsenic (As)	µg/m ³	06	0.74
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.15

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Gurdari

Environmental Monitoring Report

SEPTEMBER 2020

Report No. : MEEPL/OCT/0459/2020-21	Date: 16 th October, 2020
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>Near Shakhupani Village</i>	
Sample collected on: 21.09.2020	

LOCATION / IDENTIFICATION: Near Shakhupani Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	19.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	8.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.3
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	6.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.08
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	µg/m ³	20	1.1
10.	Arsenic (As)	µg/m ³	06	0.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.16

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Gurdari

Environmental Monitoring Report

SEPTEMBER 2020

Report No. : MEEPL/OCT/0460/2020-21	Date: 16 th October, 2020
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>Near Pakri Gada Village</i>	
Sample collected on: 21.09.2020	

LOCATION / IDENTIFICATION: Near Pakri Gada Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	22.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
06.	Ozone (O ₃)	µg/m ³	180	6.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.11
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	1.0
10.	Arsenic (As)	µg/m ³	06	1.4
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.12

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE



Annexure 1

Piezometer reading of Kujam II (157.38 ha) from Apr'20 to Sep'20		
S.No	Date	Height(m)
1	4/2/2020	38
2	4/30/2020	37.98
3	5/15/2020	37.9
4	5/23/2020	38
5	6/11/2020	38
6	6/23/2020	36.25
7	7/3/2020	31.59
8	7/24/2020	32.58
9	8/7/2020	31.25
10	8/25/2020	32.52
11	9/9/2020	33.54
12	9/25/2020	34.52

Annexure-2

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2020-21

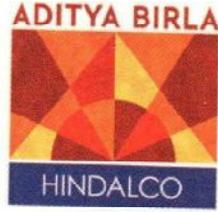
The composite cost during the year 2020-21 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 ha), Pakhar (15.58 ha), Pakhar (109.507 ha), Pakhar (8.09 ha), Pakhar (35.12 ha), 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), Bagru (75.41 ha), Hisri New (14.55 ha), Chiro kukud (152.57 ha), Orsa pat (196.36 ha), Bhusar (65.31 ha) and Bimarla Bauxite Mines (134.52 ha).

S No	Description	Budget (in Rupees) FY 2020-21	Actual (in Rupees) FY 2020-21 (From April'20 to September'20)
1	Pollution Control & Environment monitoring	38,21,524.00	23,85,921.05
2	Reclamation/ Back filing & Rehabilitation**	3,21,50,000.00	2,21,40,257.00
3	Green belt, Plantation & Water spraying arrangement	49,25,800.00	27,10,225.84
4	Rural Development	3,20,21,451.00	1,06,39,819.42

**Part of OB removed cost.



(Basudev Gangopadhyay)
Head (Geology & Environment)



Annexure 3

Date – 06.07.2020

Office Order

Environmental Cell has been re-constituted at Kujam II Bauxite Mine (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. Pravin Bhalekar (Coordinator)
2. Mr. Mahendra Bhagat – (Member)
3. Mr. Rajesh Kundu – Geologist
4. Mr. Abhay Kumar – Environment Engineer

The Undersigned is the in charge of above Environment Management Cell constituted for the purpose of ensuring compliances of environmental act rule and regulation for the above mine.

A handwritten signature in blue ink, appearing to read "Basudev Gangopadhyay", is written over a horizontal line.

Basudev Gangopadhyay
Senior Executive (Quality & Environment)

Annexure 4

Production, Mined Out, Back Filled and Over Burden removal from April'20 to September'20								
S No	Name of the Mines	Mining lease area (ha)	Production Capacity (MT)*	Lease Period*	Production (MT)	Mined out area (ha)	Back filled area (ha)	Over burden (Cu.M)
1	Bagru bauxite Mine	75.41	85000	22.01.1974 to 31.03.2030	NIL	NIL	NIL	NIL
2	Bhusar Bauxite Mine	65.31	280000	11.07.1981 to 31.03.2030	13267	0.073	0.11	10154.95
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	28869	0	0.52	16795.65
4	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	21915	0.70	1.28	19090.63
5	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	45243	0.953	1.92	38334.18
6	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	49710	0.947	1.00	60021.340
7	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	84400	5.08	3.59	198360.97
8	Shrengdag A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	46854	2.08	1.76	180936.53
9	Shrengdag B Bauxite Mine	140.07	100000	04.10.1978 to 31.03.2030	NIL	NIL	NIL	NIL
10	Jalim & Sanai Bauxite Mine	12.14	50000	16.10.1974 to 31.03.2030	18420	0.27	0.22	7140.08

Annexure 4

11	Orsapat Bauxite Mine	196.36	200000	17.07.1986 to 16.07.2036	NIL	NIL	NIL	NIL
12	Chiro Kukud bauxite Mine	152.57	100000	29.01.1985 to 28.01.2035	NIL	NIL	NIL	NIL
13	Pakhar (8.09)	8.09	80000	16.05.1973 to 31.03.2030	NIL	NIL	NIL	NIL
14	Pakhar (35.12)	35.12	200000	17.04.1975 to 31.03.2030	NIL	NIL	NIL	NIL
15	Pakhar (115.13)	115.13	300000	19.07.1996 to 31.03.2030	66500	0.50	0.66	84577.24
Minerals & Minerals Limited								
16	Pakhar (15.58)	15.58	60000	28.04.1965 to 31.03.2030	24600	0.30	0.12	29253.14
17	Pakhar (109.507)	109.507	280000	26.07.2008 to 25.07.2058	130500	1.37	0.37	120240.90
18	Bimarla Bauxite Mine	134.37	300000	18.07.2009 to 17.07.2059	46250	2.35	1.00	106168

*Static information about the mines included in the above table



Basudev Gangopadhyay
Head (Geology & Environment)