EC COMPLIANCE REPORT &

ENVIRONMENTAL STATUS REPORT (January 2017 - June 2017)

of

Hindadih Coal Washery (Capacity – 3.6 MTPA)

Located At

Village - Hindadih, Tehsil - Masturi, District - Bilaspur, State - Chhattisgarh

Project Proponent:



Hind Energy & Coal Beneficiation (India) Ltd.

Hindadih Village, Masturi Tehsil, Bilaspur District, Chhattisgarh, India

Environnent Consultant

ANACON LABORATORIES PVT. LTD., NAGPUR

Recognized by MoEF (GOI) Notifn. No. D.L.33004/99 Dt.03.01.2014 NABL T-1550 (Chemical), T-1826 (Biological), T-2344, (Mechanical) Accredited under the QCI-NABET Scheme for EIA Consultant BIS vide No.CL/CQAPD/OSL(7124116) dt.16.12.2011 Certified ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007

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> > September 2017



Foreword

The protection of environment plays a crucial role in maintaining the local environment quality for any Industrial and mining activity. Hence compliance of the statutory requirements becomes very important to conserve the ecological balance within and surrounding of mining areas. Therefore, environment protection is becoming a prerequisite for sustainable development. In line with this requirement, the management of **Hind Energy & Coal Beneficiation (India) Ltd.** has adopted a corporate responsibility of environment protection.

In order to comply with the Environment protection act, to fulfill statutory requirements and to be in tune with Environmental Preservation and Sustainable Development, **Hind Energy & Coal Beneficiation (India) Ltd.**, has prepared this Six Monthly EC Compliance report by retaining **Anacon Laboratories Pvt. Ltd.**, **Nagpur** as Environment Consultants for Environmental monitoring and various Environmental issues related to the Coal Washery.

This document presents the EC Compliance and Environmental Status Report for the period January 2017 - June 2017 as part of the statutory requirements.

For Hind Energy & Coal Beneficiation (India) Ltd.

For **ANACON LABORATORIES PVT. LTD.**

Authorized Signatory

Authorized Signatory



Compliance of EC conditions of 3.6 MTPA Coal Beneficiation Plant of Hind Energy & Coal Beneficiation (India) Ltd.



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INTRODUCTION

M/s Hind Energy & Coal Beneficiation (I) Ltd, (HECBIPL) has expanded capacity of its existing Coal beneficiation plant from 2.4 MTPA to **3.6 MTPA** on 01.10.2015 (project commissioned). The coal washery is located at Village Hindadih, Tehsil Masturi, District Bilaspur (C.G.). The raw coal is received generally from SECL Dipka mine which is about 70 km from HECBIPL.

Coal beneficiation is the process for cleaning & reducing ash content in the coal, thus improving the quality of coal. This is a wet type of coal Washery, having obtained environmental clearance vide letter No. J-11015/364/2009.IA-II(M) dated 21st May, 2014.

EC Conditions compliance status and Environmental monitoring reports for this monitoring period is given below.

Compliance Status of conditions stipulated in Environmental Clearance for 3.6 MTPA Coal Washery of M/s Hind Energy & Coal Beneficiation (I) Ltd, (HECBIPL)

COMPLIANCE STATUS

S. No.	Specific Conditions	Action Taken
i.	Coal transportation shall be by mechanically covered trucks for loading and unloading.	HECB enquired for mechanically covered trucks with leading truck manufacturers in 2013 as well as 2016 also. However, mechanically covered trucks are not available in market, hence transportation of coal is done through tarpaulin covered trucks only (Refer Annexure VII).
ii.	Green belt in and around the coal washery should be further intensified.	Being complied. The density existing green belt will be increased in phase wise manner. In first phase 4200 saplings planted in September 2016 and 4970 saplings in Oct. 2016. Every year plantation program will be carried to increase greenbelt density. (Refer Annexure III & IV)
iii.	Automatic sprinkler system at the railway siding should be installed.	Complied. Automatic sprinkler system at Gatora railway siding is installed.
iv.	No extension for the work of railway siding will be sought by the proponent.	Complied. Railway siding work has been completed within permitted time schedule and now in operation.
V.	No wastewater will be discharged into drains / water resources.	Complied. No wastewater is discharged into drains / water resources as plant is operating on zero discharge facility.





S.	Specific Conditions Action Taken	
No.	•	
vi.	In the proposed expansion, technology used for the washing of coal is wet process. Closed circuit water system will be adopted in the proposed expansion project. Zero effluent discharge system will be maintained.	Complied. Zero discharge is strictly followed by recycling and use of treated water for green belt within the premises. No wastewater is discharged into drains / water resources.
vii.	The proponent should adhere to all the conditions stipulated in letter of Central Ground Water Board letter no.21 4(102)/ CGWA/2011/ 174.	Complied. Proponent is adhering to all conditions of CGWB NoC.
viii.	The assurances given during the Public Hearing and as per the action plan developed by the proponent should be implemented	Complied. Air pollution control equipments are installed and Hind Energy is also actively doing CSR activities. (Refer Annexure II)
ix.	The CSR cost should be Rs 5 per Tonnes of Coal produced which should be adjusted as per the annual inflation.	The CSR expenditure has been increased to INR 1,41,55,567/- by the company till March 2017. HECB is committed to fulfill the statutory obligation of spending minimum 2 % of net profit for CSR activities as per the Companies act 2013.
X.	Three-tier green belt should be developed along the washery boundary and along transfer and loading points and in the proposed railway siding to mitigate/check dust pollution and the entire coal dispatch from the group of mines should be dove-tailed with the Coal evacuation system prepared for the Angul-Talcher. A 3-tier avenue plantation should also be developed along vacant areas, near washery, storage yards, loading points and transfer points and along internal roads and main approach roads and on the 2-km road upto the railway siding and at the siding.	3-tier plantation has been already implemented and in such manner plantation is being done. (Refer Annexure III & IV)
xi.	The raw coal, washed coal and coal wastes (rejects) shall be stacked properly at earmarked site(s) within stockyards fitted with wind breakers/shields. Adequate measures	Complied. Raw Coal, Washed coal & coal waste (rejects) are stacked properly at earmarked sites(s) covered with boundary walls. Water Sprinklers are provided on the coal stock to reduce dispersion of coal



S.	Compliance Period. January 2017 - June 2017	
No.	Specific Conditions	Action Taken
	hall be taken to ensure that the stored minerals do not catch fire.	particulate matter in ambient air. This also helps minimizing risk of coal storages fire. (Refer Annexure I)
xii.	Hoppers of the coal crushing unit and washery unit shall be fitted with high efficiency bag filters and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of closed belt conveyor systems and from transportation roads	Complied. Coal crusher and coal pulverizer of the plant are facilitated with Bag filters of adequate capacity and efficiency so as to comply with particulate emission norms. Mist spray water sprinkling system is provided. Closed conveyor system is provided to prevent fugitive dust emissions. (Refer Annexure II)
xiii.	All approach roads shall be black topped and internal roads shall be concreted. The roads shall be regularly cleaned with 8 mechanical sweepers.	Being complied. All internal roads are concrete & plantation has also been done along the road side wherever possible. Maintenance work is regularly carried out by HECB. (Refer Annexure III)
xiv.	Trucks engaged for mineral transportation outside the washery upto the railway siding covering a distance of 2 km shall be optimally loaded and covered with tarpaulin with no spillage en route. The trucks shall be properly maintained and emissions shall be below notified limits. Facilities for parking of trucks carrying raw coal from the linked coalmines shall be created within the Unit.	Being Complied. All the vehicles engaged in transportation are covered with tarpaulins and are maintained so as to follow emission norms. The vehicle inspection is conducted regularly.
XV.	Records of quantum and ash content of raw coal being washed, and clean coal and coal rejects produced from every batch of washing shall be maintained and details thereof uploaded on the company website	Being Complied. Records are maintained at plant and also uploaded on the website and same can be accessed at http://www.hindenergy.com .
xvi.	The transportation of coal should be by mechanically covered trucks in order to reduce coal spillage and dust pollution	HECB enquired for mechanically covered trucks with leading truck manufacturers in 2013 as well as 2016 also. However, mechanically covered trucks are not available in market, hence transportation of coal is done through tarpaulin covered trucks only.



S.	Specific Conditions Action Taken	
No.	·	
xvii.	The waste water should be discharged after proper treatment;	Complied. No wastewater is discharged into drains / water resources as plant is operating on zero discharge facility.
xviii.	All the conditions stipulated in the letter of Central Ground Water Board letter no. 21-4(102)/CGWA/NCCR/2011/174 dated Nil should be adhered to.	Complied. All conditions in CGWB letter are adhered.
xix.	The time limit should be provided to the Contractual vendors /contractors for providing mechanically covered trucks for coal transportation.	Noted. The mechanically covered trucks are not available with truck manufactures nor intend to manufacture right now. Same will be procured by HECB whenever available in market.
XX.	The washery unit shall be a zero-discharge facility and no wastewater shall be discharged from the washery into the drains/natural water courses. Recycled water shall be used for development and maintenance of green belt and in the Plant Operations.	Complied. Zero discharge is strictly followed by recycling for process and use of treated water for green belt within the premises. No wastewater is discharged into drains / water resources.
xxi.	Industrial wastewater (workshop) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December 1993 or as amended from time to time before use within the washery premises. Oil and grease trap shall be installed for treatment of workshop effluents. No wastewater shall be discharged from the washery into the drains/natural water courses.	Complied. Effluent treatment plant has been constructed and the treated effluent is confirming with CECB standards.
xxii.	No additional groundwater shall be used for the Plant Operations. Any additional water requirement envisaged shall be obtained by recycle/reuse to the maximum extent and from rainwater harvesting measures.	Complied. Water recycled from ETP is reused in plant operation and only makeup water is withdrawn from groundwater.
xxiii.	Socio-economic and welfare measures for the local communities for the adjoining villages shall be implemented under CSR. Activities under CSR	Being complied. The CSR amount was spent on various need based activities like pond construction, education facilities, drainage repairing, borewell construction



	Compliance Feriou. January 2017 - June 2017	
S. No.	Specific Conditions	Action Taken
	activities to be undertaken for the adjoining villages shall be identified in consultation with the local authorities, the details of status of implementation of CSR and expenditure thereon which should be annually updated on the company website.	and medical instrument donations to government hospital etc. The CSR expenditure details are uploaded on the website and same can be accessed at http://www.hindenergy.com .
xxiv.	Heavy metal content in raw coal, and washed coal shall be analysed once in a year and records maintained thereof.	Complied. Analysis of heavy metal content in raw coal, washed coal is carried out.
XXV.	The project authorities shall in consultation with the Panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried out over the balance life of the mine.	Complied. The company is actively doing CSR activities in consultation with panchayats of nearby villages.
xxvi.	The commitment made by the Proponent to the issue raised during Public Hearing shall be implemented by the Proponent.	Complied. Air pollution control equipments are installed and Hind Energy is also actively doing CSR activities.
xxvii.	Corporate Environment Responsibility: a) The Company shall have a well laid down Environment Policy approved by the Board of Directors. b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/ violation of the environmental or forest norms/conditions. c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.	Complied. Corporate Environment Policy in place and adhered.
	d) To have proper checks and balances, the company shall have a	





S. No.	Specific Conditions	Action Taken
	well laid down system of reporting of	
	non-compliances/violations of	
	environmental norms to the Board of	
	Directors of the company and/or	
	shareholders or stakeholders at large.	

General Conditions:

Sr.	General Conditions	Action Taken
No.		
i.	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	Noted and agreed.
ii.	No change in the calendar plan of production for quantum of mineral coal shall be made.	Noted and agreed.
iii.	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM ₁₀ , PM _{2.5} , SO ₂ and NOx monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	Complied. Four nos. of ambient air quality monitoring stations have been established & are operational for monitoring ambient air data. Heavy metals (Hg, As, Ni, Cd & Cr) are monitored. Ambient air quality monitoring data for current monitoring period is enclosed along with Status report.
iv.	Data on ambient air quality (PM ₁₀ , PM _{2.5} , SO ₂ and NOx) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EPA rules, 1986 shall be furnished as part of compliance report.	Being Complied on regular basis.
V.	Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc. shall be provided with ear plugs/muffs.	Complied. Machines & equipment's producing noise are covered with sound absorbing material & ear plugs/muffs are being provided to the workers in noisy environment.
vi.	Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the	Complied. Effluent treatment plant has been constructed and the treated effluent is confirming with CECB



Sr.	General Conditions Action Taken	
Sr. No.	General Conditions	ACTION Taken
NO.	standards prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.	standards.
vii.	Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.	Being complied. All the vehicles engaged in transportation are covered with tarpaulins and are maintained so as to follow emission norms.
viii.	Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, 1986.	Complied. The environmental quality is being regularly monitored and analyzed through M/s Anacon Laboratory Pvt. Ltd., Nagpur, a MoEF recognized and NABET & NABL accredited Laboratory.
ix.	Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.	Complied. Protective Respiratory Devices are provided & safety appliances are being used by the workers. Shoes, mask helmet safety belt & ear plug, have been provided & adequate training has been given to workers.
x.	Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.	Complied. Protective Respiratory Devices are provided & safety appliances are being used by the workers. Shoes, mask helmet safety belt & ear plug, have been provided & adequate training has been given to workers. Regular health checkup taken periodically.
xi.	A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company	Being complied. Separate environment cell is in place which is headed by senior person.
xii.	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned	The details of fund used for environmental protection measures are provided in Annexure VIII. A separate account (SBI, Bilaspur; A/c. No. 36262584886) has been opened





Sr.	General Conditions	Action Taken
No.		
	Regional Office.	for Environmental protection measures and year wise expenses will be submitted to Regional office periodically with Six monthly EC compliance reports.
xiii.	The Project authorities shall advertise at least	After receipt of EC letter dtd. 21st
	in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days 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 may also be seen at the website of the ministry of Environment & Forests at http://envfor.nic.in.	May 2014 same is give to newspaper office immediately for publishing. However it was published on 30 th May 2016. (Refer Annexure VI)
xiv.	A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.	Circulated and displayed in Gram Panchayat. EC letter was now uploaded on the company website along with other relevant data. Same can be accessed at http://www.hindenergy.com .
XV.	A copy of the environmental clearance letter shall be shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Sector and Collector's Office/Tehsildar's Office for 30 days.	In purview of CECB, CG.
xvi.	The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM ₁₀ , PM _{2.5} , SO ₂ and NOx (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	EC letter was now uploaded on the company website along with Six monthly EC compliance reports till date along with environmental quality monitoring data. Environmental monitoring data is also displayed on main gate of the company.

Compliance of EC conditions of 3.6 MTPA Coal Beneficiation Plant of Hind Energy & Coal Beneficiation (India) Ltd.



Compliance Period: January 2017 - June 2017

Sr.	General Conditions	Action Taken	
No.	General Conditions	Action Taken	
xvii.	The project proponent shall submit six monthly	Being complied.	
	compliance reports on status of compliance of		
	the stipulated environmental clearance		
	conditions (both in hard copy and in e-mail) to		
	the respective Regional Office of the Ministry,		
	respective Zonal Office s of CPCB and the		
	SPCB.		
xviii.	The Regional Office of this Ministry located in	Noted and full co-operation will be	
	the Region shall monitor compliance of the	given to the official of the Hon'ble	
	stipulated conditions. The Project authorities	Ministry and all	
	shall extend full cooperation to the office(s) of	data/document/reports as sought by	
	the Regional Office by furnishing the requisite	them will be submitted.	
	data/ information/monitoring reports.		
xix.	The Environmental statement for each	Being complied. Environmental	
	financial year ending 31 March in For -V is	Statement for each year is submitted	
	mandated to be submitted by the project	to CECB regularly.	
	proponent for the concerned State Pollution		
	Control Board as prescribed under the		
	Environment (Protection) Rules, 1986, as		
	amended subsequently, shall also be		
	uploaded on the company's website along with		
	the status of compliance of EC conditions and		
	shall be sent to the respective Regional		
	Offices of the MoEF by e-mail.		

Other Conditions:

Sr.	Other Conditions	Action Taken
No.		
1.	The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report so also during their presentation to the EAC.	Being Complied. Air pollution control measures and zero discharge measures have been installed. Plantation is done every year to increase green belt.
2.	The commitment made by the Proponent to the issue raised during Public Hearing shall be implemented by the Proponent	Complied.
3.	The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for	Complied. All clearances required are obtained.



Compliance of EC conditions of 3.6 MTPA Coal Beneficiation Plant of Hind Energy & Coal Beneficiation (India) Ltd.



Sr. No.	Other Conditions	Action Taken
	environmental protection.	
4.	The Ministry or any other competent authority may stipulate any further condition for environmental protection.	Noted.
5.	The Proponent shall setup an Environment Audit cell with responsibility and accountability to ensure implementation of all the EC Conditions.	Being complied. Environment Cell is established for monitoring of EC conditions.
6.	Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Noted and agreed.
7.	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India/ High Courts and any other Court of Law relating to the subject matter. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.	Noted and agreed.
8.	Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted.
9.	This EC supersedes the earlier EC, vide letter no. J-11015/190/2007-IA.II (M) dated 24.06.2008.	Noted.





Annexure I **Boundary Walls and Sprinklers**







Annexure II **Bag Filters**







Annexure III









Annexure IV Plantation Programmed Carried out by HECBIL





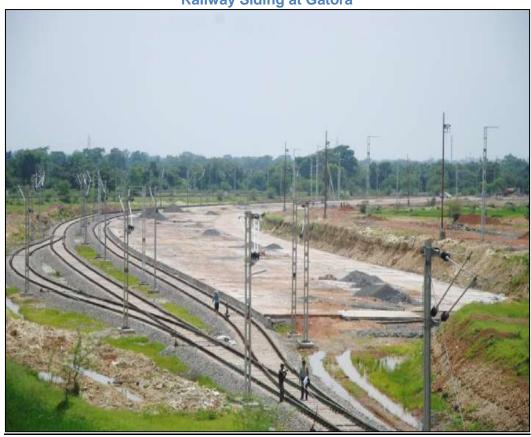








Annexure V Railway Siding at Gatora





Annexure VI

Paper Advisement of Environmental Clearance by MOEF





Annexure VII

Letters from Truck Manufacturers



To,

26/09/2018

The Director,

Hind Energy & Coal beneficiation (India) Ltd.,

Bilaspur.

Sub: Your query regarding mechanically covered & operated trucks.

Sir,

This is in reference to your letter dated 23/09/2013 regarding a query of mechanically obvered & operated trucks.

We wish to inform you that presently we are not providing any mechanically covered & operated trucks in Tractor Trailer range.

Regards,

Tata Motors timited.

For.

TATA MOTORS LIMITED

Parthivi Pacific 2nd Floor Above Axis Bank Tatibandh GE Road Raipur 492 009 Chhattisgarh Tei 91 771 6675501 Fax 91 771 6675523 www.tatamotors.com Registered Office Bombay House 24 Homi Mody Street Mumbal 400 001







To Whomsoever It May Concern:

This is to certify that our company "AMW Motors Ltd" is one among the largest manufacturer of the heavy commercial vehicles in India.

Furthermore, we certify that we do not manufacture any heavy commercial vehicles which are mechanically covered and operated, and further till date we have no future plans to manufacture the same.

This is for you kind reference.

Assuring best services all time.



AMW Motors Ltd.

(Demerged entity of Asia Motor Works Ltd.)

Plant & Regd. Office: 34 Km. Milestone, Shuj - Bhachau Road, Village Kantayabe, Kachohh, Gujarat 370 020, India Tel.: (91-2832) 243700-10 (11 lines), Fax: (91-2832) 243726 / 30.

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Off Bandra Kurla Road, L.B.S Marg, Kurla (West) Mumbai - 400 070.

Tel.: (91-22) 67101501 / 02 Fax: (91-22) 67101503 / 04





ENVIRONMENTAL STATUS REPORT

Air Quality Monitoring

Regular monitoring of environmental parameters is of immense importance to assess the status of environment. With the knowledge of baseline conditions, the monitoring program will serve as an indicator for any deterioration in environmental conditions due to mining operation. Suitable mitigation steps will be taken in time to safeguard the environment, based on monitoring reports. Monitoring is important in the control of pollution since the efficiency of control measures can only be determined by monitoring.

In order to find out the impact of plant activity on sensitive receptors, it is necessary to monitor Environmental Quality to know the level of concentrations of pollutants within and around the plant area. Accordingly Hind Energy & Coal Beneficiation (India) Ltd. monitoring air, quality on monthly basis.

Ambient Air Quality Monitoring

Ambient Air Quality was monitored at four locations within plant premises and four locations in nearby villages. Fugitive emissions were monitored at two locations in the plant premises.

The sampling stations are selected at the above mentioned locations, in downwind and upwind directions of the Industry. ALPL is carrying out regular monitoring for, SPM, RPM, SO₂, NOx and heavy metals at above Ambient Air Quality Monitoring (AAQM) locations. Monitoring of fugitive emissions include parameters SPM, PM₁₀, SO₂ & NOx.

Frequency of Sampling

Ambient air quality monitoring was carried out on 24 hourly on quarterly basis (once in a quarter) for the monitoring period.

Duration of Sampling

The duration of sampling for PM_{10} , $PM_{2.5}$, SO_2 , NO_x and heavy metals is twenty-four hourly. Data is compared with the standards mentioned in the Gazette Notification of the Central Pollution Control Board (CPCB) Notification 16th Nov. 2009.

Methods and Instruments used for Sampling

The air samples were analyzed as per methods specified by Central Pollution Control Board (CPCB).

The levels of Suspended Particulate Matter, Respirable Particulate Matter, Sulphur Dioxide (SO_2) , Oxides of Nitrogen (NO_X) & heavy metals were monitored for identifying the impact on surrounding area. PM_{10} and $PM_{2.5}$ were collected with the help of Respirable particulate sampler and Fine particulate sampler operating 24 hours and is computed by gravimetric method. Due to the high flow rate of air, the vacuum is formed into the hopper region of sampler which is tapped by providing a nozzle in the hopper which sucks the ambient air for sampling SO_2 and NO_X . The gases were measured by wet chemical method and were analyzed by colorimetrical. The measurement techniques used for various pollutants and other details are given in **(Table 4)**.





TABLE 1: MEASUREMENT TECHNIQUES FOR VARIOUS POLLUTANTS

S. No.	Parameter	Method	Technical Protocol	Minimum Detection limit (μg/m³)
1.	Suspended Particulate Matter, SPM	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part – IV)	5
2.	Respirable Particulate Matter, PM ₁₀	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part – IV)	5
3.	Fine Particulate Matter, PM _{2.5}	Fine Particulate Sampler (Gravimetric Method)	IS-5182 (Part-IV)	-
4.	Sulphur Dioxide	Improved West and Geake Method	IS-5182 (Part – II)	4
5.	Oxide of Nitrogen	Jacob & Hochheiser Modified Method	IS-5182 (Part – VI)	4
6.	Heavy Metals	Acid digestion	CPCB Guideline (Vol. 1)	0.0001

Ambient Air Quality

The ambient air quality monitoring was carried out at 4 locations in the Plant premises and 4 locations in the nearby villages in upwind, downwind and crosswind directions of the coal washery project. The air quality monitoring was conducted for PM_{10} , $PM_{2.5}$, SO_2 , NO_x and heavy meals during this monitoring period.

Fugitive emission monitoring was carried out at two locations within the washery premises during this period for the parameters which includes SPM, PM₁₀, SO₂ & NOx.

The results of ambient air quality monitoring during this monitoring period are given in **Table 5** and the results of fugitive emission monitoring are given in **Table 6** below:

Overall the ambient air concentrations of PM₁₀, PM_{2.5}, SO₂, NO_x and heavy meals were observed to be well within the limits of concentrations promulgated by CPCB, New Delhi.

National Ambient Air Quality Standard:

 PM_{10} (RPM): 100 μ g/m³,

 $PM_{2.5}$: 60 µg/m³

SO₂: 80 μg/m³ and

 NO_x : 80 µg/m³





TABLE 2: AMBIENT AIR QUALITY MONITORING RESULTS FOR THIS MONITORING PERIOD

[Report For The Month of January-February-March-2017 (Qtrly)]

Report No.:-	AN/AA/HECBIL/2016-17/657-1	Report Date:-	31.03.2017		
Name of Client & Address:-	M/s HIND ENERGY AND COAL BENIFICATION (I) LTD. Village:- Hindadih, Sipat, Bilaspur (C.G.)-495 001.				
Type of Work :-	Ambient Air Monitoring (March-2017)	Sample Ref.No. :-	1617/Mon-280-1		
Sample Drawn By:	Anacon Representative	Sample Received Date	24.03.2017		
Date of Analysis :-	25.03.2017 To 27.03.2017	Testing Period	01 Day		

(24 hrs Sampling)

SL. No.	Sampling Location	Sampling Date	PM ₁₀ μg /m ³	PM _{2.5} μg /m ³	SO ₂ µg/m³	NO _x μg/m³
1.	Near Steel Yard	21.03.2017	67.3	26.1	8.2	21.6
2.	Near Rotary Breaker	21.03.2017	59.1	23.8	9.4	26.3
3.	Near Dispatch	22.03.2017	57.4	17.3	6.8	18.9
4.	Near Barrack	22.03.2017	61.7	19.6	7.3	17.4
CPCB Standards			100	60	80	80

(24 hrs Sampling)

SL No.	Sampling Location	Sampling Date	Pb μg/m³	As ng/m³	Ni ng/m³	Cd μg/m³	Cr µg/m³
1.	Near Steel Yard	21.03.2017	0.038	ND	0.0064	ND	ND
2.	Near Rotary Breaker	21.03.2017	0.024	ND	0.0052	ND	ND
3.	Near Dispatch	22.03.2017	0.019	ND	0.0047	ND	ND
4.	Near Barrack	22.03.2017	0.031	ND	0.0059	ND	ND
CPCB Standards		1.0 (24 hrs)	6.0 (annual)	20.0 (annual)			





[Report For The Month of April-May-June-2017 (Qtrly)]

Report No.:-	AN/AA/HECBIL/2017-18/140-1	Report Date:-	23.06.2017		
	M/s HIND ENERGY AND	COAL BENIFICATION () LTD.		
Name of Client & Address:-	Village:- Hindadih, Sipat , Bilaspur (C.G.)-495 001.				
Type of Work :-	Ambient Air Monitoring (June-2017)	Sample Ref.No. :-	1718/Mon-86-1		
Sample Drawn By:	Anacon Representative	Sample Received Date	16.06.2017		
Date of Analysis :-	16.06.2017 To 17.06.2017	Testing Period	01 Day		

(24 hrs Sampling)

				<u> </u>		
SL. No.	Sampling Location	Sampling Date	PM₁₀ µg /m³	PM _{2.5} µg /m³	SO ₂ µg /m³	NO _x µg /m³
1.	Near Steel Yard	12.06.2017	61.4	24.7	7.6	19.3
2.	Near Rotary Breaker	12.06.2017	54.7	17.3	6.8	16.9
3.	Near Dispatch	13.06.2017	58.3	19.4	7.1	17.2
4.	Near Barrack	13.06.2017	47.1	16.1	6.2	16.3
CPCB Star	ndards	1	100	60	80	80

SL		0	Pb	As	Ni	Cd	Cr
No.	Sampling Location	Sampling Date	µg /m³	ng/m³	ng/m³	μg /m³	μg /m³
1.	Near Steel Yard	12.06.2017	0.038	ND	0.0064	ND	ND
2.	Near Rotary Breaker	12.06.2017	0.024	ND	0.0052	ND	ND
3.	Near Dispatch	13.06.2017	0.019	ND	0.0047	ND	ND
4.	Near Barrack	13.06.2017	0.031	ND	0.0059	ND	ND
СРСВ	Standards		1.0 (24 hrs)	6.0 (annual)	20.0 (annual)		





TABLE 3: FUGITIVE DUST EMISSION MONITORING RESULT

[Report For The Month of January-February-March-2017 (Qtrly)] (24 Hrs sampling)

Report No.:-	AN/FE/HECBIL/2016-17/657	7-2	Report Date:-	31.03.2017		
Name of Client	M/s HIND ENERGY AN	р СС	AL BENIFICATION	ON(I)LTD.		
& Address:-	Village:- Hindadih, Seepat , Bilaspur (C.G.)-495 001.					
Type of Work :-	Fugitive Dust Monitoring (March-2017)	San	nple Ref.No. :-	1617/Mon-280-2		
Sample Drawn By :	Anacon Representative	Sample Received Date		24.03.2017		
Date of Analysis :-	25.03.2017 To 27.03.2017	Tes	ting Period	01 Day		

SL. NO.	Sampling Location	Sampling Date	SPM μg/m³	SO ₂ µg/m³	NO _x μg/m³
1	Near Weight Bridge	21.03.2017	294	12.8	32.9
2	Near Environment Lab	22.03.2017	179	8.1	18.4
	CPCB Standards				



[Report For The Month of April-May-June-2017 (Qtrly)]

Report No.:-	AN/FE/HECBIL/201 18/140-2	7- Report Date:-	23.06.2017			
Name of Client & Address:-	M/s HIND ENERGY AND COAL BENIFICATION (I) LTD. Village:- Hindadih, Seepat, Bilaspur (C.G.)-495 001.					
Type of Work :-	Fugitive Dust Monitoring (June-2017)	Sample Ref.No.	1718/Mon-86-2			
Sample Drawn By :	Anacon Representative	Sample Received Date	16.06.2017			
Date of Analysis :-	16.06.2017 To 17.06.2017	Testing Period	01 Day			

SL. NO.	Sampling Location	Sampling Date	SPM µg/m³	SO ₂ µg/m³	NO _x μg/m³
1	Near Weight Bridge	12.06.2017	281	11.6	31.9
2	Near Environment Lab	13.06.2017	162	7.4	18.4
CPCB Standards					



