



The Additional P.C.C.F. (Central)  
Eastern Regional Office  
Ministry of Environment & Forests  
Government of India  
A/3, Chandrashekharapur,  
**Bhubaneswar – 751 023, Odisha**

KPO/Env/C-05/150/2016  
Date: 18.11.2016

Dear Sir,

**Sub.:** Six monthly Compliance Report for April 16 to Sept-16 for Environmental Clearances in respect of 6.0 MTPA Integrated Steel Plant of M/s. Tata Steel at Kalinganagar Industrial Complex, Duburi, Dist. Jajpur, Odisha.

**Ref.:** EC Granted by MoEF vide Letter No. J-11011/7/2006-IA-II(I) dated 7.11.2006.  
: Amendments in EC granted by MoEF vide Letters No. J-11011/7/2006-IA-II (I) dated 10.12.2012 and 13.05.2015

Kindly find enclosed Six Monthly Compliance Report for the period from April 2016 to September 2016 for the conditions stipulated in Environmental Clearance including amendments granted in EC to 6.0 MTPA Integrated Steel Plant of Tata Steel Limited at Duburi, Dist. Jajpur, Odisha for your kind considerations.

Copy of the compliance report is also being sent in soft format through e-mail ([mef@ori.nic.in](mailto:mef@ori.nic.in)) for your kind perusal.

We trust the information furnished is in line with your requirement.

Thanking you,

Yours faithfully,

  
U S Parkhi  
Head, Environment, KPO

Encl. a/a

Copy to MS, OSPCB, Bhubaneswar / CPCB Kolkata



**TATA STEEL KALINGANAGAR**

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**Six Monthly Compliance Status (Apr'16 to Sep'16) of Environmental Clearance including Amendment in EC for 6.0 MTPA Integrated Steel Plant at Kalinganagar, Duburi, District-Jajpur  
7<sup>th</sup> Nov 2006, 10<sup>th</sup> Oct 2012 and 13<sup>th</sup> May 2015**

	Additional Safeguards vide letter dated 13.5.2015	Status as on date
2i	Project proponent should install 24x7 air and water monitoring devices to monitor the air emission and effluent discharge, as provided by Central Pollution Control Board (CPCB) and submit the report to Ministry and its Regional office	<p>✓ To monitor the air emissions, on-line stack monitoring devices have been installed at all the major stacks like Coke Battery No. 1 and 2, Captive power plant, SP, BF, SMS, LCP and HSM.</p> <p>✓ Water monitoring device as per CPCB guidelines have been installed at the outlet of BOD plant of Coke Oven Unit and at CETP unit.</p>
2ii	For Wet quenching: permission to start the coke ovens with wet quenching till CDQ is stabilized by June 2016, thereafter maintain wet quenching as a standby and use for 20 days (3 weeks) in a year or per annum for maintenance or operation exigencies	<p>✓ Wet quenching system for Battery No. 2 as well as that for Battery No. 1 is under operating conditions.</p> <p>✓ We had submitted an application to MoEF requesting extension of time completion of Coke Dry Quenching (CDQ).</p> <p>✓ The Equipments of CDQ unit for Battery No. 1 &amp; 2 is commissioned cold trial of equipments is under progress.</p>
2iii	For LDO: Use of LDO for generation of power in power plants and DG set till Blast Furnace gas is available for power generation in power plants and there after maintain LDO as "Standby" and use for 15 days(two weeks) per annum for maintenance or operational exigencies.	<p>BF Gas generated is used for power generation in Captive Power Plant.</p> <p>LDO is being maintained as standby fuel.</p> <p>In the period Apr'16- Sept'16, DG set was operated for 38.68 hours.</p>
	Additional Conditions vide letter dated 10.10.2012	Status as on date
i)	The company shall install low NOx burners to mitigate NOx emissions from captive power plant.	There are three nos. of boilers of captive power plant. At each boiler, 8 Nos. of Low NOx burners have been installed to control NOx emissions.
ii)	Data on ambient air, stack and fugitive emission shall be regularly submitted online to Ministry's Regional Office at Bhubaneswar and Central Pollution Control Board as well as hard copy once in six months and display data on PM10, SO2 and NOx outside the premises at the appropriate place for the general public.	<p>✓ Six Monthly compliance reports are sent in hard as well as soft copies to MoEF/ OSPCB. The same is also available at company web site.</p> <p>✓ The AAQ monitoring data for the reporting period is annexed as Annexure-1.</p> <p>✓ AAQ data is displayed at the entrance of the Plant ( Plant's Main Gate) for information to general public through Electronic display board</p> <p>✓ Four nos. of CAAQMS (Two Nos. inside and Two Nos. outside plant premises) have been installed.</p> <p>✓ Online Stack emission monitoring system has been installed at all the operating units' viz. Coke Oven battery#2, Battery #1, CPP1, SP, BF, SMS, LCP and HSM.</p>
iii)	The National Ambient Air Quality Standard issued by the Ministry vide GSR No. 826(E) dated 16th November, 2009 shall be followed.	Air Quality standards conforming to NAAQS vide GSR 826 (E) has been referred for air quality monitoring and review.
iv)	The project proponent shall also submit six monthly reports on the status of the compliances of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and SPCB. The Regional Office of the Ministry at Bhubaneswar/CPCB/SPCB shall monitor the stipulated conditions.	We are submitting the six-monthly compliance report in stipulated time. Last Six-monthly compliance reports for the period Oct'16 to Mar'16 was submitted to MoEF/ OSPCB Regional Office both in hard as well as soft copy on 27.05.16.

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v)	The environmental statement for each financial year ending 31 march in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (protection Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliances of environmental conditions and shall also be sent to the respective Regional Offices of the MoEF by e-mail.	<p>Environment Statement for 2015 -16 was submitted to OSPCB on 21 Sept 2016 and the same for 2016-17 will be submitted before 30.09.2017</p> <p>Both, Environment Statement and Status of Compliance of EC conditions have been uploaded on company's website. (<a href="http://www.tatasteelindia.com">www.tatasteelindia.com</a>)</p>
vi)	The company shall submit within three months their policy towards Corporate Environment Responsibility which should inter-alia address (i) Standard operating process/ procedure to being into focus any infringement/ deviation/ violation of the environmental or forests norms/ conditions, (ii) Hierarchical system or Administrative order of the Company to deal with environmental issues and ensuring compliances to the environmental clearances conditions and (iii) system of reporting of noncompliance/ violation of environmental norms to the Board of Directors of the Company and/or shareholders.	<p>Corporate Environmental Policy was submitted to MoEF, New Delhi vide our letter no. TSL/DEL/805/2013 dated 8.1.2013.</p> <p>Copy of the same was also submitted to MoEF, Bhubaneswar Office.</p>
A	Specific Conditions as per EC dated 7.11.2006	Status as on date
i)	The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19 <sup>th</sup> May, 1993 and standards prescribed from time to time. The state Boards may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. On-line continuous monitoring system shall be installed in stacks to monitor SPM and interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit. Nox burners shall be installed to control NOx levels. VOCs from the coke oven shall be monitored and controlled as per CPCB guidelines. The new standards prescribed by the CPCB for coke oven plants shall be strictly followed.	<p>All the process units such as Coke Plant, Sinter Plant, Blast Furnaces, SMSs, and Mills have been designed conforming to the load/mass standards notified by the Ministry in order to have the gaseous emissions under control and below the prescribed limits.</p> <p>Online continuous stack monitoring systems have been installed at all the major stacks of Coke Plant Battery No.1 and 2, Sinter Plant, BF, SMS, LCP and HSM to monitor SPM emission levels.</p> <p>The units are in operation and emission levels were found within prescribed norms.</p> <p>VOC from coke plant is controlled by On-main charging by HPLA, Hydraulic doors, Door sealing, Door frame cleaner, etc. as per CPCB guidelines and the systems for both the Battery No. 1 as well as Battery -2 are in operation.</p> <p>Low NOx burners are installed at CPP ( 8 Nos for each boilers in all three boilers) and in HSM reheating furnace (84 Nos)</p> <p>New standards prescribed by CPCB (31.03.2012) for coke ovens are being followed.</p>

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A	Specific Conditions as per EC dated 7.11.2006	Status as on date
ii.	<p>In-plant control measures for checking fugitive emissions from all the vulnerable sources like coke oven area, Sinter Plant, BF case house, BF stack house, and BOF shop etc. shall be provided. Further, specific measures like water sprinkling and dry fogging (DF) shall be carried out at the stock piles of raw materials, stacker reclaimer, conveyor transfer points and vibrating screens etc. Dust extraction system and bag filter shall be provided for room air cleaning such as sinter plant stock house, BF stock house and BF cast house, BOF shop and Ferro-alloys handling area in steel melting shop etc. Fume extraction system in steel refining units shall also be provided. Centralized de-dusting system i.e. collection of fugitive emissions through suction hood and subsequent treatment through bag filter or any other device and finally emitted through a stack of appropriately designed and height conforming to the standards for induction furnaces in the industry shall be provided. Fugitive emissions shall be controlled, regularly monitored and records maintained.</p>	<p>✓ In plant control measures like Dust extraction systems and Dry Fog dust suppression systems have been installed to control fugitive emissions from all vulnerable sources have been provided.</p> <p>✓ Further specific measures is carried out for control of fugitive emissions are:-</p> <ul style="list-style-type: none"> <li>○ Water sprinkling on roads is being done by mist type water sprinkling tankers to suppress road dust due to vehicular movement.</li> <li>○ To suppress fine dusts, specially designed vehicle for mist type sprinkling of water (through movable High Pressure Mechanized Water jet) has been deployed.</li> <li>○ Speed limits are enforced for movement of vehicles at the site as per the factory limits</li> <li>○ Most of the main roads (about 22 kms) within the plant site are metaled and remaining is under progress.</li> </ul> <p>✓ Fume extraction system in steel refining units has been provided. Centralized de-dusting system at Sinter Plant for collection of fugitive emissions through suction hood and subsequent treatment through ESP (Plant De-dusting ESP) has been provided.</p> <p>✓ Fugitive emission controls at all the vulnerable points have been considered by dust suppression, dry-fog, Dust/ Fume extractions systems, etc. as applicable in Raw Material Handling System, Sinter Plant, Coke Plant, BF Stock &amp; Cast Houses, BOF Shops, Lime Plant, etc.</p> <p>✓ All the stacks have been designed and installed to meet the requirement of stack heights as per guidelines, for proper dispersion and dilution of pollutants.</p>
iii.	<p>ESP shall be provided to sinter plant and blast furnace. New standards prescribed by the CPCB for coke oven shall be strictly followed. The Company shall install Waste Heat Recovery Boilers (WHRB) to recover the waste heat and generate power from the steam produces by the WHRB. The particulate emissions from the WHRB shall be controlled by installation of ESP as per CPCB specification and particulate emissions shall not exceed 50mg/Nm<sup>3</sup>. Further, the company shall install bag filter, After Burner Chamber (ABC), suction hood, dust extraction device and fume extraction system to control gaseous emissions from the WHRB.</p>	<p>✓ ESPs with higher efficiency have been provided to Sinter plants, Blast Furnaces, SMS etc.</p> <p>✓ Coke oven plant is designed to comply with new standards prescribed by CPCB for Coke Oven.</p> <p>✓ Waste Heat Recovery Boilers have been installed to recover waste heat which in turn shall be used for in-house power generation from the steam produces by WHRB.</p> <p>✓ Pollution Control Systems have been designed as per CPCB guidelines to control PM emissions below 50 mg/Nm<sup>3</sup>.</p> <p>✓ Particulate emissions will be less than 50 mg/Nm<sup>3</sup>.</p>
iv.	<p>Total requirement of the water from Brahmani /Kharasua river shall not exceed 26.5 MGD. No ground water shall be drawn and used for the plant. The effluent quantity into the industrial drain leading to the Gonda Nalla shall not exceed 92m<sup>3</sup>/hr and shall conform to the prescribed standards. Ammonia, phenol and cyanide in the effluent should be treated separately and discharged only after meeting the norms prescribed by the OSPCB/CPCB/Ministry under E(P)</p>	<p>✓ Make up water requirement for the plant is &lt;26.5 MGD. Present water consumption is around 9.4 MGD.</p> <p>✓ Total effluent discharge envisaged is &lt; 92 m<sup>3</sup>/hr and it meets the standards prescribed by MoEF/ CPCB/OSPCB before discharge into Gonda Nalla.</p> <p>✓ Ammonia, Phenol, Cyanide from Coke Oven plant is treated separately in BOD plant meant for the treatment of effluent generated from Coke Plant. The</p>

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	Act. Cyanide shall meet the standard of 0.2 ppm. TDS in the effluent discharged shall not be more than 2,100 mg/l. The domestic wastewater after treatment in STP shall be used for green belt development.	BOD plant is under stabilization.. J Domestic wastewater shall be treated in the centralized STP and treated water shall be utilized for plantation purposes. For treatment of domestic effluents generated from temporary offices/ colonies, septic tanks & soak pits are provided. J No groundwater is used for plant operations.
A	Specific Conditions as per EC dated 7.11.2006	Status as on date
v.	Ground water monitoring around the solid waste disposal site/secured landfill (SLF) shall be carried out regularly and report submitted to the Ministry's Regional Office at Bhubaneswar, CPCB and OPCB.	J Base line data regarding ground water level & quality is available. J Ground water monitoring points are identified; the same are being monitored regularly. (Please refer to Annexure- 1).
vi.	BF slag shall be sold to the cement manufacturers after granulation. Non-granulated BF slag shall be used in road making. BOF slag shall not be dumped anywhere except used for making cement and road etc. proposed in EIA/EMP. Ammonia and tar shall be recovered and remaining solid waste shall be burnt. Gas cleaning plant sludge and mill scales shall be reused in the sinter plant. Char generated shall be used in FBC boiler. The kiln accretions shall be utilized for filling low lying areas. The entire quantity of fly ash generated during the process shall be utilized for making brick. ESP fly ash shall be made available to the cement plants and brick making plants whereas bottom ash shall be disposed off in a suitably designed landfill as per CPCB guidelines to prevent leaching to the sub-soil and underground aquifer.	J BF slag is sold to cement manufacturers after online slag granulation process (RASA). At present slag is being loaded in wagon for transportation to cement units, Automatic wagon loading facilities is being developed. J Non-granulated BF slag shall be used for road making; non-granulated BOF slag will be used for road making and cement making. J In COBPP, we have provision of Tar and Sulphur recovery systems; Tar is being sold as by-products. J Gas cleaning plant is in operation in BF & SMS. J Provision for recycling of mill scales from mills to sinter plant has also been made. J No fly ash and bottom ash is generated in process.
vii.	The company shall develop surface water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	J Surface run-off during the monsoon is collected and stored in the reservoirs constructed under rain water harvesting schemes. J Storm water pond with necessary pumping arrangement of storm water in raw water system has been made. J Rain water harvesting structures are being planned in RCC buildings as well as in low lying areas.
viii.	Green belt shall be developed in at least 33% area within and around the plant premises as per the CPCB guidelines in consultation with DFO.	J Green Belt cover is being continuously developed within and around the project site, as well as outside the plant premises (rehabilitation colonies). <u>Details of tree saplings planted:</u> 2009-10: 792 nos. . 2013-14: 29888 nos 2010-11: 1130 nos. . 2014-15: 35437 nos 2011-12: 4800 nos. 2015-16: 78730 nos. 2012-13: 12622 nos 2016-17, 76673 nos. (till sep'16) J Avenue plantation is being taken up at Jajpur town, Kalinganagar and Bhubaneswar.
ix.	Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the factories Act.	J Initial & Periodic medical check-up for workers are being done and records for the same are maintained as per the Factories Act. J To strengthen the Occupational Health Surveillance, a system has been made, in which, employee's Gate Pass is issued only after ensuring the initial medical check-up.

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A	Specific Conditions as per EC dated 7.11.2006	Status as on date
x.	Recommendations made in the CREP guidelines issued for the steel plants shall be implemented.	<p>✓ CREP recommendations are being implemented and summarized below:</p> <ol style="list-style-type: none"> <li>1. Coke Ovens: Fugitive emission control system is in place. All the batteries are new one and having coal stamping, charging cum pushing machines.</li> <li>2. SMS: Secondary fume extraction system has been installed.</li> <li>3. BF: Pulverized Coal injection facilities have been installed in Blast Furnaces, TRT, Tar Free Runners, Cast House DE system, etc are also provided.</li> <li>4. Specific water consumption is envisaged to be less than 8 m<sup>3</sup>/t of flat product.</li> <li>5. Online monitoring facilities have been provided.</li> <li>6. Waste management systems are being implemented.</li> </ol>
xi.	Rehabilitation and Resettlement plan shall be implemented as per the revised R&R policy and in collaboration with the State Government in a time bound manner and report submitted to the Ministry, its Regional Office at Bhubaneswar and OPCB.	<p>✓ Families have been rehabilitated within the framework of "Tata Steel Parivaar" concept as per R &amp; R policy of Odisha Govt. in consultation with the local administration. A dedicated team facilitates the resettlement &amp; rehabilitation effectively.</p>
xii.	The environmental clearance for the mining project and forest clearance for the forest land involved in the mining project shall be obtained from the Ministry prior to operation of the integrated Steel Plant. In case, environmental clearance for the mining proposal from State Govt./Govt. of India is not available, Ministry shall be regularly informed about the source of ore and coal.	<p>✓ The matter is being pursued with State and Central Government.</p> <p>✓ Coal is being imported.</p> <p>✓ Source of iron ore is mainly from the mines of Tata Steel in Odisha.</p>
B.	General Conditions as per EC dated 7.11.2006	Status as on date
i.	The project authorities must strictly adhere to the stipulations made by the Orissa Pollution Control Board (OPCB) and the State Government	<p>✓ During project execution and subsequent operation phases TSL has strictly adhere to stipulation made by OSPCB and the state Government</p>
ii.	No further expansion or modification in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	<p>✓ Amendments in the Environmental Clearance were granted by MoEF on 10.10.2012 and on 13.05.2015 vide letters no. J-11011/7/2006-IA.II.(I).</p> <p>✓ Our application regarding expansion from 6 MTPA to 8 MTPA including validity of Existing EC has been submitted on 20.09.2016. ToR for expansion was reviewed by EAC Industry-I on 28.10.2016.</p>
iii.	At least four ambient air quality-monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO <sub>2</sub> and NO <sub>x</sub> are anticipated in consultation with the OPCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Bhopal and the OPCB/CPCB once in six months.	<p>✓ Latest AAQ data as monitored on 24 hourly basis at more than four locations is annexed at Annexure-1</p>
iv.	Industrial waste water shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	<p>✓ Individual units such as Coke plant, HSM, SMS and BF have their own effluent treatment facilities for recovery &amp; reuse.</p> <p>✓ Excess treated water from individual treatment plant is being diverted to Central Effluent Treatment Plant (CETP). CETP is under stabilization with tertiary</p>

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		<p>treatment for recycle and re-use of treated water.</p> <p>) Treated wastewater will be also be used for plantation, dust suppression &amp; other uses.</p>									
B.	General Conditions as per EC dated 7.11.2006	Status as on date									
v.	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).	<p>) Low noise prone rotary equipment and vibration dampening has been one of the design aspects as a control measure for noise pollution.</p> <p>) Provision of acoustic hoods, silencers in steam ejectors as well as sound proof enclosures have also been made at various internal sites.</p> <p>) Ambient Noise levels are measured at various locations and noise levels observed during the reporting period are annexed at Annexure-1.</p>									
vi.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	<p>) Environmental protection measures as proposed in the EIA and EMP report is being implemented.</p> <p>) Various socio-economic developmental activities in the area of Health, Women Empowerment, Education, Sports &amp; culture, Infrastructure development etc. are on-going in 28 villages surrounding the project site. Recently, 5 medical mobile units have been added for immediate treatment to the local people.</p> <p>) Multi-specialty, 23 bedded hospitals (Medica TS) was started. This is functioning since Nov'15, close to the plant for facilitating health service to the community. The hospital is being expanded to more than 100 beds facility.</p>									
vii.	The project authorities shall utilize Rs.1,525.00 Crores earmarked for the environmental pollution control measures judiciously to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government alongwith the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purpose.	Funds earmarked for the environmental pollution control measures are being utilized only for the said purpose.									
viii.	The Regional Office of this Ministry at Bhopal/CPCB/OPCB will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	<p>Six monthly compliance reports are being submitted regularly.</p> <p>Last Report Sent on 27.05.2016.</p>									
ix.	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the OPCB/Committee and may also be seen at Website of the Ministry of Environmental and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.	<p>Complied.</p> <p>Paper advertisement Details:</p> <table border="1"> <thead> <tr> <th><u>Newspaper</u></th> <th><u>Language</u></th> <th><u>Date</u></th> </tr> </thead> <tbody> <tr> <td>New Indian Express</td> <td>English</td> <td>13.06.06</td> </tr> <tr> <td>Sambad</td> <td>Odia</td> <td>13.06.06</td> </tr> </tbody> </table>	<u>Newspaper</u>	<u>Language</u>	<u>Date</u>	New Indian Express	English	13.06.06	Sambad	Odia	13.06.06
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B.	General Conditions as per EC dated 7.11.2006	Status as on date
X	Project authorities should inform Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	Complied.



## **Plant Progress: A Glance**

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**Captive Power Plant**



**Waggon Tippler**



**Stacker cum reclaimer at coal yard**



**Tar Handling unit at Coke Oven By-product Plant**



**Coke Dry Quenching (CDQ) unit at Coke Oven Plant**



**Stamping, Charging & Pushing Machine**



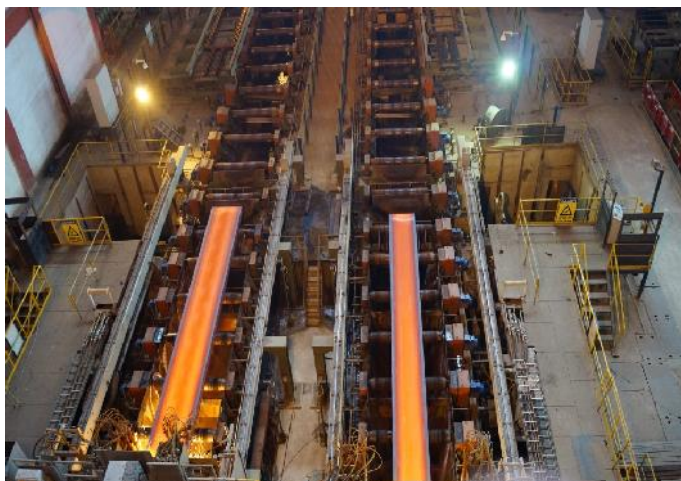
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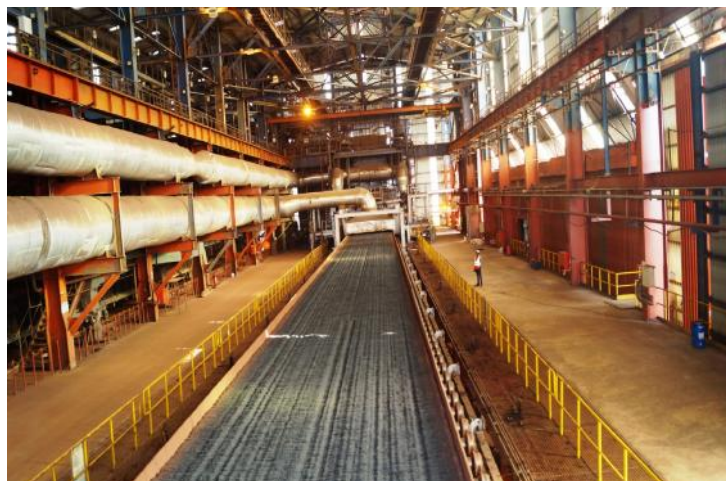
**ESP at Blast Furnace Cast House**



**Gas Cleaning Plant (GCP) at Blast Furnace**



**Slab Casting Machine at SMS**



**Sinter Machine at Sinter Plant**



**Essay & Drawing Competition for kids on World Environment Day 2016**



**Plantation on world environment Day 2016**



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**Metaled road inside plant premises**



**Periphery Plantation**



**Plantation inside plant premises**

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## AMBIENT AIR QUALITY MONITORING REPORT

(INSIDE PLANT)

Period: April to September 2016

Sl. No	Sampling Stations	month	PM <sub>10</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	SO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	CO mg/m <sup>3</sup>	Ozone (O <sub>3</sub> ) µg/m <sup>3</sup>	Lead (Pb) µg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> ) µg/m <sup>3</sup>	Benzen e (C <sub>6</sub> H <sub>6</sub> )	Benzo (a) Pyrene ng/m <sup>3</sup>	Arsenic (As) ng/m <sup>3</sup>	Nickel (Ni) ng/m <sup>3</sup>
1	Sinter Plant	Apr'16 to Sept'16	68.0	39.8	12.8	14.8	0.43	10.4	BDL	24.50	0.97	BDL	BDL	BDL
2	Power Plant		63.0	35.4	11.6	13.1	0.36	8.8	BDL	BDL	0.84	BDL	BDL	BDL
3	Main Gate		71.0	38.2	13.5	15.2	0.51	11.20	BDL	26.20	1.1	BDL	BDL	0.09
4	Coke Oven Plant		66.0	37.1	12.3	13.6	0.38	9.7	BDL	22.70	0.92	BDL	BDL	BDL
5	Gate No:4		53.8	27.7	10.9	9.5	BDL	BDL	BDL	<20	BDL	BDL	BDL	BDL
<b>C.P.C.B Standard</b>			<b>100</b> (24 Hrs.)	<b>60</b> (24 Hrs.)	<b>80</b> (24 Hrs.)	<b>80</b> (24 Hrs.)	<b>2</b> (8 Hrs.)	<b>100</b> (8 Hrs.)	<b>1</b> (24 Hrs.)	<b>400</b> (24 Hrs.)	<b>05</b> (Annual )	<b>01</b> (Annual)	<b>06</b> (Annual)	<b>20</b> (Annual )

**GROUND WATER QUALITY MONITORING REPORT**

**(Period: Apr'16 to Sep'16)**

<b>Sl. No.</b>	<b>Parameter</b>	<b>Standard as per BIS: 10500</b>	<b>April'16</b>	<b>May'16</b>	<b>June'16</b>	<b>July'16</b>	<b>Aug'16</b>	<b>Sep'16</b>	<b>Average</b>
1	pH Value	6.5-8.5	7.1	6.9	6.8	6.9	7	6.8	<b>6.92</b>
2	Colour	5	CL	CL	CL	CL	CL	CL	<b>CL</b>
3	Odour	U/O	U/O	U/O	U/O	U/O	U/O	U/O	<b>U/O</b>
4	Taste	Agreeable	AL	AL	AL	AL	AL	AL	<b>AL</b>
5	Turbidity (NTU), max	5	0.65	0.84	0.93	0.86	0.94	0.68	<b>0.82</b>
6	Anaionic Detergents, mg/l, max	0.2	ND	ND	ND	ND	ND	ND	<b>ND</b>
7	Aluminium as Al, mg/l, max	0.03	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
8	Alkalinity , mg/l, max	200	52	45	51	64	72	58	<b>57.00</b>
9	Total Hardness (as CaCO <sub>3</sub> ), mg/l, max	300	66.5	60.5	64.9	68.2	81.9	88.3	<b>71.72</b>
10	Electrical Conductivity at 25 <sup>0</sup> C, μmho/cm	\$	225	216	227	240	267	146	<b>220.17</b>
11	Calcium (as Ca), mg/l, max	75	11.5	10.6	11.3	12.7	14.6	15.6	<b>12.72</b>
12	Magnesium as Mg, mg/l, max	\$	9.2	8.3	8.7	8.9	11.1	10.3	<b>9.42</b>
13	Sodium as Na, mg/l, max	\$	7.1	7.4	8.1	7.7	8.9	7.9	<b>7.85</b>
14	Potassium as K, mg/l, max	\$	0.49	0.41	0.48	0.42	0.51	0.38	<b>0.45</b>
15	Copper (as Cu), mg/l, max	0.05	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
16	Iron (as Fe), mg/l, max	0.3	0.18	0.21	0.26	0.24	0.2	0.23	<b>0.22</b>
17	Manganese (as Mn), mg/l, max	0.1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
18	Chloride (as Cl), mg/l, max	250	11.1	12.4	13.1	13.9	15.1	14.7	<b>13.38</b>
19	Sulphate (as SO <sub>4</sub> ), mg/l, max	200	24.7	26.5	27.2	30.1	33.5	28.6	<b>28.43</b>

20	Nitrate (as NO <sub>3</sub> ), mg/l, max	45	0.21	0.27	0.29	0.22	0.36	0.32	<b>0.28</b>
21	Fluoride (as F), mg/l, max	1	0.07	0.11	0.13	0.15	0.12	0.1	<b>0.11</b>
22	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, max	0.001	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
23	Mercury (as Hg), mg/l, max	0.001	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
24	Cadmium (as Cd), mg/l, max	0.01	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
25	Selenium (as Se), mg/l, max	0.01	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
26	Arsenic (as As), mg/l, max	0.05	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
27	Cyanide (as CN), mg/l, max	0.05	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
28	Lead (as Pb), mg/l, max	0.05	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
29	Zinc (as Zn), mg/l, max	5	0.29	0.36	0.42	0.45	0.37	0.38	<b>0.38</b>
30	Nickel as Ni, mg/l, max	\$	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
31	Total Chromium as Cr, mg/l, max	\$	0.21	0.32	0.37	0.4	0.52	0.48	<b>0.38</b>
32	Chromium (as Cr+6), mg/l, max	0.05	0.007	0.004	0.005	0.005	0.008	0.006	<b>BDL</b>
33	Mineral Oil, mg/l, max	0.01	ND	ND	ND	ND	ND	ND	<b>ND</b>
34	Total Coliform, MPN/ 100 ml	\$	ND	ND	ND	ND	ND	ND	<b>ND</b>
35	E-coli , MPN/ 100 ml	\$	ND	ND	ND	ND	ND	ND	<b>ND</b>
36	Total Dissolved Solids, mg/l, max	500	151	145	152	161	179	158	<b>157.67</b>
37	Residual, free Chlorine, mg/l, min	0.2	ND	ND	ND	ND	ND	ND	<b>ND</b>
38	Boron mg/l , max	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>

Noise Monitoring Report  
(Industrial Area)  
Period: Apr'16- Sept'16

SN	NOISE MONITORING LOCATIONS	April'16		May'16		June'16		July'16		August'16		September'16		Average					
		Leq in dB(A)														Leq in dB(A)	NOISE STANDARDS	in dB(A) (Night Time)	NOISE STANDARDS
		Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time				
1	Sinter Plant	66.5	55.9	65.8	54.2	63.5	53.8	61.7	52.5	60.4	51.8	61.5	53.2	63.2	<b>75</b>	53.6	<b>70</b>		
2	Blast Furnace	54.8	51.5	53.4	49.7	52.6	48.4	50.5	46.9	49.2	45.6	50.4	46.9	51.8		48.2			
3	SMS	44.9	40.3	45.6	41.5	44.8	42.1	45.2	41.8	46.5	42.4	47.9	43.1	45.8		41.9			
4	Gate-1	57.6	52.1	58.2	53.8	57.6	52.5	58.3	53.7	59.7	54.2	60.5	55.6	58.7		53.7			
5	RMHS	55.8	49.3	54.1	48.3	53.9	46.7	52.6	45.9	53.1	47.5	54.8	48.3	54.1		47.7			
6	HSM	48.6	41.9	46.8	40.5	45.2	41.4	44.1	40.3	45.7	41.2	46.3	42.5	46.1		41.3			
7	LCP	54.3	45.2	53.5	46.9	52	45.7	49.5	44.8	50.4	46.7	51.7	47.2	51.9		46.1			

\*Day time: from 6.00 a.m. to 10.00 p.m.

\*\*Night time: from 10.00 p.m. to 6.00 a.m.