



STATE POLLUTION CONTROL BOARD, ORISSA

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012

Phone-2561909, Fax: 2562822, 2560955

CONSENT ORDERNo 7352 /IND-I-CON-226Dt 03-05-2011CONSENT ORDER NO. 1223

Sub: Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing / new operation of the plant under section 21 of Air (PCP) Act, 1981.

Ref: Your application No. SCN/ENV/012/076/10, Dt. 21/12/2010

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to

Name of the Industry Sukinda Chromite Mines, (TISCO)

Name of the Occupier & Designation Susant Ku. Mishra, Head (Mines)

Address At -Kaliapani, Po - Sukinda, Dist - Jaipur

This consent order is valid for the period up to 31.03.2016

This consent order is valid for the product quantity specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.

A. Details of Products Manufactured

Sl.No.	Product	Quantity
1.	Ore & Concentrate	0.95 MTPA

For TATA STEEL LTD.
By their Constituted Attorney


(GANESH PRASAD SAHU)
Head (Ferro Alloys Production)
Ferro Alloys & Minerals Division

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B. Discharge permitted through the following outlet subject to the standard

Outlet No.	Description of outlet	Point of discharge	Quantity of discharge KLD or KL/hr	Pre-scribed Standard						
				pH	TSS (mg/l)	Oil & Grease (mg/l)	BOD (mg/l)	COD (mg/l)	Cr ⁺⁶ (mg/l)	Total Cr (mg/l)
01.	Domestic effluent	(i) Gardening after treatment in STP (ii) Septic tank & soak pit	400 KLD	5.5 to 9.0	200	--	100	--	--	--
02.	Mine drainage water / surface run off / other wastewater	Damsala Nallah after treatment	Surface run off = 16241 KLD in Monsoon Mine drainage water = 14478 KLD	5.5 to 9.0	100	10	30	250	0.1	2.0

C. Emission permitted through the following stack subject to the prescribed standard

Chimney Stack No.	Description of Stack	Stack height (m)	Quantity of emission	Prescribed Standard				
				PM	SO ₂	NO _x		
1.								

D. Disposal of solid waste permitted in the following manner

Sl.No.	Type of Solid waste	Quantity generated (TPD)	Quantity to be reused on site (TPD)	Quantity to be reused off site (TPD)	Quantity disposed off (TPD)	Description of disposal site.
01.	Top soil / overburden	As per approved mining plan	--	--	--	As per approved mining plan

**E. GENERAL CONDITIONS FOR ALL UNITS**

- 1 The consent is given by the Board in consideration of the particulars given in the application. Any change or alternation or deviation made in actual practice from the particulars furnished in the application will also be the ground liable for review/vanation/revocation of the consent order under section 27 of the Act of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 and to make such variations as deemed fit for the purpose of the Acts.
- 2 The industry would immediately submit revised application for consent to operate to this Board in the event of any change in the quantity and quality of raw material / and products / manufacturing process or quantity / quality of the effluent rate of emission / air pollution control equipment / system etc.
- 3 The applicant shall not change or alter either the quality or quantity or the rate of discharge or temperature or the route of discharge without the previous written permission of the Board.
- 4 The application shall comply with and carry out the directives/orders issued by the Board in this consent order and at all subsequent times without any negligence on his part. In case of non-compliance of any order/directives issued at any time and/or violation of the terms and conditions of this consent order, the applicant shall be liable for legal action as per the provisions of the Law/Act.
- 5 The applicant shall make an application for grant of fresh consent at least 90 days before the date of expiry of this consent order.
- 6 The issuance of this consent does not convey any property right in either real or personal property or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State laws or regulation.
- 7 This consent does not authorize or approve the construction of any physical structure or facilities or the undertaking of any work in any natural water course.
- 8 The applicant shall display this consent granted to him in a prominent place for perusal of the public and inspecting officers of this Board.
- 9 An inspection book shall be opened and made available to Board's Officers during the visit to the factory.
- 10 The applicant shall furnish to the visiting officer of the Board any information regarding the construction, installation or operation of the plant or of effluent treatment system / air pollution control system / stack monitoring system any other particulars as may be pertinent to preventing and controlling pollution of Water / Air.
- 11 Meters must be affixed at the entrance of the water supply connection so that such meters are easily accessible for inspection and maintenance and for other purposes of the Act provided that the place where it is affixed shall in no case be at a point before which water has been tapped by the consumer for utilization for any purposes whatsoever.
- 12 Separate meters with necessary pipe-line for assessing the quantity of water used for each of the purposes mentioned below:
 - a) Industrial cooling, spraying in mine pits or boiler feed,
 - b) Domestic purpose
 - c) Process
- 13 The applicant shall display suitable caution board at the place where the effluent is entering into any water-body or any other place to be indicated by the Board, indicating therein that the area into which the effluents are being discharged is not fit for the domestic use/bathing.
- 14 Storm water shall not be allowed to mix with the trade and/or domestic effluent on the upstream of the terminal manholes where the flow measuring devices will be installed.
- 15 The applicant shall maintain good house-keeping both within the factory and the premises. All pipes, valves, sewers and drains shall be leak-proof. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas.
- 16 The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems install or used by him to achieve with the term(s) and conditions of the consent.
- 17 Care should be taken to keep the anaerobic lagoons, if any, biologically active and not utilized as mere stagnation ponds. The anaerobic lagoons should be fed with the required nutrients for effective digestion. Lagoons should be constructed with sides and bottom made impervious.
- 18 The utilization of treated effluent on factory's own land, if any, should be completed and there should be no possibility of the effluent gaining access into any drainage channel or other water courses either directly or by overflow.
- 19 The effluent disposal on land, if any, should be done without creating any nuisance to the surroundings or inundation of the lands at any time.
- 20 If at any time the disposal of treated effluent on land becomes incomplete or unsatisfactory or create any problem or becomes a matter of dispute, the industry must adopt alternate satisfactory treatment and disposal measures.
- 21 The sludge from treatment units shall be dried in sludge drying beds and the drained liquid shall be taken to equalization tank.
- 22 The effluent treatment units and disposal measures shall become operative at the time of commencement of production.
- 23 The applicant shall provide port holes for sampling the emissions and access platform for carrying out stack sampling and provide electrical outlet points and other arrangements for chimneys/stacks and other sources of emissions so as to collect samples of emission by the Board or the applicant at any time in accordance with the provision of the Act or Rules made therein.
- 24 The applicant shall provide all facilities and render required assistance to the Board staff for collection of samples / stack monitoring / inspection.



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25. The applicant shall not change or alter either the quality or quantity or rate of emission or install, replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in any change in quality and/or quantity of emissions, without the previous written permission of the Board.
26. No control equipments or chimney shall be altered or replaced or as the case may be erected or re-erected except with the previous approval of the Board.
27. The liquid effluent arising out of the operation of the air pollution control equipment shall be treated in the manner and to ion of standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 (as amended).
28. The stack monitoring system employed by the applicant shall be opened for inspection to this Board at any time.
29. There shall not be any fugitive or episodal discharge from the premises.
30. In case of such episodal discharge/emissions the industry shall take immediate action to bring down the emission within the limits prescribed by the Board in conditions/stop the operation of the plant. Report of such accidental discharge /emission shall be brought to the notice of the Board within 24 hours of occurrence.
31. The applicant shall keep the premises of the industrial plant and air pollution control equipments clean and make all hoods, pipes, valves, stacks/chimneys leak proof. The air pollution control equipments, location, inspection chambers, sampling port holes shall be made easily accessible at all times.
32. Any upset condition in any of the plant/plants of the factory which is likely to result in increased effluent discharge/emission of air pollutants and / or result in violation of the standards mentioned above shall be reported to the Headquarters and Regional Office of the Board by fax / speed post within 24 hours of its occurrence.
33. The industry has to ensure that minimum three varieties of trees are planted at the density of not less than 1000 trees per acre. The trees may be planted along boundaries of the industries or industrial premises. This plantation is stipulated over and above the bulk plantation of trees in that area.
34. The solid waste such as sweeping, wastage packages, empty containers residues, sludge including that from air pollution control equipments collected within the premises of the industrial plants shall be disposed off scientifically to the satisfaction of the Board, so as not to cause fugitive emission, dust problems through leaching etc., of any kind.
35. All solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board by :
 - i) Land fill in case of inert material, care being taken to ensure that the material does not give rise to leachate which may percolate into ground water or carried away with storm run-off.
 - ii) Controlled incineration, wherever possible in case of combustible organic material.
 - iii) Composting, in case of bio-degradable material.
36. Any toxic material shall be detoxicated if possible, otherwise be sealed in steel drums and buried in protected areas after obtaining approval of this Board in writing. The detoxication or sealing and burying shall be carried out in the presence of Board's authorized persons only. Letter of authorization shall be obtained for handling and disposal of hazardous wastes.
37. If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any control equipment either in whole or in part) this Board shall after giving the applicant an opportunity of being heard, vary all or any of such condition and thereupon the applicant shall be bound to comply with the conditions so varied.
38. The applicant, his/heirs/legal representatives or assignees shall have no claim whatsoever to the condition or renewal of this consent after the expiry period of this consent.
39. The Board reserves the right to review, impose additional conditions or condition, revoke change or alter the terms and conditions of this consent.
40. Notwithstanding anything contained in this conditional letter of consent, the Board hereby reserves to it the right and power under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Act by the Board.
41. The conditions imposed as above shall continue to be in force until revoked under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 A of Air (Prevention & Control of Pollution) Act, 1981.
42. In case the consent fee is revised upward during this period, the industry shall pay the differential fees to the Board (for the remaining years) to keep the consent order in force. If they fail to pay the amount within the period stipulated by the Board the consent order will be revoked without prior notice.
43. The Board reserves the right to revoke/refuse consent to operate at any time during period for which consent is granted in case any violation is observed and to modify/ stipulate additional conditions as deemed appropriate.

GENERAL CONDITIONS FOR UNITS WITH INVESTMENT OF MORE THAN Rs 50 CRORES, AND 17 CATEGORIES OF HIGHLY POLLUTING INDUSTRIES (RED A).

1. The applicant shall analyse the emissions every month for the parameters indicated in TABLE B & C as mentioned in this order and shall furnish the report thereof to the Board by the 10th of the succeeding month.
2. The applicant shall provide and maintain at his own cost three ambient air quality monitoring stations for monitoring Suspended Particulate Matter, Sulphur Dioxide, Oxides of Nitrogen, Hydro-Carbon, Carbon-Monoxide and monitor the same once in a day/week/fortnight/month. The data collected shall be maintained in a register and a monthly extract be furnished to the Board.

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- 3 The applicant shall provide and maintain at his own cost a meteorological station to collect the data on wind velocity, direction, temperature, humidity, rainfall, etc. and the daily reading shall be recorded and the extract sent to the Board once in a month.
- 4 The applicant shall forward the following information to the Member Secretary, State Pollution Control Board, Orissa, Bhubaneswar regularly.
 - a Report of analysis of stack monitoring, ambient air quality monitoring meteorological data as required every month.
 - b Progress on planting of trees quarterly
- 5 The applicant shall install mechanical composite sampling equipment and continuous flow measuring / recording devices on the effluent drains of trade as well as domestic effluent. A record of daily discharge shall be maintained.
- 6 The following information shall be forwarded to the Member Secretary on or before 10th of every month.
 - a Performance / progress of the treatment plant
 - b Monthly statement of daily discharge of domestic and/or trade effluent
- 7 **Non-compliance with effluent limitations**
 - a) If for any reason the applicant does not comply with or is unable to comply with any effluent limitations specified in this consent, the applicant shall immediately notify the consent issuing authority by telephone and provide the consent issuing authority with the following information in writing within 5 days of such notification.
 - i) Causes of non-compliance
 - ii) A description of the non-compliance discharge including its impact on the receiving waters.
 - iii) Anticipated time of continuance of non-compliance if expected to continue or if such condition has been corrected the duration or period of non-compliance
 - iv) Steps taken by the applicant to reduce and eliminate the non-complying discharge and
 - v) Steps to be taken by the applicant too prevent the condition of non-compliance
 - b) The applicant shall take all reasonable steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge
 - c) Nothing in this consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance whether or not such non-compliance is due to factors beyond his control, such as break-down, electric failure, accident or natural disaster
- 8 The applicant shall at his own cost get the effluent samples collected both before and after treatment and get them analysed at an approval laboratory every month for the parameters indicated in Part-D and shall submit in duplicate the report thereof to the Board
- 9 The addition of various treatment chemicals should be done only with mechanical dosers and proper equipment for regulation of correct dosages determined daily and for proper uniform feeding. Crude practices such as dumping of chemicals in drains or sumps or trickling of acids or alkalies arbitrarily and utilizing poles for stirring etc. should not be resorted to.
- 10 In the disposal of treated effluent on land for irrigation, the industry shall keep in view of the need for
 - Rotation of crops
 - Change of point of application of effluent on land
 - A portion of land kept fallow
- 11 The adoption of these would avoid soil becoming sick or stale, the industry may ensure this in consultation with the Agriculture Department
- 12 It is the sole responsibility of the industry to ensure that there are no complaints at any time from the royals in the surrounding areas as a result of discharge of sewage or trade effluent if any
- 13 Proper house keeping shall be maintained by a dedicated team
- 14 The industry must constitute a team of responsible and technically qualified personnel who will ensure continuous operation of all pollution control devices round the clock (including night hours) and should be in a position to explain the status of operation of the pollution control measures to the inspecting officers of the Board at any point of time. The name of these persons with their contact telephone numbers shall be intimated to the concerned Regional Officer and Head Office of the Board and in case of any change in the team it shall be intimated to the Board immediately

**F. SPECIAL CONDITIONS :**

1. Grant of this consent to operate order is subject to forest clearance under the provisions of Forest (Conservation) Act, 1980. No mining shall be undertaken in the forest area without obtaining forest clearance.
2. A copy of the annual return (submitted to IBM) shall be submitted to the Board every year. The environmental statement report shall be submitted to the Board every year latest by 30th September in prescribed format.
3. Wet drilling shall be practiced or suitably designed dust extractor shall be provided for dry drilling to mitigate the effect of dust on the work environment
4. Pre-wetting of blasting site shall be practiced.
5. Water sprinkling through tankers / fixed sprinklers shall be carried out on the haulage roads to always keep them in wet condition, so as to prevent generation of dust. Water sprinkling at suitable intervals shall be carried out for this purpose.
6. Spillage of materials on haulage roads shall be prevented. Regular collection of spilled over material from haul roads shall be practiced to prevent the generation of dust due to movement of dumpers / tippers / trucks etc.
7. All haulage roads shall be maintained properly to avoid creation of ruts and pot holes.
8. Fixed type water sprinklers shall be provided at ore stockpile areas, loading, unloading points and other strategic dust generating areas to prevent generation of fugitive dusts.
9. Adequate measures shall be taken for control of noise levels below the prescribed standards.

<u>Time</u>	<u>Standard in dB(A)</u>
Day (6 AM to 10 PM)	75
Night (10 PM ~ 6 AM)	70

10. Regular monitoring of ambient air quality shall be carried out at the appropriate places and monitoring report shall be furnished to the Board once in six months. The permanent monitoring stations shall be fixed in consultation with the Regional Officer of the Board.
11. Ambient air quality of the mine shall meet the prescribed standards of the Board.
12. Water generated during the process of dewatering of mine shall be used after treatment for sprinkling purposes on haulage roads / wet beneficiation of sub grade ore instead of discharging to outside. Excess water if any, shall be discharged into surface water body after meeting the prescribed standards.
13. Water generated from the ore beneficiation plant shall be completely reused.
14. The slime generated from the ore beneficiation plant shall be disposed of in an impervious pit in order to prevent the contamination of ground water.
15. Check dams and sedimentation ponds shall be constructed at strategic points including stock pile areas in order to guide all surface run-off water containing sediments and Cr⁺⁶ for settlement of suspended solids and removal of Cr⁺⁶ before discharge of water into surface water body during monsoon after meeting the prescribed standards. Action shall be taken on management of surface run offs generated from stockpile area before monsoon and compliance shall be submitted to the Board.
16. The topsoil shall be removed and stored separately for future use duly covered with grass and vegetation. It shall be utilized for restoration of rehabilitation of land.
17. Overburden / waste rock shall be properly stacked in the earmarked areas approved by IBM and shall be suitably terraced and stabilized through vegetative cover.



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18. Garland drains of adequate dimension shall be provided all around the waste dump terminating with sedimentation ponds and treated adequately. The treated wastewater shall either be reused or shall be discharged after meeting the prescribed standards.
19. Restoration and rehabilitation of the mine shall be done in accordance with approved mine closure plan. A copy of mine closure plan shall be submitted to the Board
20. Seasonal monitoring of ground water level and its quality shall be carried out four times a year and report shall be submitted to the Board.
21. Seasonal monitoring of ground water level and its quality shall be carried out four times a year and report shall be submitted to the Board.
22. Domestic effluent of the township shall be treated in suitable and well designed sewage treatment plant or shall be discharged to soak pit via septic tank constructed as BIS specifications.
23. Service centers i.e. auto shops, HEMM shops, and other areas, wherein, water pollution due to wash outs of oil and grease and suspended solids are expected, effluent treatment plant shall be provided. The treated effluent shall be reused or shall be discharged to out side after meeting the prescribed standards.
24. Rainwater harvesting shall be practiced as a measure of conservation of water.
25. The mine shall abide – by the provisions of Environment (Protection) Act, 1986 and Rules framed there under.
26. The mine shall submit a declaration by 30th April every year that all pollution control systems are in good condition, are operated efficiently and ambient air quality as well as wastewater quality are conforming to the prescribed standards.
27. Failure to comply with any of the conditions mentioned above may result withdrawal of this consent to operate order

To,

The Head (Mines),
Sukinda Chromite Mine (Tata Steel Ltd),
Po - Kalarangiatta,
Dist - Jaipur

[Signature]
2/5/11

MEMBER SECRETARY
STATE POLLUTION CONTROL BOARD, ORISSA

Memo No. _____/Dt.

- i) Regional Officer, State Pollution Control Board, Cuttack
- ii) District Collector Jaipur
- iii) D.F.O Jaipur
- iv) Deputy Director of Mines Jaipur Road
(For Mines and Minerals Processing Unit only)
- v) Cess Section (Head Office)
- vi) Consent Register

ENV. SCIENTIST
STATE POLLUTION CONTROL BOARD, ORISSA



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**GENERAL STANDARDS FOR DISCHARGE OF
ENVIRONMENT POLLUTANTS**

**GENERAL STANDARDS FOR DISCHARGE OF
ENVIRONMENTAL POLLUTANTS PART -A : EFFLUENTS**

Sl.No.	Parameters	Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
1.	Colour & odour	Colourless/Odourless as far as practicable	-----	See 6 of Annex-1	See 6 of Annex-1
2.	Suspended Solids (mg/l)	100	600	200	For process wastewater – 100 b For cooling water effluent 10% above total suspended matter of influent.
3.	Particular size of SS	Shall pass 850	-----	-----	
5.	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	Shall not exceed 5°C above the receiving water temperature	-----	-----	Shall not exceed 5°C above the receiving water temperature
7.	Oil & Grease mg/l max.	10	20	10	20
8.	Total residual chlorine	1.0	-----	-----	1.0
9.	Ammonical nitrogen (as N) mg/l max.	50	50	-----	50
10.	Total Kjeldahl nitrogen (as NH ₃) mg/l max.	100	-----	-----	100
11.	Free ammonia (as NH ₃) mg/l max.	5.0	-----	-----	5.0
12.	Biochemical Oxygen Demand (5 days at 20°C) mg/l max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/l max.	250	-----	-----	250
14.	Arsenic (as As) mg/1 max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg) mg/1 max	0.01	0.01	-----	0.001
16.	Lead (as pb) mg/1 max.	01.	1.0	-----	2.0



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17.	Cadmium (as Cd) mg/l max.	2.0	1.0	-----	2.0
18.	Hexavalent Chromium (as Cr + 6) mg/l max	0.1	2.0	-----	1.0
19.	Total Chromium (as Cr) mg/l max.	2.0	2.0	-----	2.0
20.	Copper (as Cu) mg/l max.	3.0	3.0	-----	3.0
21.	Zinc (as Zn) mg/l max.	5.0	15	-----	15
22.	Selenium (as Se) mg/l max	0.05	0.05	-----	0.05
23.	Nickel (as Ni) mg/l max.	3.0	3.0	-----	5.0
24.	Cyanide (as CN) mg/l max.	0.2	2.0	0.2	0.02
25.	Fluoride (as F) mg/l max.	2.0	15	-----	15
26.	Dissolved Phosphates (as P) mg/l max.	5.0	-----	-----	-----
27.	Sulphide (as S) mg/l max	2.0	-----	-----	5.0
28.	Phenolic compounds as (C ₆ H ₅ OH) mg/l max.	1.0	5.0	-----	5.0
29.	Radioactive materials a. Alpha emitter micro curie/ml. b. Beta emitter micro curie/ml.	10 ⁷ 10 ⁶	10 ⁷ 10 ⁶	10 ⁸ 10 ⁷	10 ⁷ 10 ⁶
30.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
31.	Manganese (as Mn)	2 mg/l	2 mg/l	-----	2 mg/l
32.	Iron (Fe)	3 mg/l	3 mg/l	-----	3 mg/l
33.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	-----	0.2 mg/l
34.	Nitrate Nitrogen	10 mg/l	-----	-----	20 mg/l



NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutants	Time Weighed Average	Concentrate of Ambient Air		
			Industrial Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1.	Sulphur Dioxide (SO ₂), µg/m ³	Annual *	50	20	-Improved wet and Gaeke
		24 Hours **	80	80	- Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO ₂), µg/m ³	Annual *	40	30	- Modified Jacob & Hochheiser (Na-Arsenite)
		24 Hours **	80	80	- Chemiluminescence
3.	Particulate Matter (size less than 10µm) or PM ₁₀ , µg/m ³	Annual *	60	60	- Gravimetric
		24 Hours **	100	100	- TOEM
					- Beta Attenuation
4.	Particulate Matter (size less than 2.5µm) or PM _{2.5} , µg/m ³	Annual *	40	40	- Gravimetric
		24 Hours **	60	60	- TOEM
					- Beta Attenuation
5.	Ozone (O ₃) µg/m ³	8 Hours **	100	100	- UV Photometric
		1 Hours **	180	180	- Chemiluminescence
					- Chemical Method
6.	Lead (Pb) µg/m ³	Annual *	0.50	0.50	-AAS/ICP method after sampling on EMP 2000 or equivalent filter paper.
		24 Hours **	1.0	1.0	- ED-XRF using Teflon filter
7.	Carbon Monoxide (CO) mg/m ³	8 Hours **	02	02	- Non Dispersive Infra Red (NDIR)
		1 Hours **	04	04	Spectroscopy
8.	Ammonia (NH ₃) µg/m ³	Annual*	100	100	-Chemiluminescence
		24 Hours**	400	400	- Indophenol Blue Method
9.	Benzene (C ₆ H ₆) µg/m ³	Annual *	05	05	-Gas Chromatography based continuous analyzer
					- Adsorption and Desorption followed by GC analysis
10.	Benzo (a) Pyrene (BaP)-Particulate phase only, ng/m ³	Annual*	01	01	-Solvent extraction followed by HPLC/GC analysis
11.	Arsenic (As), ng/m ³	Annual*	06	06	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12.	Nickel (Ni), ng/m ³	Annual*	20	20	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

** Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring

For TATA STEEL LTD.
By their Constituted Attorney

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(GANESH PRASAD SAHU)
Head (Ferro Alloys Production)
Ferro Alloys & Minerals Division