



CONSENT ORDER
SOUTH KALIAPANI CHROMITE MINES OF M/S. OMC LTD.

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BY REGD. POST WITH AD

STATE POLLUTION CONTROL BOARD, ODISHA

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

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CONSENT ORDER

No. 4912 / IND-I-CON-253 (A) Dt. 19-03-16

CONSENT ORDER NO. 368

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 online application No. 466630, Dated 30.12.2015 & Online Reply dated 10.03.2016

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: SOUTH KALIAPANI CHROMITE MINES OF M/S. OMC LTD.

Name of the Occupier & Designation: SRI ABANIKANTA PRADHAN, MANAGER (MINING)

Address: AT/PO: KALIAPANI, DIST: JAJPUR

This consent order is valid for the period up to 31.03.2020

This consent order supersedes the earlier consent order issued vide letter No. 5675 dated 30.03.2015.

Details of Products Manufactured

| Sl. No | Product | Quantity |
|--------|------------|----------|
| 01. | Chrome Ore | 1.4 MTPA |

Details of Mineral Handling/Processing Plants

| | | |
|----|----------------------------------|-----------|
| 01 | COB Plant of throughput capacity | 0.47 MTPA |
|----|----------------------------------|-----------|

This consent order is valid for the 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. Discharge permitted through the following outlet subject to the standard

| Outlet No. | Description of outlet | Point of discharge | Quantity of discharge KLD | Pre-scribed Standard | | | | | | | |
|------------|---|-------------------------------------|---------------------------|----------------------|------------|------------|------------|---------------------|-------------|-----------------------|------------------|
| | | | | pH | TSS (mg/l) | BOD (mg/l) | COD (mg/l) | Oil & Grease (mg/l) | Cr+6 (mg/l) | Total Chromium (mg/l) | Iron (Fe) (mg/l) |
| 01. | Septic tank (Domestic effluent) | Soak pit | -- | 5.5 to 9.0 | 200 | 100 | -- | -- | -- | -- | |
| 02. | Mine drainage water / surface run off/ other wastewater | On land / inland surface water body | 32,400 (max) | 5.5 to 9.0 | 100 | -- | -- | 10 | 0.05 | 2.0 | 3.0 |

B. 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 | | |
| | | | | | | | | |

C. 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 |



D. 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/variation/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.
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.



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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 no 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.
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, Odisha, 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.



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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 slate, 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 royats in the surrounding areas as a result of discharge of sewage or trade effluent if any.
13. Proper housekeeping 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.



E. SPECIAL CONDITIONS:

- 1) A copy of the annual return (annual return submitted to IBM, Govt. of India/ Directorate of Mines, Govt. of Odisha) shall be submitted every year.
- 2) The environmental statement report shall be submitted to the Board in proper format every year.
- 3) Wet drilling shall be practiced or suitably designed dust extractor shall be provided for dry drilling to prevent generation of dust in the work environment.
- 4) Pre-wetting of blasting site and controlled blasting shall be practiced. Blasting shall be carried out during day time.
- 5) Water sprinkling through tankers / fixed sprinklers shall be carried out on the mine haulage roads and should always be in wet condition, so as to prevent generation of dust during transportation of materials.
- 6) Wheel washing facility for the ore transport vehicles shall be provided at the exit point of the mine.
- 7) The vehicles carrying ore for transportation from the mine shall be covered with tarpaulin.
- 8) Regular water sprinkling on mineral transportation roads passing through the habitation area as well as other strategic point on the ore transportation road shall be done jointly by the mining lessees.
- 9) All mine haulage roads and other transportation roads shall be maintained properly to avoid creation of ruts and pot holes.
- 10) Adequate measures shall be taken for control of noise levels below 85 dB(A) in work zone.
- 11) Regular monitoring of ambient air quality shall be carried out at three 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.
- 12) Ambient air quality of the mine shall meet the prescribed standards for industrial area.
- 13) Wastewater generated from the ore beneficiation plant shall be completely reused.
- 14) The slime generated from the ore beneficiation plant shall be disposed of safely as per mining plan and action shall be taken to prevent the contamination of ground water due to its disposal.



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- 15) Retention wall shall be constructed at the toe of OB dump with provision of garland drain. Provision shall be made to divert the runoff from OB, ore stack yard and other areas of the mine to the ETP. Garland drains, channels and sedimentation pits constructed for the purpose shall be desilted after monsoon or as and when required.
- 16) Mine drainage water shall be used for wet beneficiation of sub-grade ore. Excess water if any, shall be discharged into surface water body after adequate treatment in the ETP. The treated wastewater of ETP shall also be utilized for sprinkling activities at various sources of generation of dust.
- 17) Construction of up-graded ETP as per the conceptual plan of IIT, Kharagpur shall be expedited and action should be taken to complete the same by June-2016.
- 18) The online monitoring system with data transfer facility to SPCB server shall be installed at the inlet and outlet of ETP for the parameters such as quantity of flow, pH, TSS and Cr^{+6} .
- 19) Overburden / waste rock shall be properly stacked in the earmarked areas approved by IBM and shall be suitably terraced and stabilized through vegetative cover or otherwise.
- 20) Restoration and rehabilitation of the mine shall be done in accordance with approved mine closure plan.
- 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) Oil and grease trap with sedimentation pit shall be provided for treatment of workshop effluent, if any. The treated wastewater shall be completely recycled.
- 24) Ambient Air Quality monitoring data, Noise Monitoring data & Water/Waste Water Quality Monitoring data shall be electronically displayed at the entry point of the mine or at a suitable location of the mine.
- 25) Plantation of trees shall be undertaken in the colony/ township, over top soil dumps, OB dumps, back filled areas, along the side of haul road and in other areas of the mines not being utilized for mining activities. The mine shall take up avenue plantation and plantation in nearby village areas in consultation with DFO/Horticulture Department. The density of the plantation shall be around 2500 plants per hectare. Nursery shall also be developed for plantation activities within the ML area and free distribution of seedlings to nearby villagers. The annual statements pertaining to the number of trees planted areas where plantation has been done, survival percentage and area in Ha. covered under plantation shall be submitted to the Board, every year in prescribed format.



- 26) Mining operation is subject to availability of all other statutory clearances required under relevant Acts/Rules.
- 27) 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.


MEMBER SECRETARY

STATE POLLUTION CONTROL BOARD, ODISHA

TO

**THE MANAGER (MINING),
SOUTH KALIAPANI CHROMITE MINES OF
M/S. OMC LIMITED
AT/PO: KALIAPANI,
DIST: JAJPUR, PIN: 755028**

Memo No. _____/Dt.

Copy forwarded to :

- i) Regional Officer, State Pollution Control Board, **Kalinganagar**
- ii) District Collector, **Jajpur**
- iii) Director of Mines, Govt. of Odisha, Bhubaneswar,
- iv) Director, Environment -cum-Special Secretary, F & E. Deptt. Govt. of Odisha, Bhubaneswar.
- v) D.F.O **Jajpur**
- vi) Deputy Director of Mines, **Jajpur Road**
- vii) Cess Section (Head Office)
- viii) Sr. Env. Engineer-L-I (C) (Hazardous waste cell)
- ix) Sr. Env. Scientist -L-I (L), Central Lab. SPCB, Bhubaneswar
- x) Consent Register


SR. ENV. SCIENTIST (MINES)

STATE POLLUTION CONTROL BOARD, ODISHA



**GENERAL STANDARDS FOR DISCHARGE OF
ENVIRONMENTAL 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/l max. | 0.2 | 0.2 | 0.2 | 0.2 |
| 15. | Mercury (as Hg) mg/l max. | 0.01 | 0.01 | ----- | 0.001 |
| 16. | Lead (as Pb) mg/l 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 * 24 Hours ** | 50 80 | 20 80 | -Improved west and Gaeke - Ultraviolet fluorescence |
| 2. | Nitrogen Dioxide (NO ₂), µg/m ³ | Annual * 24 Hours ** | 40 80 | 30 80 | - Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence |
| 3. | Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³ | Annual * 24 Hours ** | 60 100 | 60 100 | -Gravimetric - TOEM - Beta Attenuation |
| 4. | Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³ | Annual * 24 Hours ** | 40 60 | 40 60 | -Gravimetric - TOEM - Beta Attenuation |
| 5. | Ozone (O ₃) µg/m ³ | 8 Hours ** 1 Hours ** | 100 180 | 100 180 | - UV Photometric - Chemiluminescence - Chemical Method |
| 6. | Lead (Pb) µg/m ³ | Annual * 24 Hours ** | 0.50 1.0 | 0.50 1.0 | -AAS/ICP method after sampling on EMP 2000 or equivalent filter paper. - ED-XRF using Teflon filter |
| 7. | Carbon Monoxide (CO) mg/m ³ | 8 Hours ** 1 Hours ** | 02 04 | 02 04 | - Non Dispersive Infra Red (NDIR) Spectroscopy |
| 8. | Ammonia (NH ₃) µg/m ³ | Annual* 24 Hours** | 100 400 | 100 400 | -Chemiluminescence - 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.