THE ENVIRONMENT (PROTECTION) RULES, 1986

(As amended to date)

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THE ENVIRONMENT (PROTECTION) RULES, 1986

MINISTRY OF ENVIRONMENT AND FORESTS

(Department of Environment, Forest and Wildlife)

NOTIFICATION

New Delhi, the 19th November, 1986

[1]**S.O. 844(E) -** In exercise of the powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules, namely:-

1. SHORT TITLE AND COMMENCEMENT

(i) These rules may be called the Environment (Protection) Rules, 1986.

(ii) They shall come into force on the date of their publication in the Official Gazette.

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2. DEFINITIONS

In these rules, unless the context otherwise requires,-

(a) "Act" means the Environment (Protection) Act, 1986 (29 of 1986);

[2] [(aa) "areas" means all areas where the hazardous substances are handled;]

(b) "Central Board" means the Central Pollution Control Board constituted under section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);

(c) "Form" means a form set forth in Appendix A to these rules;

(d) "Government Analyst" means a person appointed or recognized as such under section 13;

(e) "person" in relation to any factory or premises means a person or occupier or his agent who has control over the affairs of the factory or premises and includes in relation to any substance, the person in possession of the substance.

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1 As published in Gazette of India, Extraordinary, Part II 3(ii), dt.19.11.1986.

2 Clauses (aa), (ee) and (ff) inserted by Notification NO. G.S.R. 931(E) dated 27.10.89 published in the Gazette No. 564 dated 27.10.89. These rules are referred to as Principal Rules in all Notifications beginning with S.O. 32(E) published in the Gazette No. 66 dated 16.2.87.

[1][(ee) "prohibited substance" means the substance prohibited for handling;]

(f) "recipient system" means the part of the environment such as soil, water, air or other which receives the pollutants;

[1][(ff) "restricted substance" means the substance restricted for handling;]

(g) "section" means a section of the Act;

(h) "Schedule" means a Schedule appended to these rules;

(i) "Standards" means standards prescribed under these rules;

(j) "State Board" means a State Pollution Control Board constituted under section 4 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or a State Pollution Control Board constituted under section 5 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981);

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3. STANDARDS FOR EMISSION OR DISCHARGE OF ENVIRONMENTAL POLLUTANTS

(1) For the purpose of protecting and improving the quality of the environment and preventing and abating environmental pollution, the standards for emission or discharge of environmental pollutants from the industries, operations or processes shall be as specified in [2][Schedule I to IV].

(2) Notwithstanding anything contained in sub-rule (1),the Central Board or a State Board may specify more stringent standards from those provided in [3][Schedule I to IV] in respect of any specific industry, operation or process depending upon the quality of the recipient system and after recording reasons therefore in writing.

[4][(3) The standards for emission or discharge of environmental pollutants specified under sub-rule (1) or sub-rule (2) shall be complied with by an industry, operation or process within a period of one year of being so specified.]

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1 Clauses (aa), (ee) and (ff) inserted by Notification NO. G.S.R. 931(E) dated 27.10.89 published in the Gazette No. 564 dated 27.10.89. These rules are referred to as Principal Rules in all Notifications beginning with S.O. 32(E) published in the Gazette No. 66 dated 16.2.87.

2 Substituted by notification G.S.R 422(E) dated 19.5.1993, published in the Gazette No. 174 dated 19.5.1993.

3 Substituted ibid

4 The sub-rule (3)of rule 3 inserted vide S.O.23(E), dt.16.01.1991.

[1][(3A) (i) Notwithstanding anything contained in sub-rules (1) and (2), on and from the 1st day of January, 1994, emission or discharge of environmental pollutants from the [2][industries, operations or processes other than those industries, operations or processes for which standards have been specified in Schedule-I] shall not exceed the relevant parameters and standards specified in schedule VI.

Provided that the State Boards may specify more stringent standards for the relevant parameters with respect to specific industry or locations after recording reasons therefore in writing.

(ii) The State Board shall while enforcing the standards specified in Schedule VI follow the guidelines specified in Annexure I and II in that Schedule.]

[3][(3B)] The combined effect of emission or discharge of environmental pollutants in an area, from industries, operations, processes, automobiles and domestic sources, shall not be permitted to exceed the relevant concentration in ambient air as specified against each pollutant [4][in columns (4) and (5) of Schedule VII.]

(4) Notwithstanding anything contained in sub-rule (3)-

(a) the Central Board or a State Board, depending on the local conditions or nature of discharge of environmental pollutants, may, by order, specify a lesser period than a period specified under sub-rule (3) within which the compliance of standards shall be made by an industry, operation or process.

(b) the Central Government in respect of any specific industry, operation or process, by order, may specify any period other than a period specified under sub-rule (3) within which the compliance of standards shall be made by such industry, operation or process.

(5) Notwithstanding anything contained in sub-rule (3) the standards for emission or discharge of environmental pollutants specified under sub-rule (1) or sub-rule (2) in respect of an industry, operation or process before the commencement of the Environment (Protection) Amendment Rules, 1991, shall be complied by such industry, operation or process by the 31st day of December 1991.

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1 The sub-rule (3A) of rule 3 inserted by rule 2(a)(iii) of the Environment (Protection) Second Amendment Rules, 1993 notified vide GSR 422(E) dt.19.05.1993, published in the Gazette No.174 dated 19.05.1993.

2 Substituted by rule 2(a) of the Environment (Protection) Third Amendment Rules, 1993 notified vide Notification G.S.R 801(E), dt.31.12.1993, published in Gazette No.463 dt.31.12.1993.

3 Substituted by Rule 2(a) of the Environment (Protection) Second (Amendment) Rules, 1998 notified by notification GSR 7, dated 22.12.1998.

4 Substituted by Rule 2 of the Environment (Protection) Seventh Amendment Rules, 2009 notified by GSR 826(E), dated 16.11.2009.

[1][(6) Notwithstanding anything contained in sub-rule (3), an industry, operation or process which has commenced production on or before 16th May, 1981 and has shown adequate proof of atleast commencement of physical work for establishment of facilities to meet the specified standards within a time-bound programme, to the satisfaction of the concerned State Pollution Control Board, shall comply with such standards latest by the 31st day of December, 1993.

(7) Notwithstanding anything contained in sub-rule (3) or sub-rule (6) an industry, operation or process which has commenced production after the 16th day of May, 1981 but before the 31st day of December 1991 and has shown adequate proof of at least commencement of physical work for establishment of facilities to meet the specified standards within a time-bound programme, to the satisfaction of the concerned State Pollution Control Board, shall comply with such standards latest by the 31st day of December, 1992.]

[2][(8) On and from the 1st day of [3][June, 2002], the following coal based thermal power plants shall use [4][raw or blended or beneficiated coal with an ash content not exceeding thirty four per cent on an annual average basis.], namely:-

(a) any thermal power plant located beyond one thousand kilometers from the pit-head; and

(b) any thermal power plant located in urban area or sensitive area or critically polluted area irrespective of their distance from pit-head except any pit-head power plant.

[5][Provided that any thermal power plant using Circulating Fluidised Bed Combustion or Atmosphere Fluidised Bed Combustion or Pressurized Fluidised Bed Combustion or integrated Gasification Combined Cycle technologies or any other clean technologies as may be notified by the Central Government in the Official Gazette shall be exempted from Clauses (a) and (b)]

***Explanation**:* For the purpose of this Rule :-

(a) 'beneficiated coal' means coal containing higher calorific value but lower ash than the original ash content in the raw coal obtained through physical separation or washing process.

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1 Sub-rule (6) and (7) of rule 3 were added by the Environment (Protection) Amendment Rule, 1992 vide G.S.R. 95(E) dated 12.02.1992.

2 Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 1997 vide G.S.R.560(E), dated 19.9.1997.

3 Substituted vide G.S.R.407(E), dated 31.5.2001.

4 Substituted vide G.S.R.378 (E), dated 30.6.1998.

5 Inserted vide G.S.R. 378 (E), dated 30.6.1998.

(b) 'pit-head power plant' means power stations having captive transportation system for its exclusive use for transportation of coal from the loading point at the mining end upto the uploading point at the power station without using the normal public transportation system.;

(c) 'sensitive area' means an area whose ecological balance is prone to be easily disturbed.

(d) 'critically polluted area' means the area where pollution level has reached or likely to reach to the critical level and which has been identified as such by the Central Government or Central Pollution Control Board or a State Pollution Control Board.

[1][(e) 'urban area' means an area limit of a city having a population of more than 1 million according to 1991 census.]

4. DIRECTIONS

(1) Any direction issued under section 5 shall be in writing.

(2) The direction shall specify the nature of action to be taken and the time within which it shall be complied with by the person, officer or the authority to whom such direction is given.

[2][(3) (a) The person, officer or authority to whom any direction is sought to be issued shall be served with a copy of the proposed direction and shall be given an opportunity of not less than fifteen days from the date of service of a notice to file with an officer designated in this behalf the objections, if any, to the issue of the proposed direction.

(b) Where the proposed direction is for the stoppage or regulation of electricity or water or any other service affecting the carrying on any industry, operation or process and is sought to be issued to an officer or an authority, a copy of the proposed direction shall also be endorsed to the occupier of the industry, operation or process, as the case may be and objections, if any, filed by the occupier with an officer designated in this behalf shall be dealt with in accordance with the procedures under sub-rules (3a) and (4) of this rule:

Provided that no opportunity of being heard shall be given to the occupier if he had already been heard earlier and the proposed direction referred to in sub-rule (3b) above for the stoppage or regulation of electricity or

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1 Inserted vide G.S.R.378(E), dated 30.6.1998.

2 Sub-rule (3) of rule 4 of the Principal Rules was re-numbered as sub-rule 3(a) and sub-rule 3(b) inserted vide Notification No. S.O. 64(E) published in the Gazette No. 42 dated 18.1.88.

water or any other service was the resultant decision of the Central Government after such earlier hearing.]

(4) The Central Government shall within a period of 45 days from the date of receipt of the objections, if any or from the date up to which an opportunity is given to the person, officer or authority to file objections whichever is earlier, after considering the objections, if any, received from the person, officer or authority sought to be directed and for reasons to be recorded in writing, confirm, modify or decide not to issue the proposed direction.

(5) In case where the Central Government is of the opinion that in view of the likelihood of a grave injury to the environment it is not expedient to provide an opportunity to file objections against the proposed direction, it may, for reasons to be recorded in writing, issue directions without providing such an opportunity.

(6) Every notice or direction required to be issued under this rule shall be deemed to be duly served

(a) where the person to be served is a company, if the document is addressed in the name of the company at its registered office or at its principal office or place of business and is either-

(i) sent by registered post, or

(ii) delivered at its registered office or at the principal office or place of business;

(b) where the person to be served is an officer serving Government, if the document is addressed to the person and a copy thereof is endorsed to this Head of the Department and also to the Secretary to the Government, as the case may be, in-charge of the Department in which for the time being the business relating to the Department in which the officer is employed is transacted and is either-

(i) sent by registered post, or

(ii) is given or tendered to him;

(c) in any other case, if the document is addressed to the person to be served and-

(i) is given or tendered to him, or

(ii) if such person cannot be found, is affixed on some conspicuous part of his last known place of residence or business or is given or tendered to some adult member of his family or is affixed on some conspicuous part of the land or building, if any, to which it relates, or

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(iii) is sent by registered post to that person;

Explanation.-For the purpose of this sub-rule:-

(a) "company" means any body corporate and includes a firm or other association of individuals;

(b) "a servant" is not a member of the family.

5. PROHIBITION AND RESTRICTION ON THE LOCATION OF INDUSTRIES AND THE CARRYING ON PROCESSES AND OPERATIONS IN DIFFERENT AREAS

(1) The Central government may take into consideration the following factors while prohibiting or restricting the location of industries and carrying on of processes and operations in different areas-

(i) Standards for quality of environment in its various aspects laid down for an area.

(ii) The maximum allowable limits of concentration of various environmental pollutants (including noise) for an area.

(iii) The likely emission or discharge of environmental pollutants from an industry, process or operation proposed to be prohibited or restricted.

(iv) The topographic and climatic features of an area.

(v) The biological diversity of the area which, in the opinion of the Central Government needs to be preserved.

(vi) Environmentally compatible land use.

(vii) Net adverse environmental impact likely to be caused by an industry, process or operation proposed to be prohibited or restricted.

(viii) Proximity to a protected area under the Ancient Monuments and Archaeological Sites and Remains Act, 1958 or a sanctuary, National Park, game reserve or closed area notified as such under the Wild Life (Protection) Act, 1972 or places protected under any treaty, agreement or convention with any other country or countries or in pursuance of any decision made in any international conference, association or other body.

(ix) Proximity to human settlements.

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(x) Any other factor as may be considered by the Central Government to be relevant to the protection of the environment in an area.

(2) While prohibiting or restricting the location of industries and carrying on of processes and operations in an area, the Central Government shall follow the procedure hereinafter laid down.

(3) (a) Whenever it appears to the Central Government that it is expedient to impose prohibition or restrictions on the locations of an industry or the carrying on of processes and operations in an area, it may by notification in the Official Gazette and in such other manner as the Central Government may deem necessary from time to time, give notice of its intention to do so.

(b) Every notification under clause (a) shall give a brief description of the area, the industries, operations, processes in that area about which such notification pertains and also specify the reasons for the imposition of prohibition or restrictions on the locations of the industries and carrying on of process or operations in that area.

(c) Any person interested in filing an objection against the imposition of prohibition or restrictions on carrying on of processes or operations as notified under clause (a) may do so in writing to the Central Government within sixty days from the date of publication of the notification in the Official Gazette.

(d) The Central Government shall within a period of one hundred and twenty days from the date of publication of the notification in the Official Gazette consider all the objections received against such notification and may within [1][three hundred and sixty five days] from such day of publication] impose prohibition or restrictions on location of such industries and the carrying on of any process or operation in an area.

[2][(4) Notwithstanding anything contained in sub-rule (3), whenever it appears to the Central Government that it is in public interest to do so, it may dispense with the requirement of notice under clause (a) of sub-rule (3).]

[3][6. PROCEDURE FOR TAKING SAMPLES

The Central Government or the officer empowered to take samples under section 11 shall collect the sample in sufficient quantity to be divided into two uniform parts and effectively seal and suitably mark the same and permit to the person from whom the sample is taken to add his own seal or mark to all or any of the portions so sealed and marked. In case where the sample is made up in containers or small volumes and is likely to deteriorate or be otherwise damaged if exposed, the Central Government or the officer

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1 Substituted for the words "one hundred and eight days" the words "three hundred and sixty five days" by Rule 2 of the Environment (Protection) Eighth Amendment Rules, 1992

2 Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 1994 notified by G.S.R.320(E), dated 16.3.1994.

3 For rule 6 of the principal rules this rule was substitute vide S.O. 64(E) published in the Gazette No. 42 dated 18.1.88.

empowered shall take two of the said samples without opening the containers and suitably seal and mark the same. The Central Government or the officer empowered shall dispose of the samples so collected as follows:-

(i) One portion shall be handed over to the person from whom the sample is taken under acknowledgement; and

(ii) The other portion shall be sent forthwith to the environmental laboratory or analysts.]

7. SERVICE OF NOTICE

The Central Government or the officer empowered shall serve on the occupier or his agent or person in charge of the place a notice then and there in Form I of his intention to have the sample analysed.

8. PROCEDURE FOR SUBMISSION OF SAMPLES FOR ANALYSIS, AND THE FORM OF LABORATORY REPORT THEREON

(1) Sample taken for analysis shall be sent by the Central Government or the officer empowered to the environmental laboratory by registered post or through special messenger along with Form II.

(2) Another copy of Form II together with specimen impression of seals of the officer empowered to take samples along with the seals/marks, if any, of the person from whom the sample is taken shall be sent separately in a sealed cover by registered post or through a special messenger to the environmental laboratory.

(3) The findings shall be recorded in Form III in triplicate and signed by the Government Analyst and sent to the officer from whom the sample is received for analysis.

(4) On receipt of the report of the findings of the Government Analyst, the officer shall send one copy of the report to the person from whom the sample was taken for analysis, the second copy shall be retained by him for his record and the third copy shall be kept by him to be produced in the Court before which proceedings, if any, are instituted.

9. FUNCTIONS OF ENVIRONMENTAL LABORATORIES

The following shall be the functions of environmental laboratories:-

(i) to evolve standardized methods for sampling and analysis of various types of environmental pollutants;

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(ii) to analyze samples sent by the Central Government or the officers empowered under sub-section (1) of section 11.

(iii) to carry out such investigations as may be directed by the Central Government to lay down standards for the quality of environment and discharge of environmental pollutants, to monitor and to enforce the standards laid down;

(iv) to send periodical reports regarding its activities to the Central Government;

(v) to carry out such other functions as may be entrusted to it by the Central Government from time to time.

10. QUALIFICATIONS OF GOVERNMENT ANALYST

A person shall not be qualified for appointment or recognized as a Government Analyst unless he is a:-

(a) graduate in science from a recognized university with five years experience in laboratory engaged in environmental investigation, testing or analysis; or

(b) post-graduate in science or a graduate in engineering or a graduate in medicine or equivalent with two years experience in a laboratory engaged in environmental investigations testing or analysis; or

(c) post-graduate in environmental science from a recognized university with two years experience in a laboratory engaged in environmental investigations, testing or analysis.

11. MANNER OF GIVING NOTICE

The manner of giving notice under clause (b) of section 19 shall be as follows, namely:-

(l) The notice shall be in writing in Form IV.

(2) The person giving notice may send notice to-

(a) if the alleged offence has taken place in a Union territory

(A) the Central Board and

(B) Ministry of Environment and Forests (represented by the Secretary to Government of India);

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(b) if the alleged offence has taken place in a State:

(A) the State Board; and

(B) the Government of the State (represented by the Secretary to the State Government in-charge of environment); and

(C) the Ministry of Environment and Forests (represented by the Secretary to the Government of India);

(3) The notice shall be sent by registered post acknowledgement due; and

(4) The period of sixty days mentioned in clause (b) of section 19 of the Environment (Protection) Act, 1986 shall be reckoned from the date it is first received by one of the authorities mentioned above.

[1][12. FURNISHING OF INFORMATION TO AUTHORITIES AND AGENCIES IN CERTAIN CASES

Where the discharge of environmental pollutant in excess of the prescribed standards occurs or is apprehended to occur due to any accident or other unforeseen act or event, the person in charge of the place at which such discharge occurs or is apprehended to occur shall forth with intimate the fact of such occurrence or apprehension of such occurrence to all the following authorities or agencies, namely:-

(i) The officer-in-charge of emergency or disaster relief operation in a district or other region of a state or Union territory specified by whatever designation by the Government of the said State or Union territory, and in whose jurisdiction the industry, process or operation is located.

(ii) Central Board or a State Board as the case may be and its regional officer having local jurisdiction who have been delegated powers under section 20, 21, 23 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of l974) and section 24 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981).

(iii) The statutory authorities or agencies specified in column 3 in relation to places mentioned in column 2 against thereof of the Schedule II.]

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[1] Rule 12 inserted vide Notification No. S.O. 32(E) dated 16.2.87 published in the Gazette No. 66 dated 16.2.87.

[1][13. PROHIBITION AND RESTRICTION ON THE HANDLING OF HAZARDOUS SUBSTANCES IN DIFFERENT AREAS

(1) The Central Government may take into consideration the following factors while prohibiting or restricting the handling of hazardous substances in different areas-

(i) The hazardous nature of the substance (either in qualitative or quantitative terms as far as may be) in terms of its damage causing potential to the environment, human beings, other living creatures, plants and property;

(ii) the substances that may be or likely to be readily available as substitutes for the substances proposed to be prohibited or restricted;

(iii) the indigenous availability of the substitute, or the state of technology available in the country for developing a safe substitute;

(iv) the gestation period that may be necessary for gradual introduction of a new substitute with a view to bringing about a total prohibition of the hazardous substance in question; and

(v) any other factor as may be considered by the Central Government to be relevant to the protection of environment.

(2) While prohibiting or restricting the handling of hazardous substances in an area including their imports and exports the Central Government shall follow the procedure hereinafter laid down-

(i) Whenever it appears to the Central Government that it is expedient to impose prohibition or restriction on the handling of hazardous substances in an area, it may, by notification in the Official Gazette and in such other manner as the Central Government may deem necessary from time to time, give notice of its intention to do so.

(ii) Every notification under clause (i) shall give a brief description of the hazardous substances and the geographical region or the area to which such notification pertains, and also specify the reasons for the imposition of prohibition or restriction on the handling of such hazardous substances in that region or area.

(iii) Any person interested in filing an objection against the imposition of prohibition or restrictions on the handling of hazardous substances as notified under clause (i) may do so in writing to the Central Government within sixty days from the date of publication of the notification in the Official Gazette.

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[1] Rule 13 inserted vide Notification No G.S.R. 931(E) dated 27.10.89 published in the Gazette No. 564 dated 27.10.89.

(iv) The Central Government shall within a period of ninety days from the date of publication of the notification in the official Gazette consider all the objections received against such notification and may impose prohibition or restrictions on the handling of hazardous substances in a region or an area.]

[1][14. SUBMISSION OF ENVIRONMENTAL [2][STATEMENT]

Every person carrying on an industry, operation or process requiring consent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) or both or authorization under the Hazardous Wastes (Management and Handling) Rules, 1989 issued under the Environment (Protection) Act, 1986 (29 of 1986) shall submit an environmental [2][statement] for the financial year ending the 31st March in Form V to the concerned State Pollution Control Board on or before the [3][thirtieth day of September] every year, beginning 1993.]

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1 Inserted by Rule 2 of the Environment (Protection) (second amendment) Rules, 1992 vide notification G.S.R. 329(E), dated 13.3.1992.

2 Substituted by Rule 2(a) (i) of the Environment (Protection) Amendment Rules, 1993 vide notification G.S.R. 386(E), dated 22.4.1993

3 Substituted by Rule 2(a) (ii), ibid

STANDARDS FOR EMISSION OR DISCHARGE OF ENVIRONMENTAL POLLUTANTS

[1]SCHEDULE – I (See rule 3)

Sr. No.	Industry	Parameter	Standards
1	2	3	4
1.	**CAUSTIC SODA INDUSTRY**		Concentration not to exceed, miligramme per lit. (except for pH and flow)
		Total concentration of mercury in the final effluent*	0.01
		Mercury bearing waste-water generation (flow)	10 kilolitres/ tonne of caustic soda produced.
		pH	5.5 to 9.0
		*Final effluent is the combined effluent from (a) cell house, (b) brine plant, (c) chlorine handling (d) hydrogen handling (e) hydrochloric acid plant.	
**2.	**MAN-MADE FIBRES (SYNTHETIC)**		Concentration not to exceed miligramme per litre (except for pH)
		Suspended solids	100
		Bio-chemical oxygen demand [2][BOD 3 days at 27°C]	30
		pH	5.5 to 9.0
[3][3.	**PETROLEUM OIL REFINERY**	**A. EFFLUENT**	
		1. pH	6.0-8.5
		2. Oil & Grease	5.0
		3. $BOD_{3\ days,\ 27^{o}C}$	15.0
		4. COD	125.0
		5. Suspended Solids	20.0
		6. Phenols	0.35
		7. Sulphides	0.5
		8. CN	0.20
		9. Ammonia as N	15.0
		10. TKN	40.0
		11. P	3.0

[1] The Environment (Protection) Rules, 1986 are referred to as principal rules in all subsequent Notifications beginning with S.O. 32(E), dated 16.2.1987 published in the Gazette no. 66, dated 16.2.1987. The Schedule to be principal rules was renumbered as Schedule-I vide S.O. 32(E) supra.

** Standards notified at Sl. No. 60 may also be referred.

[2] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

[3] Substituted by Rule 2 (i) of the Environment (Protection) Amendment Rules, 2008 notified by G.S.R.186(E), dated 18.3.2008.

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Sr. No.	Industry	Parameter	Standards
1	2	3	4
		12. Cr (Hexavalent)	0.1
		13. Cr (Total)	2.0
		14. Pb	0.1
		15. Hg	0.01
		16. Zn	5.0
		17. Ni	1.0
		18. Cu	1.0
		19. V	0.2
		20. Benzene	0.1
		21. Benzo (a) – Pyrene	0.2

Notes:-

(i) Concentration limits shall be complied with at the outlet, discharging effluent (excluding discharge from sea water cooling systems) to receiving environment (surface water Bodies, marine systems or public sewers). In case of application of treated effluent directly for irrigation/horticulture purposes (within or outside the premises of refinery), make-up water for cooling systems, fire fighting, etc., the concentration limits shall also be complied with at the outlet before taking the effluent for such application. However, any use in the process such as use of sour water in desalter is excluded for the purpose of compliance.

(ii) In case of circulating seawater cooling, the blow-down from cooling systems shall be monitored for pH and oil & grease (also hexavalent & total chromium, if chromate treatment is given to cooling water) and shall conform to the concentration limits for these parameters. In case of reuse of treated effluent as cooling water make-up, all the parameters (as applicable for treated effluent) shall be monitored and conform to the prescribed standards.

(iii) In case of once through cooling with seawater, the oil & grease content in the effluent from cooling water shall not exceed 1.0 mg/l.

B. EMISSIONS

Limiting concentration in mg/Nm^3, unless stated

		Fuel Type	Existing refineries	New Refinery/ Furnace/ Boiler
(Furnace, Boiler and Captive Power Plant)	Sulphur Dioxide (SO_2)	Gas	50	50
		Liquid	1700	850
	Oxides of Nitrogen (NOx)	Gas	350	250
		Liquid	450	350
	Particulate Matter (PM)	Gas	10	5
		Liquid	100	50

Sr. No.	Industry	Parameter		Standards	
1	2	3		4	
		Carbon Monoxide (CO)	Gas	150	100
			Liquid	200	150
		Nickel and Vanadium (Ni+v)	Liquid	5	5
		Hydrogen Sulphide (H_2S) in fuel gas	Liquid / Gas	150	150
		Sulphur content in liquid fuel, weight%	Liquid / Gas	1.0	0.5

Notes:-

(i) In case of mixed fuel (gas and liquid) use, the limit shall be computed based on heat supplied by gas and liquid fuels.

(ii) All the furnaces/boilers with heat input of 10 million kilo calories/hour or more shall have continuous systems for monitoring of SO_2 and NO_2. Manual monitoring for all the emission parameters in such furnaces or boilers shall be carried out once in two months.

(iii) All the emission parameters in furnaces/boilers having heat input less than 10 million kilo calories/hour will be monitored once in three months.

(iv) In case of continuous monitoring, one hourly average concentration values shall be complied with 98% of the time in a month. Any concentration value obtained through manual monitoring, if exceeds the limiting concentration value, shall be considered as non-compliance.

(v) Data on Nickel and Vanadium content in the liquid fuel (in ppm) shall be reported. Nickel and Vanadium in the liquid fuel shall be monitored at least once in six months, if liquid fuel source & quality are not changed. In case of changes, measurement is necessary after every change.

(FCC Regenerators)

	Limiting concentration in mg/Nm^3, unless stated		
	Existing refineries		**New Refinery /FCC Commissioned**
	Hydro processed FCC feed	Other than Hydro processed FCC feed	
Sulphur Dioxide (SO_2)	500	1700	500 (for hydro-processed feed) 850 for other feed)
Oxides of Nitrogen (NO_x)	400	450	350
Particulate Matter (PM)	100	100	50
Carbon Monoxide (CO)	400	400	300
Nickel and Vanadium (Ni+V)	2	5	2
Opacity, %	30	30	30

Sr. No.	Industry	Parameter	Standards
1	2	3	4

Notes:-

(i) In case part feed is hydro-processed, the emission values shall be calculated proportional to the feed rates of untreated and treated feeds.

(ii) FCC regenerators shall have continuous systems for monitoring of SO_2 and NO_x. One hourly average concentration values shall be complied with 98% of the time in a month, in case of continuous monitoring. Manual monitoring for all the emission parameters shall be carried out once in two months.

(iii) Any concentration value obtained through manual monitoring, if exceeds the limiting concentration value, shall be considered as non-compliance.

(iv) Data on Sulphur (weight in %), Nickel (PPM) and Vanadium (PPM) content in the feed to FCC shall be separated regularly.

(v) Limit of Carbon Monoxide emissions shall be complied with except during annual shut down of CO boiler for statutory maintenance.

		Plant Capacity (Tonnes/day)	**Existing SRU**	**New SRU or Refinery Commissioned**
{Sulphur, Recovery Units (SRU)}	Sulphur recovery, %	Above 20	98.7	99.5
	H_2S, mg/Nm^3		15	10
	Sulphur recovery, %	5-20	96	98
	Sulphur recovery, %	1-5	94	96
	Oxides of Nitrogen (NO_x), mg/Nm^3	All capacity	350	250
	Carbon Monoxide (CO), mg/Nm^3	All capacity	150	100

Notes:-

(i) Sulphur recovery units having capacity above 20 tonnes per day shall have continuous systems for monitoring of SO_2. Manual monitoring for all the emission parameters shall be carried out once in a month.

(ii) Data on Sulphur Dioxide emissions (mg/Nm^3) shall be reported regularly.

(iii) Sulphur recovery efficiency shall be calculated on monthly basis, using quantity of sulphur in the feed to SRU and quantity of sulphur recovered.

C- FUGITIVE EMISSION

Storage of Volatile Liquids : General Petroleum Products

(1) Storage tanks with capacity between 4 to 75m^3 and total vapour Pressure (TVP) of more than 10 kpa should have Fixed Roof Tank (FRT) with pressure valve vent.

(2) Storage tank with the capacity between 75 to 500 m^3 and total vapour Pressure (TVP) of 10 to 76 kpa should have Internal Floating Root Tank (IFRT) of External Floating Root Tank (EFRT) or Fixed Roof Tank with vapour control or vapour balancing system.

(3) Storage tanks with the capacity of more than 500 m^3 and total vapour Pressure (TVP) of 10 to 76 kpa should have Internal Floating Roof Tank or External Floating Roof Tank or Fixed Roof Tank with vapour control system.

(4) The tanks with the capacity of more than 75 m^3 and total vapour Pressure (TVP) of more than 76 kpa should have Fixed Root Tank with vapour control system.

(5) Requirement for seals in Floating Roof Tanks:

(i) (a) IFRT and EFRT shall be provided with double seals with minimum vapour recovery of 96%.

(b) Primary seal shall be liquid or shoe mounted for EFRT and vapour mounted for IFRT. Maximum seal gap width will be 4 cm and maximum gap area will be 200 cm^2/m of tank diameter.

(c) Secondary seal shall be rim mounted. Maximum seal gap width will be 1.3 cm and maximum gap area will be 20 cm^2/m of tank diameter.

(d) Material of seal and construction shall ensure high performance and durability.

(ii) Fixed Roof Tanks shall have vapour control efficiency of 95% and vapour balancing efficiency of 90%

(iii) Inspection and maintenance of storage tanks shall be carried out under strict control. For the inspection, API RP 575 may be adopted, In-service inspection with regard seal gap should be carried out once in every six months and repair to be implemented in short time. In future, possibility of on-stream repair of both seals shall be examined.

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Storage of Volatile Liquids : Benzene Storage

(1) FRT with vapour to incineration with 99.9% of removal efficiency for volatile organic compounds (VOC) shall be provided.

(2) IFRT/EFRT with double seals, emission-reducing roof fitting and fitted with fixed roof with vapour removal efficiency of at least 99% shall be provided.

Solvents for Lube-Base Oil production (Furfural, NMP, MEK, Toluene and MIBK)

IFRT with double seals and inert gas blanketing with vapour removal efficiency of at least 97% shall be provided.

Emission control for Road tank truck/Rail tank wagon loading			
	Loading of Volatile Products	Gasoline and Naphtha: (i) VOC reduction, %. (ii) Emission, gm/m^3	(i) 99.5 (ii) 5
		Benzene: (i) VOC reduction, % (ii) Emission, mg/m^3	(i) 99.99 (ii) 20
		Toluene/Xylene: (i) VOC reduction, % (ii) Emission, mg/m^3	(i) 99.98 (ii) 150
		Note: (i) It shall be applicable for Gasoline, Naphtha, Benzene, Toluene and Xylene loading. (ii) Road tank Truck shall have Bottom loading and Roll tank wagon shall have Top submerged loading. (iii) Annual leak testing for vapour collection shall be done.	

Standards for Equipment Leaks

(1) Approach: Approach for controlling fugitive emissions from equipment leaks shall have proper selection, installation and maintenance of non-leaking or leak-tight equipment. Following initial testing after commissioning, the monitoring for leak detection is to be carried out as a permanent on-going Leak Detection and Repair (LDAR) programme. Finally detected leaks are to be repaired within allowable time frame.

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(2) Components to be Covered: Components that shall be covered under LDAR programme include (i) Block valves; (ii) Control valves; (iii) Pump seals; (iv) Compressor seals; (v) Pressure relief valves; (vi) Flanges – Heat Exchangers; (vii) Flanges – Piping; (viii) Connectors – Piping; (ix) Open ended lines; and (x) Sampling connections, Equipment and line sizes more than 1.875 cm or ¾ inch are to be covered.

(3) Applicability: LDAR programme would be applicable to components (given at 2 above) for following products/compounds: (i) hydrocarbon gases; (ii) Light liquid with vapour pressure @ 20° C > 1.0 kPa; and (iii) Heavy liquid with vapour pressure @ 20° C between 0.3 to 1.0 kPa.

(4) While LDAR will not be applicable for heavy liquids with vapour pressure < 0.3 kPa, it will be desirable to check for liquid dripping as indication of leak.

(5) Definition of leak: A leak is defined as the detection of VOC concentration more than the values (in ppm) specified below at the emission source using a hydrocarbon analyzer according to measurement protocol (US EPA – 453/R-95-017, 1995 Protocol for equipment leak emission estimates may be referred to:

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Component	**General Hydrocarbon (ppm)**		**Benzene (ppm)**	
	Till 31st Dec. 2008	w.e.f. January 01, 2009	Till 31st Dec., 2008	w.e.f January 01, 2009
Pump/Compressor	10000	5000	3000	2000
Valves/Flanges	10000	3000	2000	1000
Other components	10000	3000	2000	1000

(6) In addition, any component observe to be leaking by sight, sound or smell, regardless of concentration (liquid dripping, visible vapor leak) or presence of bubbles using soap solution should be considered as leak.

(7) Monitoring Requirements and Repair Schedule: Following frequency of monitoring of leaks and schedule for repair of leaks shall be followed:

Component	Frequency of monitoring	Repair schedule
	Quarterly (semiannual after two consecutive periods with < 2% leaks and annual after 5 periods with < 2% leaks)	Repair will be started within 5 working days and shall be completed within 15 working days after detection of leak for general hydrocarbons. In case of benzene, the leak shall be attended immediately for repair.
Pump seals	Quarterly	
Compressor seals	Quarterly	
Pressure relief devices	Quarterly	
Pressure relief devices (after venting)	Within 24 hours	
Heat Exchangers	Quarterly	
Process drains	Annually	
Components that are difficult to monitor	Annually	
Pump seals with visible liquid dripping	Immediately	Immediately
Any component with visible leaks	Immediately	Immediately
Any component after repair/ replacement	Within five days	-

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(8) The percentage leaking components should not be more than 2% for any group of components monitored excluding pumps/compressors. In case of pumps/compressors it should be less than 10% of the total number of pumps/compressors or three pumps and compressors, whichever is greater.

(9) Emission inventory: Refinery shall prepare on inventory of equipment components in the plant. After the instrumental measurement of leaks, emission from the components will be calculated using stratified emission factor (USEPA) or any other superior factors. The total fugitive emission will be established.

(10) Monitoring following types of monitoring methods may be judiciously employed for detection of leaks: (i) instrumental method of measurement of leaks; (ii) Audio, visual and olfactory (AVO) leak detection; and (iii) Soap bubble method.

(11) Data on time of measurement and concentration value for leak detection; time of repair of leak; and time of measurement & concentration value after repair of leak should be documented for all the components.

(12) Pressure relief and blow down systems should discharge to a vapour collection and recovery system or to flare.

(13) Open-ended lines should be closed by a blind flange or plugged.

(14) Totally closed-loop should be used in all routine samples.

(15) Low emission packing should be used for valves.

(16) High integrity sealing materials should be used for flanges.

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D. Emission Standards for VOC from Wastewater Collection and Treatment

(1) All contaminated and odorous wastewater streams shall be handled in closed systems from the source to the primary treatment stages (oil-water separator and equalization tanks).

(2) The collection system shall be covered with water seals (traps) on sewers and drains and gas tight covers on junction boxes.

(3) Oil-water separators and equalization tanks shall be provided with floating/fixed covers. The off-gas generated shall be treated to remove at least 90% of VOC and eliminate odour. The system design shall ensure safety (prevention of formation of explosive mixture, possible detonation and reduce the impact) by dilution with air/inert gas, installing LEL detector including control devices, seal drums, detonation arrestors etc. The system shall be designed and operated for safe maintenance of the collection and primary treatment systems.

(4) Wastewater from aromatics plants (benzene and xylene plants) shall be treated to remove benzene & total aromatics to a level of 10, 20 ppm respectively before discharge to effluent treatment system without dilution].

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
4.	**SUGAR INDUSTRY**		Concentration not exceed, milligramme per litre
		Bio-chemical oxygen demand, [1][3 days at 27°C]	100 for disposal on land 30 for disposal in surface water
		Suspended solids	100 for disposal on land. 30 for disposal in surface waters.
5.	**THERMAL POWER PLANTS**		Maximum limiting concentration, milligrammes per litre (except for pH and temperature)
	Condenser Cooling waters (once through cooling system)	pH	6.5 – 8.5
		Temperature	Not more than 5°C higher than the intake water temperature
		Free available chlorine	0.5
	Boiler blowdowns	Suspended solids	100
		Oil and Grease	20
		Copper (total)	1.0
		Iron (total)	1.0
	Cooling tower blowdown	Free available chlorine	0.5
		Zinc	1.0
		Chromium (total)	0.2
		Phosphtate	5.0
		Other corrosion inhibiting material	Limit to be established on case by case basis by Central Board in case of Union territories and State Board in case of States.
	Ash pond effluent	pH	6.5 – 8.5
		Suspended solids	100
		Oil and Grease	20

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
6.	**COTTON TEXTILE INDUSTRIES (COMPOSITE AND PROCESSING)**		Concentration not to exceed, milligramme per litre (except for pH and bioassay)
		Common	
		pH	5.5 to 9
		Suspended solids	100
		Bio-Chemical Oxygen Demand[1][3days at 27°C]	150
		Oil and grease	10
		Bio-assay test	90% survival of fish of after 96 hours
		Special:	
		Total chromium as (Cr)	2
		Sulphide (as S)	2
		Phenolic compounds (as C_4H_2OH)	5

The special parameters are to be stipulated by the Central Board in case of Union territories and State Boards in case of States depending upon the dye used in the industry. Where the industry uses chrome dyes, sulphur dyes and/or phenolic compounds in the dyeing/printing process, the limits on chromium of 2 mg/litre, sulphides of 2 mg/litre and phenolic compounds of 5 mg/litre respectively shall be imposed.

Where the quality requirement of the recipient system so warrants, the limit of BOD should be lowered upto 30 according to the requirement by the State Boards for the States and the Central Board for the union territories.

A limit on sodium absorption ratio of 26 should be imposed by the State Boards for the States and the Central Board for the Union territories if the disposal of effluent is to be made on land.

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
7.	**COMPOSITE WOOLLEN MILLS**		Concentration not be exceed, milligramme per litre (except for pH and bioassay)
	Common :	Suspended Solids	100
		pH	5.5 to 9.0
		Bio-chemical oxygen demand [1][3days at 27°C]	100
		Oil and grease	10
		Bio-assay	90% survival of fish after 96 hrs.
	Special :	Total chromium (as Cr)	2
		Sulphide (as S)	2
		Phenolic Compounds (as C_6H_5OH)	5

The special parameters are to be stipulated by the Central Board in case of Union territories and State Boards in case of State depending upon the dye used in the industry. Where the industry uses chrome dyes, sulphur dyes and or/phenolic compounds in the dyeing/printing process, the limits on chromium of 2 mg/litre, sulphides of 2 mg./litre and phenolic compounds of 5 mg/litre respectively shall be imposed.

Where the quality requirement of the recipient system so warrants, the limit of BOD should be lowered upto 30 according to the requirement by the State Boards for the States and the Central Board for the Union territories.

A limit on sodium absorption ratio of 26 should be imposed by the State Boards for the States and the Central Board for the Union Territories if the disposal of the effluent is to be made on land.

[#1]8	**DYE AND DYE INTERMEDIATE INDUSTRY**		Concentration not to exceed milligrammes per litre (except for pH, temperature and bio-assay)
		Suspended Solids	100
		pH	6 to 8.5
		Temperature	Shall not exceed 5°C above the ambient temperature of the receiving body.

[#] Standards notified at Sl. No. 45 may also be referred.

[1] Sl. No. 8,9 and 10 and entries relating thereto inserted vide S.O. 393(E) dt. 16.4.87 published in the Gazette No. 185 dt. 16.4.87.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
		Mercury (as Hg)	0.01
		Hexavalent (as Cr)	0.1
		Chromium (Total Chromium (as Cr)	2.0
		Copper (as Cu)	3.0
		Zinc (as Zn)	5.0
		Nickel (as Ni)	3.0
		Cadmium (as Cd)	2.0
		Chloride (as Cl)	1000
		Sulphate (as SO_4)	1000
		Phenolic Compounds (as C_6H_5OH)	1.0
		Oil and Grease	10
		Bio-assay Test (with 1:8 dilution of effluents)	90% survival of Test animals after 96 hours.

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The standards for chlorides and sulphates are applicable or discharge into inland and surface water courses. However, when discharged on land for irrigation, the limit for chloride shall not be more than 600 milligrammes per litre and the sodium absorption ratio shall not exceed 26.

9.	**ELECTROPLATING INDUSTRIES**		Concentration not to exceed milligrammes per litre (except for pH and temperature)
		pH	0.6 to 9.0
		Temperature	Shall not exceed 5°C above the ambient temperature of the receiving body.
		Oil and Grease	10
		Suspended Solids	100
		Cynides (as CN)	0.2
		Ammonical	50
		Nitrogen (as N)	
		Total Residual Chlorides (as Cl)	1.0

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
		Cadmium (as Cd)	2.0
		Nickei (as Ni)	3.0
		Zinc (as Zn)	5.0
		Hexavalent	0.1
		Chromium as (Cr) Total Chromium (as Cr)	2.0
		Copper (as Cu)	3.0
		Lead (as Pb)	0.1
		Iron (as Fe)	3.0
		Total Metal	10.0
[1][10.	**CEMENT PLANTS**		not to exceed mg/Nm^3
		A. TOTAL DUST	
		Plant Capacity	
		(i)200 tonnes/day (all sections)	400
		(ii) Greater than 200 tonnes/day (all sections)	250
		B. EMISSIONS	

(i) For Cement Plants, including Grinding Units, located in critically polluted* or urban areas with a population of one lakh and above (including 5 Km distance outside urban boundary):

Particulate Matter 100mg/Nm^3

(ii) New Cement Kilns, including Grinding Units to be installed after the date of notification:

Particulate Matter 50 mg/Nm^3

* As per the guidelines of the Central Pollution Control Board]

[1] Substituted by Rule 2(I) of the Environment (Protection) First Amendment Rules, 2006 notified by G.S.R.46(E), dated 3.2.2006.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
[#1]11.	**STONE CRUSHING UNIT**	Suspended Particulate Matter	The suspended particulate matter measured between 3 metres and 10 metres from any process equipment of a stone crushing unit shall not exceed 600 microgrammes per cubic metre.
[2]12.	**COKE OVENS**		Concentration in the effluents when discharged into inland surface waters not be exceed milligramme per litre (except for pH)
		pH	5.5 – 9.0
		Biochemical Oxygen Demand (27°C for 3 days)	30
		Suspended Solids	100
		Phenolic Compounds (as C_6H_5OH)	5
		Cynides (as CN)	0.2
		Oil & Grease	10
		Ammonical Nitrogen (as N)	50
13.	**SYNTHETIC RUBBER**		Concentration in the effluents when discharged into inland surface waters not be exceed milligramme per litre (except for colour and pH)
		Colour	Absent
		pH	5.5 – 9.0
		Biochemical Oxygen Demand [1][BOD (3 days at 27°C]	50
		Chemical Oxygen Demand	250
		Oil and grease	10.0

[1] S.No.11 and entries relating thereto inserted vide SO 443(E)dt.18.4.87 published in the Gazette no. 206 dt. 18.4.87.

[#] Standards notified at Sl. No. 37 may also be referred.

[2] S.Nos. 12 to 24 and entries relating thereto inserted vide S.O. 64(E) published in the Gazette No. 42 dt. 18.1.88.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
14.	**SMALL PULP AND PAPER INDUSTRY**		Concentration not be exceed mg/l (except for pH and sodium absorption ratio)
	*Discharge into inland surface water	pH	5.5 – 9.0
		Suspended Solids	100
		BOD	30
	Disposal on land	pH	5.5 – 9.0
		Suspended Solids	100
		BOD	100
		Sodium Absorption Ratio	26
		[1][Absorbable Organic Halogens (AOX) in effluent discharge	3.00 kg/ton of paper produced with effect from the date of publication of this notification. 2.00 kg/ton of paper produced with effect from the 1st day of March, 2006.

Explanation.- These standards shall apply to all small scale Pulp and Paper Mills having capacity below 24,000 MT per annum]

[2]15.	**FERMENTATION INDUSTRY (DISTILLERIES, MALTRIES AND BREWERIES)**		Concentration in the effluents not to exceed milligramme per litre (except for pH and colour & odour)
		pH	5.5 – 9.0
		Colour & Odour	All efforts should be made to remove colour and unpleasant odour as far as practicable.
		Suspended Solids	100
		[3][BOD (3 days at 27°C)]	
		[4][-disposal into inland surface waters or river/ streams]	30
		- disposal on land or for irrigation]	100
		**[(2)….(7)]	

[1] Inserted by Rule 2 (i) of the Environment (Protection) Third Amendments Rules, 2005 notified vide Notification G.S.R.546(E), dated 30.8.2005.

[2] Entries relating to S.No. 15 corrected in terms of SO 12(E), dt. 8.1.90 published in the Gazette no. 10 dt. 8.1.90.

[3] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

[4] Substituted vide Rule 3(a) of the Environment (Protection) (Amendments) Rules, 1996 notified vide G.S.R.186(E), dated 2.4.1996

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4

Note : [1][(1)] *Wastewater generation shall not exceed 250 metre cube per tonne of paper produced.

[2][(2)…….(7)]

16. **LEATHER TANNERIES**

Concentration in the effluent not to exceed milligramme per litre (except for pH and per cent sodium)

	Inland Surface Waters	Public Sewers	Land for Irrigation	Marine Coastal areas
	(a)	(b)	(c)	(d)
Suspended Solids	100	00	200	100
[3][BOD 3 days at 27°C]	30	350	100	100
pH	6.0 – 9.0	6.0 – 9.0	6.0 – 9.0	6.0 – 9.0
Chlorides (as Cl)	1000	1000	200	-
Hexavalent Chromium (Cr+6)	0.1	0.2	0.1	1.0
Total Chromium (as Cr)	2.0	2.0	2.0	2.0
Sulphides (as S)	2.0	5.0	-	5.0
Sodium percent	-	60	60	-
Boron (as B)	2.0	2.0	2.0	-
Oil & Grease	10	20	10	20

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1 Renumbered as (1) by Notification No.S.O.12(E), dated 8.1.1990

2 Notes 2 to 7 inserted by Notification S.O.12(E), dated 8.1.1990 and omitted by G.S.R.176(E), dated 2.4.1996 w.e.f. 3.4.1996

3 Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	**Industry**	Parameter	Standards	
1	**2**	3	4	
17.	**FERTILIZER INDUSTRY**		Concentration in the effluent not to exceed milligramme per litre (except for pH)	
		EFFLUENTS	Plants	Plants
		- Straight Nitrogeneous Fertilizers, Excluding the Calcium Ammonium Nitrate and Ammonium Nitrate Fertilizers	Commissioned January 1, 1982 onwards	Commissioned Prior to January 1, 1982
			(a)	(b)
		pH	6.5 – 8.0	6.5 – 8.0
		Ammonical Nitrogen	50	75
		Total Kjeldahl Nitrogen	100	150
		Free Ammonical Nitrogen	4	4
		Nitrate Nitrogen	10	10
		Cynide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2
		Suspended solids	100	100
		Oil and Grease	10	10
		*Hexavalent Chromium as Cr.	0.1	0.1
		*Total Chromium as Cr.	2.0	2.0
		Straight Nitrogenous Fertilizers, including Calcium Ammonium Nitrate and Ammonium Nitrate Fertilizers	Plants Commissioned January 1, 1982 onwards	Plants Commissioned prior to January 1, 1982

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* To be complied with at the outlet of Chromate removal unit.

Sr. No.	**Industry**	Parameter	Standards	
1	**2**	3	4	
			(a)	(b)
		pH	6.5 – 8.0	6.5 – 8.0
		Ammonical Nitrogen	50	75
		Total Kjeidahl Nitrogen		150
		Free Ammonical Nitrogen	4	4
		Nitrate Nitrogen	20	20
		Cynide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2
		Suspended solids	100	100
		Oil and Grease	10	10
		*Hexavalent Chromium as Cr	0.1	0.1
		*Total Chromium as Cr	2.0	2.0
		Complex Fertilizers excluding Calcium Ammonium Nitrate, Ammonium Nitrate & Ammonium Nitrophosphate Feritilizers	Plants Commissioned January 1, 1982 onwards	Plants Commissioned prior to January 1, 1982
			(a)	(b)
		pH	6.5 – 8.0	6.5 – 8.0
		Ammonical Nitrogen	50	75
		Free Ammonical Nitrogen	4	4
		Total Kjeldahl Nitrogen	100	100
		Nitrate Nitrogen	10	10

* To be complied with at the outlet of Chromate removal unit.

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Sr. No.	**Industry**	Parameter	Standards	
1	**2**	3	4	
		Cynide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2
		Phsophate as P	5	5
		Suspended solids	100	100
		Oil and Grease	10	10
		*Fluoride as F	10	10
		**Hexavalent Chromium as Cr	0.1	0.1
		**Total Chromium as Cr	2.0	2.0
		Complex Fertilizers including Calcium Ammonium Nitrate, Ammonium Nitrate & Ammonium Nitrophosphate Fertilizers	Plants Commissioned January 1, 1982 onwards	Plants Commissioned prior to January 1, 1982
			(a)	(b)
		pH	6.5 – 8.0	6.5 – 8.0
		Ammonical Nitrogen	50	75
		Free Ammonical Nitrogen	100	100
		Nitrate Nitrogen	20	20
		Cynide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2

* To be complied with at the outlet of fluoride removal unit. If the recipient system so demand, fluoride as F shall be limited to 1.5 mg/l.

** To be complied with at the outlet of Chromate removal unit.

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Sr. No.	**Industry**	Parameter	Standards	
1	**2**	3	4	
		Phosphate as P	5	5
		Oil and Grease	10	10
		Suspended Solids	10	100
		*Fluoride as F	10	10
		**Hexavalent Chromium as Cr.	0.1	0.1
		**Total Chromium as Cr	2.0	2.0
		Straight Phosphate Fertilizers		
		pH	7.0 –9.0	
		Phosphate as P	5	
		Oil and Grease	10	
		Suspended Solids	100	
		*Fluoride as F	10	
		**Hexavalent Chromium as Cr	0.1	
		**Total Chromium as Cr	2.0	
	Emissions			
	Phosphatic Fertilizers (Fluorides and Particulate matter emission)	Phosphorice acid manufacturing unit Granulation mixing and grinding of rock phosphate	25 milligramme per normal cubic metre as total Fluoride 150 milligramme per normal cubic metre of particulate matter.	
	Urea (Particulate matter emission)	Pricing tower Commissioned prior to 01.01.1982	150 milligramme per normal cubic metre of 2 kilogramme per tone of product.	
		Commissioned after 1.1.1982	50 milligramme per normal cubic metre or 0.5 kilogramme per tonne of product	

* To be complied with at the outlet of fluoride removal unit. If the recipient system so demand, fluoride as F shall be limited to 1.5 mg/l.

** To be complied with at the outlet of Chromate removal unit.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
[1][18.	***OMITTED***		
19.	**CALCIUM CARBIDE**	Particulate Matter Emission	
		- Kiln	250 milligramme per normal cubic metre.
		- Arc Furnace	150 milligramme per normal cubic metre.
20.	**CARBON BLACK**	Particulate matter Emission	150 milligramme per normal cubic metre.
21.	**COPPER, LEAD AND ZINC SMELTING**	Particulate Matter Emission in Concentrator	150 milligramme per normal cubic metre.
		Emission of Oxides of Sulphur in Smelter & convertor	Off-gases must be utilized for sulphuric acid manufacture. The limits of sulphur dioxide emission from stock shall not exceed 4 kilogramme per tonne of concentrated (one hundred per cent acide produced).
22.	**NITRIC ACID (EMISSION OXIDES OF NITROGEN)**	Emission of Oxides of Nitrogen	3 kilogramme of oxides of nitrogen per tonne of weak acid (before concentration) produced.
[2][23.	**SULPHURIC ACID PLANT**	Emission standards Limiting concentration in mg/Nm^3, unless stated	
		Plant capacity for 100% concentration of Sulphuric Acid (tonne/day)	

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[1] Sr. No.18 relating to **"Aluminum"** and entries relating thereto omitted by Rule 2(II) of the Environment (Protection) First Amendment Rules, 2006 notified by G.S.R. 46(E), dated 3.2.2006.

[2] Substituted by Rule 2(I) of the Environment (Protection) Third Amendment Rules, 2008 notified by G.S.R. 344(E), dated 7.5.2008.

Sr. No.	**Industry**	Parameter	Standards	
1	**2**	3	4	
			Existing Unit	New Unit
	Sulphur dioxide	(SO_2) upto 300	1370	1250
		Above 300	1250	950
	Acid Mist/Sulphur	Up to 300	90	70
	Trioxide	Above 300	70	50

Note:

(i) Scrubbing units shall have on-line pH meters with auto recording facility.

(ii) The height of the stack emitting sulphur-dioxide or acid mist shall be of minimum of 30 metre or as per the formula $H=14(Q)^{(0.3)}$ (whichever is more). Where "H" is the height of stack in metre; and "Q' is the maximum quantity of SO_2 expected to be emitted through the stack at 110 per cent rated capacity of the plants and calculated as per the norms of gaseous emission.

(iii) Plants having more than one stream or unit of sulphuric acid at one location, the combined capacity of all the streams and units shall be taken into consideration for determining the stack height and applicability of emission standards.

(iv) Plants having separate stack for gaseous emission for the scrubbing unit, the height of this stack shall be equal to main stack].

24.	**IRON & STEEL (INTEGRATED)**	Particulate Matter Emission	
		- Sintering Plant	150 milligramme per normal cubic metre
		- Steel making	
		-- during normal operations	150 milligramme per normal cubic metre.
		--during oxygen lancing	400 milligramme per normal cubic metre.
		- Rolling Mill	150 milligramme per normal cubic metre.
		- Carbon monoxide from coke oven	3 kilogramme per tonne of coke produced.

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
[1]25.	**THERMAL POWER PLANTS**	*Particulate Matter Emissions :	
		- generation cpacity 210 MW or more	150 millogramme per normal cubic metre.
		- generation capacity less than 210 MW	350 milligramme per normal cubic metre.
26.	**NATURAL RUBBER INDUSTRY**		Concentrations in the effluents not to exceed milligramme per litre (except for pH) 44°C
	- Discharge into inland surface water	Colour & odour	Absent
		pH	6.0 – 9.0
		BOD	50
		COD	250
		Oil and Grease	10
		Sulphides	2
		Total Kjeldahl Nitrogen	100
		Dissolved phosphate (as P)	5
		Suspended Solids	100
		Dissolved solids (inorganic)	2100
		Ammonical Nitrogen as N	50
		Free ammonia (as NH_3)	5
	-Disposal on land for irrigation	Colour and Odour	Absent
		pH	6.0 – 8.0
		BOD	100
		COD	250
		Oil & Grease	10
		Suspended Solids	200
		Dissolved solids	2100

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[1] S. No. 25 and 26 and entries relating thereto inserted vide S.O. 8(E) dt. 3.1.89 published in the Gazette No. 7 dated. 3.1.89.
Corrections in rule 2 against S.No. 26 made vide corrigendum No. S.O. 190 (E) dt. 15.3.89 published in the Gazette no. 126 dt. 15.3.89.

* Depending upon the requirement of local situation, such as protected area, the State Pollution Control Board and other implementation agencies under the Environment (Protection) Act, 1986 may prescribed a limit of 150 milligramme per normal cubic meter, irrespective of generation capacity of the plant.

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
[1][2]27.	**ASBESTOS MANUFACTURING UNITS (INCLUDING ALL PROCESSES INVOLVING THE USE OF ASBESTOS)**	- Pure Asbestos material	0.5 fibre */cc for one year from the date of notification 0.2 fibre */cc after one year from the date of notification]
		- Total Dust	2 mg/m^3 (normal)
28.	**CALOR ALKALI (CAUSTIC SODA)**	**EMISSIONS**	Concentration in mg/m^3 (normal)
	(a) Mercury Cell	Mercury (from hydrogen gas holder stack)	0.2
	(b) All processes	Chlorine (from hypo tower)	15.0
	(c) All processes	Hydro chloric acid vapours and mist (from hydro chloric acid plant)	35.0
29.	**LARGE PULP AND PAPER**	**EMISSIONS**	Concentration in mg/m^3 (normal)
		Particulate matter	250**
		H_2S	10
30.	**INTEGRATED IRON AND STEEL PLANTS:**	I. **EMISSIONS**	
	(a) Coke Oven	Particulate mater	50
	(b) Refractory material plant	Particulate matter	150
		II. **EFFLUENTS**	Concentration in mg/l except for pH.
	(a) Coke oven By product plant.	pH	6.0 – 8.0
		Suspended Solids	100

1 Standards mentioned at Sl. No.27 amended by Rule 2(III) of the Environment (Protection) First Amendment Rules, 2006 notified vide Notification G.S.R.46(E), dated 3.2.2006.

2 S.No. 27 to 31 and entries relating thereto inserted vide GSR 913(E) dt. 24.10.89 published in the Gazette No. 554 dt. 24.10.89.

** This standard of 250 mg/m^3 (normal) shall apply only for a period of 3 years with effect from the date on which the Environment (protection) Second Amendment Rules, 1989 came into force. After three years the standard to be applicable is 15 mg/m^3 (normal).

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
		Phenol	1.0
		Cynide	0.2
		BOD [1][(3 days at 27°C)]	30
		COD	250
		Ammonical Nitrogen	50
		Oil and Grease	10
	(b)Other plants such as sintering plant, blast furnace, steel melting and rolling mill:	pH	6.0 – 9.0
		Suspended Solids	100
		Oil and Grease	10
31.	**RE-HEATING (REVERBERATORY) FURNACES:**	**EMISSIONS**	Concentration in mg/m^3 (normal)
	Capacity : All sizes		
	Sensitive area	Particulate matter	150
	Other area	Particulate matter	450
[2][32.	**FOUNDRIES**	**EMISSIONS**	
	(a) Cupola Capacity (Melting Rate) :		
	Less than 3 mt./hr.	Particulate Matter	450
	3 mt/hr. and above	Particulate Matter	150
	Note : It is essential that stack is constructed over the cupola beyond the charging door and emissions are directed through the stack which should be at least six times the diameter of cupola.		
	(b) Arc Furnaces :		
	Capacity: All sizes	Particulate Matter	150

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[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred

[2] S.No. 32 to 47 and entries relating thereon inserted vide GSR 742(E) dt. 30.8.90 published in the Gazette No. 365 dated 30.8.90.

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
	(c) Induction Furnace		
	Capacity: All sizes	Particulate Matter	150

Note : In respect of Arc Furnaces and Induction Furnaces provision has to be made for collecting the fumes before discharging the emissions through the stack.

33.	**THERMAL POWER PLANTS**	STACK HEIGHT/LIMIT IN METERS*	
		Power generation capacity :	
		- 500 MW and above	275
		- 200 MW/210 MW and above to less than 500 MW	220
		- Less than 200 MW/210 MW	$H-14(Q)^{0.3}$ where Q is emission rate of SO_2 in *kg/hr. and *H Stack height in metres.
		Steam generation capacity: - Less than 2 ton/hr.	½ times the neighbouring building height or 9 metres (whichever is more)
		- More than 2 ton/hr. to 5 ton/hr.	12
		- More than 5 ton/hr. to 10 ton/hr.	15
		- More than 10 ton./hr.	18
		- More than 15 ton/hr. to 20 ton/hr.	*21
		- More than 20 ton/hr. to 25 ton/hr	24
		- More than 25 ton/hr. to 30 ton/hr.	27
		- More than 30 ton/hr.	30 or using formula $H-14(Q)^{0.3}$ (whichever is more) Q is emission rate of SO_2 in kg/hr and *H-Stack height in meters.

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* Correction have been made as per Corrigendum Notification no. S.O. 8(E) dt. 31.12.1990.

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
34.	**SMALL BOILERS**	**EMISSIONS***	
	Capacity of Boiler	Particulate matter	
	- Less than 2 ton/hr.		1600
	- 2 to 5 ton/hr		1200
	More than 15 ton/hr.		150
[1][2]35.	**COFFEE INDUSTRY**	**Instant/Dry Processing**	
			Limiting value for concentration in mg/l except for pH
		pH	6.5-8.5
		BOD $_{3\ day,\ 27^{o}C}$	100
		Total Dissolved Solids	2100
		Wet/Parchment Coffee Processing	
		pH	6.5-8.5
		BOD $_{3\ day,\ 27^{o}C}$	1000

Notes:

(i) Coffee growers having plantation area less than 10 ha with wet processing shall store primary treated effluent in lined lagoons for solar evaporation with a non-permeable system at the base and sides of lagoon.

(ii) Coffee growers having plantation area between 10-25 ha with wet processing shall store primary (equalization and neutralization) treated effluent in lined lagoons for solar evaporation with a non-permeable system at the base and sides of lagoon.

(iii) Coffee growers having plantation area 25 ha or above with wet processing shall store secondary treated effluent in conformity with above norms in lined lagoons with a non-permeable lining system at the base and side of lagoon and use the effluent for irrigation after dilution so as BOD of diluted effluent for land application is less than 100 mg/l.

(iv) The minimum liner specifications for a non-permeably lining system shall be a composite barrier having 1.5 mm High Density Polyethylene (HDPE) geomembrane or equivalent, overlying 90 cm of soil (clay or amended soil) having permeability coefficient not more than $1x10^{-5}$cm/sec.

(v) The effluent storage facilities/lagoons/solar evaporation ponds shall be located above high flood level mark of the nearby stream, rivulet etc. with below mentioned free board and away from any water body/stream at a distance.

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* All emissions normalized to 12 per cent carbon dioxide.

1 Omitted entry relating to **Oil Refineries (Sulphur Dioxide)** by Rule 2 (i) (b) of the Environment (Protection) Amendment Rules, 2008 notified by G.S.R. 186 (E), dated 18.3.2008.

2 Inserted by Rule 2 of the Environment (Protection) Sixth Amendment Rules, 2008 notified by G.S.R.579(E), dated 6.8.2008

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Sr. No.	Industry	Parameter	Standards		
1	2	3	4		
		Grower	Small (<10ha)	Medium (10-25ha)	Large (>25ha)
		Free Based (cm)	30	60	90
		Distance (m)	50	100	150
		(vi) Raw, Treated and/or diluted effluent shall be discharged into surface water body or used for recharging groundwater under any circumstances what so ever].			
36.	**ALUMINIUM PLANTS:**	**EMISSIONS**			
	(a) Aluminia Plant:				
	(i) Raw Material Handling	Primary and Secondary Crusher Particulate Matter	150		
	(ii) Precipitation Area				
	- Calcination	Particulate matter	250		
		Carbon Monoxide	1% max.		
		Stack Height	H=14 $(Q)^{0.3}$ Where Q is emission rate of SO_2 in kg/hr and H-Stack height in meters.		
	(b)Smelter Plant	Particulate Matter			
	(i)Green Anode Shop	Particulate Matter	150		
	[1] [(ii)Anode Bake Oven	Particulate Matter	50 mg/Nm^3		
		Total Fluoride (F)	0.3 kg/MT of Aluminium.		
	(iii)Pot room	Particulate matter	150		
		Total Fluoride For Soderberg* Technology	2.8 Kg/ton by 31st December 2006		
		For Pre-baked Technology	0.8 kg/t by 31st December 2006		

[1] Substituted by Rule 2(iv) (a) amended by Rule 2 (IV) (a) of the Environment (Protection) First Amendment Rules, 2006 notified vide Notification G.S.R.46(E), dated 3.2.2006.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4

* Separate standards for VSS, HSS, PBSW & PBCW as given in column 4 stands abolished

	[1][(c) Standards for forage fluoride		
		- Twelve consecutive months average	- 40 ppm
		- Two consecutive months average	- 60 ppm
		- One month average	- 80 ppm]
*37.	**STONE CRUSHING UNIT**	Suspended Particulate Matter (SPM)	The Standards consist of two paras :
			(i) Implementation of the following Pollution Control measures:
			(a) Dust containment cum suppression system for the equipment.
			(b) Construction of wind breaking walls.
			(c) Construction of the metalled roads within the premises.
			(d) Regular cleaning and wetting of the ground within the premises.
			(e) Growing of a green belt along the periphery.

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[1] Inserted by Rule 2(IV)(b) of the Environment (Protection) First Amendment Rules, 2006 notified by G.S.R.46(E), dated 3.2.2006.

* Standards notified at Sl. No. 11 may also be referred.

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
			(ii) Quantitative standard for SPM : **[measured between three meters and ten metres from any processes equipment of a stone crushing unit shall not exceed 600 microgrammes per cubic metre] from a controlled isolated as well as from a unit located in a cluster should be less than 600 mg/Nm$_3$ [1][xxx….]
38.	**PETROCHEMICALS (BASIC & INTERMEDIATES)**	**EFFLUENTS**	
		Ph	6.5 – 8.5
		*BOD [2][(3days at 27°C)]	50
		**Phenol	5
		Sulphide (as S)	2
		COD	
		Cynide (as CN)	250
		*** Fluoride (as F)	
		Total suspended Solids	[3][100]
		Hexavalent Chromium [3][(as Cr)]	0.1
		**** Total Chromium [3][(as Cr)]	2.0

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** Corrections have been made as per CORRIGENDUM Notification No. S.O. 8(E) dated 31.12.1990.

1 The sentence 'The measurements are to be conducted at least twice a month for all the 12 month in a year' deleted as per CORRIGENDUM Notification S.O 8(E) dated 31.12.90.

2 Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

3 Corrected as per CORRIGENDUM Notification S.O. 8(E) dated 31.12.1990.

Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4

* State Board may prescribed the BOD value of 30 mg/l if the recipient system so demands.

** The limit for phenol shall be conformed to at the outlet of effluent treatment of phenol plant. However, at the final disposal point, the limit shall be less than 1 mg/l.

*** The limit for fluoride shall be confirmed to at the outlet of the chrome removal unit. However, at the disposal point fluoride concentration shall be lower than 5mg/l.

**** The limits for total and hexavalent chromium shall be conformed to at the outlet of the chromate removal. This implies that in the final treated effluent, total and hexavalent chromium shall be lower than prescribed herein.

[1][2]39 **HOTEL INDUSTRY**

EFFLUENT STANDARDS

(i)Hotel with atleast 20 bedrooms

	limiting concentration in mg/1,	except for pH
	Inland Surface Water	On land for Irrigation
PH	5.5-9.0	5.5-9.0
BOD3 days, 27°C	30	100
Total Suspended Solids	50	100
Oil & Grease	10	10
Phosphate as P	1.0	-

(ii)Hotel with less than 20 bedrooms or a Banquet Hall with minimum floor area of 100m^2 or a Restaurant with minimum seating capacity of 36

pH	5.5-9.0	5.5-9.0
BOD3 days, 27°C	100	100
Total Suspended Solids	100	100
Oil & Grease	10	10

[1] Omitted entry relating to **Pharmaceutical Manufacturing and Formulation Industry** by Rule 2(a) of the Environment (Protection) Third Amendment Rules, 2009 notified by G.S.R.512(E), dated 9.7.2009.

[2] Inserted by Rule of the Environment (Protection) Sixth Amendment Rules, 2009 notified by G.S.R.794(E), dated 4.11.2009.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4

Notes:

i. Hotels, banquet halls, restaurants, etc. located in coastal area shall also comply with the provisions of the Coastal Regulation Zone, as applicable.

ii If, the effluent is discharged into a municipal sewer leading to a Sewage Treatment Plant, the hotel or restaurant or banquet hall, as the case may be, shall provide a proper Oil and Grease Trap for effluent arising from its kitchen and laundry and shall have to comply with the 'General Standards for Discharge of Environmental Pollutants Part-A: Effluents' notified under Schedule-VI].

40.	**PESTICIDE MANUFACTURING AND FORMULATION INDUSTRY.**	**EFFLUENTS**	
		1. Temperature	Shall not exceed 5°C above the receiving water temperature
		2. pH	6.5 – 8.5
		3. Oil and Grease	10
		4. BOD [1][(3 days at 27°C)]	30
		5. Total Suspended Solids	100
		6. Bio-assay test	90% survival of fish after 96 hours in 100% effluent.
		7. **(a) Specific Pesticides :**	
		Benzenl Hexachloride	10
		Carbonyl	10
		DDT	10
		Endosulfan	10
		Diamethoate	450
		Fenitrothion	10
		Malathion	10

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
		Phorate	10
		Methyl Parathion	10
		Phenathoate	10
		Pyrethrums	10
		Copper Oxyghloride	9600
		Copper Sulphate	50
		Ziram	1000
		Sulphur	30
		Paraquat	2300
		Proponil	7300
		Nitrogen	780
		(b) Heavy Metals	
		Copper	1.00
		Managanese	1.00
		Zinc	1.00
		Mercury	0.01
		Tin	0.10
		Any other metal like Nickel etc.	Shall not exceed 5 times the drinking water standards of BIS.
		(c) Organics	
		Phenol and Phenolic compounds as C_6H_5OH	1.0
		(d) Inorganics	
		Arsenics (As As)	0.2
		Cyanide (as CN)	0.2
		Nitrate (as NO_3)	50.0
		Phosphate (as P)	5.0

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Sr. No.	**Industry**	Parameter	Standards
1	**2**	3	4
		[1]**[EMISSIONS**	**Not to exceed mg/Nm^3**
		HCl	20
		Cl_2	5
		H_2S	5
		P_2O_5 (as H_3PO_4)	10
		NH_3	30
		Particulate matter with pesticides compounds	20
		CH_3Cl	20
		HBr	5]

Note :

1. Limits should be complied with the end of the treatment plant before any dilution.

2. Bio-assay test should be carried out with available species of fish in receiving water.

3. State Boards may prescribe limits of total dissolved solids (TDS) sulphates and chlorides depending on the uses of recipient water body.

4. State Board may prescribe COD limit correlated with BOD limit.

5. Pesticides are known to have metabolites and isomers. If they are found insignificant concentration, standards may be prescribed for those in the list by Central or State Board.

6. Industries are required to analyse pesticides in waste water by advanced analytical method such as GLC/HPLC.

7. All the parameters will be compulsory for formulators, for others, the 7th will be optional.

[1] Inserted entries relating to emissions by Rule 2(V) of the Environment (Protection) First Amendment Rules, 2006 notified vide G.S.R.46(E), dated 3.2.2006.

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Sr. No.	Industry	Parameter	Standards
1	2	3	4
41.	**TANNERY (AFTER PRIMARY TREATMENT)** Disposal : Channel/ conduit	**EFFLUENT**	
	Carrying waste waters to Secondary Treatment Plants		
	Type of Tanners :		
	- chrome tanneries/ combined chrome & Vegetable tanneries.	pH	6.5 – 9.0
		SS	Not to exceed 600
		Chromium Concentration after treatment in the chrome waste water stream	45
	- Vegetable tanneries	pH	6.5 – 9.0
		SS	Not to exceed 600
	Note : The above standards will apply to those tannery units which have made full contribution to a Common Effluent Treatment Plant (CETP) Comprising secondary treatment. Those who have not contributed will be governed by earlier Notification No. S.O.*61 (E), dated January 18, 1988.		
42.	**PAINT INDUSTRY WASTE WATER DISCHARGE**	**EFFLUENTS**	
		pH	6.0 – 8.5
		Suspended Solids	100
		BOD_5 [1][(3 days at 27°C)]	50
		Phenolics as C_6H_5OH	1.0
		Oil and Grease	10.0
		Bio-assay test	90% survival in 96 hours
		Lead as Pb	0.1

* Corrected as per Notification No. S.O. 8(E) dated 31.12.1990.

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred

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Sr. No.	Industry	Parameter	Standards
1	2	3	4
		Chromium as Cr Hexavalent	0.1
		Total	2.0
		Copper as Cu	2.0
		Nickle as Ni	2.0
		Zinc as Zn	5.0
		Total heavy metals	7.0
43.	**INORGANIC CHEMICAL INDUSTRY (WASTE WATER DISCHARGE)**	**EFFLUENTS**	
	part I (metal compounds of Chromium, Manganese, Nickel, Copper, Zinc, Cadmium, Lead and Mercury)	pH	6.0 – 8.5
		Chromium as Cr Hexavalent	0.1
		Total	2.0
		Manganese as Mn	2.0
		Nickel as Ni	2.0
		Copper as Cu	2.0
		Zinc as Zn	5.0
		Cadmium as Cd	0.2
		Lead as Pb	0.1
		Mercury as Hg	.01
		Cynide as CN	0.2
		Oil & Grease	10.0
		Suspended Solids	30.0
		In addition to the above, total heavy metals are to be limited to 7 mg/l.	

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Sr. No.	Industry	Parameter	Standards
1	2	3	4
44.	**BULLION REFINING (WASTE WATER DISCHARGE)**	**EFFLUENTS**	
		pH	6.5 – 8.5
		Cynide as CN	0.2
		Sulphide as S	0.2
		Nitrate as N	10.0
		Free $C1_2$ as C1	1.0
		Zinc as Zn	5.0
		Copper as Cu	2.0
		Nickel as Ni	2.0
		Arsenic as As	0.1
		Cadmium as Cd	0.2
		Oil and Grease	10.0
		Suspended Solids	100
*45.	**DYE & DYE INTERMEDIATE INDUSTRY (WASTE WATER DISCHARGE)**	**EFFLUENTS**	
		pH	6.0 – 8.5
		Colour Hazen Unit	400.0
		Suspended Solids	100.0
		BOD [1][(3 days at 27°C)]	100.0
		Oil and Grease	10.0
		Phenolics as C_6H_5OH	1.00
		Cadmium as Cd	0.2
		Copper as Cu	2.0
		Manganese as Mn	2.0
		Lead as Pb	0.1
		Mercury as Hg	0.01
		Nickel as Ni	2.0
		Zinc as Zn	5.0
		Chromium as Cr^{6+}	0.1
		Total Chromium	2.0
		Bio-assay test	90% survival in 96 hours.

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* Standards Notified as Sl. No. 8 may also be referred.

1 Substituted by Rule2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred

Sl.No.	Category	Standards dB(A)
1	2	3
46.	**NOISE LIMITS FOR AUTOMOBILES (FREE FIELD) AT ONE METER IN dB(A) AT THE MANUFACTURING STAGE TO BE ACHIEVED BY THE YEAR 1992.**	
	(a) Motorcycle, Scooters & Three wheelers	80
	(b) Passenger Cars	82
	(c) Passenger or Commercial Vehicles upto 4 MT	85
	(d) Passenger or Commercial Vehicles above 4 MT and upto 12 MT	89
	(e) Passenger or Commercial Vehicles exceeding 12 MT	91
47.	**DOMESTIC APPLIANCES AND CONSTRUCTION EQUIPMENTS AT THE MANUFACTURING STAGE TO BE ACHIEVED BY THE YEAR, 1993**	
	(a) Window Air Conditioner of 1 ton to 1.5 tons	68
	(b) Air Coolers	60
	(c) Refrigerators	46
	[1][(d) ***……	-]
	(e) Compactors (rollers) Front loaders, Concrete mixers, Cranes (movable), Vibrators and Saws.	75

[1] The words and figures 'Diesel generators for domestic purposes … 85-90' omitted by Rule 2(a) of the Environment (Protection) Second Amendments Rules, 2002 published vide Notification No.G.S.R.371(E), dated 17.5.2005

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Sr. No.	Industry	Parameter	Standards
1	2	3	4
[1]48.	**GLASS INDUSTRY**	**EMISSIONS**	
	A. Sodalime & Borosilicate and other special Glass (other than Lead)		
	(a) Furnace : Capacity		
	(i) Upto a product draw capacity of 60 MT/Day	Particulate Matter	2.0 kg/hr.
	(ii) Product draw capacity more than 6 MT/Day	Particulate Matter	0.8 kg/MT of product drawn
	(iii) For all capacities	Stack height	$H=14(Q)^{0.3}$ where Q is the emission rate of SO_2 in Kg/hr. & H is Stack height in meters.
		Total Fluorides	5.0 mg/NM^3
		Nox	Use of low Nox burners in new plants
	(b) Implementation of the following measures for fugitive emission control from other sections :		
	(i) Raw materials should be transported in leak proof containers.		
	(ii) Cullet preparation should be dustfree using water spraying.		
	(iii) Batch preparation section should be covered.		
	B. Lead Glass		
	(a) Furnaces : All capacities	Particulate Matter	50 mg/NM^3
		Lead	20 mg/NM^3
	(b) Implementation of the following measures for fugitive emission control from other sections:		
	(i) Batch mixing, proportioning section and transfer points should be covered and it should be connected to control equipments to meet the following standards :		
		Particulate matter	50 mg/NM^3
		Lead	20 mg/NM^3
	(ii) Minimum Stack height should be 30 metres in lead glass units.		
	(c) Pot furnace at Firozabad Furnace :	Particulate matter	1200 mg/NM^3

Note : Depending upon local environmental conditions, State/Central Pollution Control Board can prescribe more stringent standards than those prescribed above.

[1] S.No. 48 to 55 and entries relating thereto inserted vide GSR 93(E) dt. 21.2.91 published in the Gazette No. 79 dated 27.2.91.

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Sr. No.	Industry	Parameter	Standards
1	2	3	4
	Glass Industries (for all categories)	**EFFLUENTS**:	
		pH	6.5 – 8.5
		Total Suspended Solids	100 mg/l
		Oil & Grease	10 mg/l
49.	**LIME KILN**	Stack Height	
	Capacity :		
	Upto 5 T/day	Stack Height	A hood should be provided with a stack of 30 meter height from ground level (including kiln height).
	Above 5T/day	Stack height	$H=14(Q)^{0.3}$ where Q is emission rate of SO_2 in kg/hr and H=Stack Height in meters.
	More than 5T/day and up to 40 T/Day	Particulate matter	500 mg/Nm^3
	Above 40T/day	Particulate matter	150 mg/Nm^3
50.	***SLAUGHTER HOUSE, MEAT & SEA FOOD INDUSTRY**	**EFFLUENTS**	Concentration in mg/l
	Category		
	A.Slaughter House		
	(a) Above 70 TLWK/day	BOD [1][3 days at 27°C]	100
		Suspended Solids	100
		Oil and Grease	10
	(b) 70 TLWK/day below	BOD [1][3 days at 27°C]	500
	B.Meat Processing		
	(a) Frozen Meat	BOD [1][3 days at 27°C]	30
		Suspended Solids	50
		Oil & Grease	10
	(b) Raw Meat from own Slaughter House.	BOD [1][3 days at 27°C]	30
		Suspended Solids	50
		Oil & Grease	10
	(c) Raw Meat from other sources		Disposal via Screen and Septic Tank.
	C.Sea Food Industry	BOD [1][3 days at 27°C]	30
		Suspended Solids	50
		Oil and Grease	10

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* The emission standards from Boiler House shall conform to the standards already prescribed under E(P) Act, 1986 vide notification No.G.S.R.742(E), dated 30.8.90.

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards	
1	2	3	4	

Note : (i) TLWK – Tonnes of Live Weight Killed (ii) In case of disposal into municipal sewer where sewage is treated the industries shall install screen and oil & grease separation units. (iii) The industries having slaughter house along with meat processing units will be considered in meat processing category as far as standards are concerned.

51.	**FOOD AND FRUIT PROCESSING INDUSTRY:**	**EFFLUENTS**	Concentration not to exceed – mg/l except pH	Quantum gm/MT of product
	Category			
	A. Soft Drinks			
	(a) Fruit based/ Synthetic (more than 0.4 MT/Day) bottles and tetrapack			
		pH	6.5 – 8.5	-
		Suspended Solids	100	
		Oil and Grease	10	
		BOD[1][3days at 27°C]	30	
	(b) Synthetic (less than 0.4 MT/Day)		Disposal via septic Tank	-
	B. Fruit & Vegetables			
	(a) Above 0.4 MT/Day	pH	6.5 – 8.5	-
		Suspended Solids	50	
		Oil and Grease	10	
		BOD[1][3days at 27°C]	30	
	(b) 0.1-0.4 MT/day (10 MT/year)		Disposal via septic Tank	-
	C. Bakery			
	(a) Bread and Bread & Biscuit			
	(i) Continuous process (More than 20T/day)	pH	6.5 - 8.5	-
		BOD[1][3days at 27°C]	200	25

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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Sr. No.	Industry	Parameter	Standards	
1	2	3	4	
	(ii) Non-continuous process (less than 20 MT/day)	-	Disposal via Septic tank	
	(b) Biscuit Production			
	(i) 10 T/day & above	pH	6.5 – 8.5	
		BOD[1][3days at27°C]	300	35
	D. Confectioneries	**EFFLUENTS**		
	(a) 4 T/day and above	pH	6.5 – 8.5	-
		Suspended Solids	50	
		Oil and Grease	10	
		BOD [1][3days at 27°C]	30	
	(b) Below 4 T/day		Disposal via Septic Tank	

Note : To ascertain the category of 'unit fails' the average of daily production and waste water discharge for the preceding 30 operating days from the date of sampling shall be considered.

* The emission from the boiler house shall conform to the standards already prescribed under E(P) Act, 1986 vide Notification No. GSR 742(E) dated 30.8.90.

52.	***JUTE PROCESSING INDUSTRY :**	**EFFLUENTS**	Concentration in mg/l except pH and Water consumption
		pH	5.5 – 9.0
		BOD [1][3days at 27°C]	30
		Suspended Solids	100
		Oil and Grease	10
		Water Consumption	1.60 Cum/Ton of product produced.

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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Sr. No.	Industry	Parameter	Standards
1	2	3	4

Note : 1. Water Consumption for the Jute processing industry will be 1.5 Cum/Ton of product from January, 1992.

2. At the present no limit for colour is given for liquid effluent. However, as far as possible colour should be removed.

* Stack emissions from boiler house shall conform to the standards already prescribed under Environment (Protection) Act, 1986, vide Notification No. GSR 742(E), dated 30.08.90.

53.	**LARGE PULP & PAPER NEWS PRINT/ RAYON GRADE PLANTS OF [1][CAPACITY ABOVE 24000 MT PER ANNUM]**	**EFFLUENTS**	Concentration in mg/l except pH and TOCL
		pH	7.0 – 8.5
		BOD[2][3 days at 27°C]	30
		COD	350
		Suspended Solids	500
		[3][Absorbable Organic Halogens (AOX) in effluent discharge	1.5 kg/ton of product with effect from the date of publication of this notification.1.0 kg/ton of product with effect from the 1st day of March,2008.]
		Flow (Total Waste Water Discharge)	
		**(i)Large Pulp & Paper	200 Cum/Ton of Paper produced
		(ii)Large Rayon Grade Newsprint	150 Cum/Ton of Paper produced.
54.	**SMALL PULP AND PAPER**	**EFFLUENT**	
	Paper Plant of Capacity upto 24000 MT/Annum : Category :		
	A. *Agrobased	Total waste water discharge	200 cum/Ton of paper produced
	B. **Waste paper based	Total waste water discharge	75 cum/Ton of paper produced

[1] Substituted by Rule 2(ii) (a) of the Environment (Protection) Third Amendments Rules, 2005 notified vide Notification No.G.S.R.546(E), dated 30.8.2005.

[2] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred

[3] Substituted by Rule 2(ii) (b) of the Environment (Protection) Third Amendments Rules, 2005 notified vide Notification No.G.S.R.546(E), dated 30.8.2005

** The Standards with respect of total wastewater discharge for the large pulp and paper mills be established from 1992, will meet the standards of 100 cum/Ton of paper produced.

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Sr. No.	Industry	Parameter	Standards
1	2	3	4

* The agro based mills to be established from January, 1992 will meet the standards of 150 cum/Ton of paper produced.

** The waste-paper mills to be established from January, 1992 will meet the standards of 50 cum/Tom of paper produced.

55.	**COMMON EFFLUENT TREATMENT PLANTS:**	**EFFLUENTS** (Inlet effluent quality for CETP)	(Concentration in mg/l)
	A. Primary Treatment	pH	5.5 – 9.0
		Temperature ^{o}C	45
		Oil & Grease	20
		Phenolic Compounds (as C_6H_5OH)	5.0
		Ammonical Nitrogen (as N)	50
		Cynide (as CN)	2.0
		Chromium hexavalent (as Cr+6)	2.0
		Chromium (total)(as Cr)	2.0
		Copper (as Cu)	3.0
		Lead (as Pb)	1.0
		Nickel (as Ni)	3.0
		Zinc (as Zn)	15
		Arsenic (as As)	0.2
		Mercury (as Hg)	0.01
		Cadmium (as Cd)	1.0
		Selenium (as Se)	0.05
		Fluoride (as F)	15
		Boron (as B)	2.0
		Radioactive Materials	
		Alpha emitters, Hc/ml	10-7
		Beta emitters, He/ml	10-8

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Sr. No.	Industry	Parameter	Standards
1	2	3	4

Note : 1. These Standards apply to the small scale industries, i.e. total discharge upto 25 KL/Day.

2. For each CETP and its constituent units, the State Board will prescribe standards as per the local needs and conditions; these can be more stringent than those prescribed above. However, in case of clusters of units, the State Board with the concurrence of CPCB in writing, may prescribe suitable limits.

B. Treated Effluent Quality of Common Effluent Treatment Plant Concentration in mg/l except pH & Temperature

	Into inland surface waters	On land for Irrigation	Into Marine Coastal areas
	(a)	(b)	(c)
pH	5.5 - 9.0	5.5 – 9.0	5.5 – 9.0
BOD[1][3days at 27°C]	30	100	100
Oil & Grease	10	10	20
Temperature	Shall not exceed 40°C in any section of the stream within 15 metres down stream from the effluent outlet	-	45°C at the point of discharge.
Suspended Solids	100	200	(a) For process waste water – 100 (b) For cooling water effluents 10 percent above total suspended matter of effluent cooling water
Dissolved Solids (inorganic)	2100	2100	-

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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Sr. No.	Industry	Parameter	Standards	
1	2	3	4	
		Total residual chlorine	1.0	-	1.0
		Ammonical nitrogen(as N)	50	-	50
		Kjeldahl nitrogen (asN)	100	-	100
		Chemical Oxygen Demand	250	-	250
		Arsenic (as As)	0.2	0.2	0.2
		Mercury (as Hg)	0.01	-	0.01
		Lead (as Pb)	0.1	-	1.0
		Cadmium (as Cd)	1.0	-	2.0
		Total Chromium (asCr)	2.0	-	2.0
		Copper (as Cu)	3.0	-	3.0
		Zinc (as Zn)	5.0	-	15
		Selenium (as Se)	0.05	-	0.05
		Nickel (as Ni)	3.0	-	5.0
		Boron (as B)	2.0	2.0	-
		Percent Sodium	-	60	-
		Cynide (as CN)	0.2	0.2	0.2
		Chloride (as Cl)	1000	600	-
		Fluoride (as F)	2.0	-	15
		Sulphate (as SO_4)	1000	1000	-
		Sulphide (as S)	2.8	-	5.0
		Pesticides	Absent	Absent	Absent
		Phenolic compounds (as C_6H_5OH)	1.0	-	5.0

Note : All efforts should be made to remove colour and unpleasant odour as far as possible.

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Sr. No.	Industry	Parameter	Standards	
1	2	3	4	
[1]56.	**DAIRY**	**EFFLUENTS**	Concentration in mg/l except pH	Quantum per product processed
		pH	6.5 – 8.5	-
		*BOD [2][3 days at 27°C]	100	-
		** Suspended Solids	150	-
		Oil and Grease	10	-
		Waste Water generation	-	$3m^3$/Kl of milk

Note :*BOD may be made stringent upto 30 mg/l if the recipient fresh water body is a source for drinking water supply. BOD shall be upto 350 mg/l for the chilling plant effluent for applying on land provided the land is designed and operated as a secondary treatment system with suitable monitoring facilities. The drainage water from the land after secondary treatment has to satisfy a limit of 30 mg/l of BOD and 10 mg/l of nitrate expressed as 'N'. The net addition to the groundwater quality should not be more than 3 mg/l of BOD and 3 mg/l of nitrate expressed as 'N'. This limit for applying on land is allowed subject to the availability of adequate land for discharge under the control of industry, BOD value is relaxable upto 350 mg/l, provided the wastewater is discharged into a town sewer leading to secondary treatment of the sewage.

** Suspended solids limit is relaxable upto 450 mg/l, provided the wastewater is discharged into town sewer leading to secondary treatment of the sewage.

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57.	**TANNERIES**	**EFFLUENTS**	Concentration in mg/l except pH	Quantum per raw hide processed
		pH	6.5 – 9.0	-
		*BOD [2][3 days at 27°C]	100	-
		Suspended Solids	100	-
		Sulphides (as S)	1	-
		Tototal Chromium (as Cr)	2	
		Oil and Grease	10	-
		Waste Water generation	-	28 m^3/T

* For effluent discharge into inland surface waters BOD limit shall be made stricter to 30 mg/l by the concerned State Pollution Control Board.

[1] Sl. No. 56 to 61 and entries relating thereto inserted vide GSR 475(E) dated 5.5.92 published in the Gazette No. 202 dated. 5.5.92.

[2] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter		Standards	
1	2	3		4	
****58.	**NATURAL RUBBER PROCESSING INDUSTRY**	Centrifuging and creaming units		Crape and crumb units	
		for disposal into inland surface water	for disposal on land for irrigation	for disposal into inland surface water	for disposal on land for irrigation
		(a)	(b)	(a)	(b)
		(Concentration in mg/l, except pH & quantum of waste water generation)		(Concentration in mg/l except pH & quantum of waste waster generation)	
	pH	6 – 9	6 – 8	6 – 8	6 – 8
	Total Kjeldahl nitrogen (as N)	200(100*)	***	50	***
	Ammonical Nitrogen as (N))	100 (50*)	***`	25	***
	BOD[1][3 days at 27°C]	20°C	100	30	100
	COD	250	***	250	***
	Oil & Grease	10	20	10	20
	Sulphide (as S)	2	***	2	***
	TDS	2100	NP**	2100	NP**
	SS	100	200	100	20
	Quantum of waste water generation	5 lit/kg of product processed	8 lit./kg of product processed	40 lit/kg of product processed	40 lit./kg of product processed

* To be achieved in three years.

** Not prescribed in case effluent is used for rubber plantation of their own. In other cases suitable limit, as necessary may be prescribed by the State Board.

*** Not specified.

**** These standards supersede the standards notified as serial no. 26 vide Notification No. S.O. 8(E), dated 3rd June, 1989.

59.	**BAGASSE-FIRED BOILERS**	**EMISSIONS**	(Concentration in mg/l)
	(a) Step Grate	Particulate Matter	250
	(b) Horse shoe/pulsating grate	Particulate Matter	500 (12% CO_2)
	(c) Spreader Stroker	Particulate Matter	800 (12% CO_2)

Note : In the case of horse shoe and spreader stroker boilers, if more than one boiler is attached to a single stack, the Standard shall be fixed based on added capacity of all the boilers connected with the stack.

[1] Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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Sr. No.	Industry	Parameter	Standards
1	2	3	4
*60.	**MAN-MADE FIBRE INDUSTRY (SEMI-SYNTHETIC)**	**EFFLUENTS**	(Concentration in mg/l except for pH)
		pH	5.5 - 9.0
		Suspended Solids	100
		BOD[1][3 days at 27°C]	30
		Zinc (as Zn)	1
61	**CERAMIC INDUSTRY**	**EMISSIONS**	(Concentration in mg/Nm^3)
	A. Kilns		
	(a) Tunnel, Top Hat, Chamber	Particulate Matter	150
		Fluoride	10
		Chloride	100
		Sulphur dioxide	**
	(b) Down-draft	Particulate Matter	1200
		Fluoride	10
		Chloride	100
		Sulphur dioxide	**
	(c) Shuttle	Particulate Matter	150
		Fluoride	10
		Chloride	100
		Sulphur dioxide	**
	(d) Vertical Shaft Kiln	Particulate Matter	250
		Fluoride	10
		Sulphur dioxide	**
	(e) Tank furnace	Particulate Matter	150
		Fluoride	10
		Sulphur dioxide	**
	B. Raw material handling, Processing and operations		
	(a) Dry raw materials handling and processing operations	Particulate Matter	150
	(b) Basic raw material and processing operations	Particulate Matter	*
	(c) Other sources of air pollution Generation	Particulate Matter	*
	C. Automatic Spray Unit		
	(a)Dryers		
	(i)Fuel fired dryers	Particulate matter	150
	(ii)For heat recovery dryer	Particulate matter	*
	(b)Mechanical finishing operation	Particulate matter	*
	(c) Lime/Plasters of Paris manufacture		

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* Standards notified at Sr. No.2 may also be referred.

1 Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
	Capacity :		
	Upto 5T/day	Stack Height	A. Hood should be provided with a stack of 30 meter height from ground level (including Kiln height)
	Above 5T/day	- do -	$H=14(Q)^{0.3}$ Where Q is emission rate of SO_2 in kg/hr and H=Stack in meters
	More than 5T/day	Particulate matter	500 mg/NM^3
	and utp 40 T/day	Particulate matter	150 mg/NM^3

Note : Oxygen reference level for particulate matter concentration calculations for kilns mentioned at A(c) is 18% and for those at A(b), A(d) and A(c) is 8%.

* All possible preventive measures should be taken to control pollution as far as practicable.

** The standard for sulphur dioxide in terms of stack height limits for kilns with various capacities of coal consumption shall be as indicated below :

Coal consumed per day	Stack height
Less than 8.5 MT	9 m
More than 8.5 to 21 MT	12 m
More than 21 to 42 MT	15 m
More than 42 to 64 MT	18 m
More than 64 to 104 MT	21 m
More than 104 to 105 MT	24 m
More than 105 to 126 MT	27 m
More than 126 MT	30 m or using formula

$H=14\ (Q_g)^{0.3}$ (whichever is more)

Note : In this notification

H—Physical height of the stack
Qg—Emission of sulphurdioxide in Kg/hr.
MT—Metric tones
m—meters

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S. No.	Indsutry	Parameter	Standards
1.	2.	3.	4.
[1][62.	**VISCOSE FILAMENT YARN** (Sub-sector of manmade fibre semi-Synthetic Industry)	**EFFLUENTS**	(Concentration in mg/l except for pH)
		pH	5.5-9.0
		Suspended solids	100
		BOD(3 days at 27°C)	30
		Zinc (as Zn)	5
[2][63.	**STARCH INDUSTRY** (Maize products)	**EFFLUENTS**:	Concentration not to exceed mg/l (except pH and waste water discharge)
		pH	6.5-8.5
		BOD (3 days at 27°C)	
		Suspended Solids	150
		Wastewater discharge	8 m^{3} /tonne of maize Processed

Note : The prescribed limits for BOD and suspended solids shall be made more stringent or less stringent depending upon the conditions and local requirements as mentioned below :

(i) BOD shall be made stringent upto 30mg/l if the recipient fresh water body is a source for drinking water supply.

(ii) BOD shall be allowed upto 350 mg/l for applying on land provided the land is designed and operated as a secondary treatment system with the requisite monitoring facilities. The drainage water

[1] Sl. No. 62 and entries relating thereto inserted by Rule 2(b) of the Environment (Protection) Third Amendment Rules, 1993 by G.S.R. No. 801 (E), dated 31.12.1993.

[2] Sl.No.63 to 78 and entries relating thereto inserted by Rule 3 (a) of the Environment (Protection) (Amendment) Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996.

* Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27oC) wherever BOD 5 days 20°C occurred.

from the land after secondary treatment has to satisfy a limit of 30mg/l of BOD and 10mg/l of nitrate expressed as "N". The net addition to ground water quality should not be more than 3 mg/l of BOD and 10mg/l of nitrate expressed as "N".

(iii) BOD shall be allowed upto 350 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.

(iv) Suspended solids shall be allowed upto 450 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.

(v) In the event of bulking of sludge, the industry shall immediately apprise the respective State Pollution Control Board.

64. BEEHIVE HARD COKE OVEN **EMISSION** :

(i) New unit	Particulate matter (corrected to 6% CO_2)	150 mg/Nm^3
	Hydrocarbons	25 ppm
(ii) Existing units	Particulate matter (corrected to 6% CO_2)	350 mg/Nm^3

Note : For control of emissions and proper dispensation of pollutants the following guidelines shall be followed:

(i) Units set up after the publication of this notification shall be treated as new units.

(ii) A minimum stack height of 20 meters shall be provide by each unit.

(iii) Emissions from coke ovens shall be channelised through a tunnel and finally omitted through a stack. Damper adjustment techniques shall be used to have optimum heat utilization and also to control the emission of unburnt carbon particles and combustible flue gases.

(iv) Wet scrubbing system or waste heat utilization for power generation or byproduct recovery systems should be installed preferably to achieve the prescribed standards.

(v) After four years from the date of this notification, all the existing units shall comply with the standards prescribed for the new units.

65. BRIQUETTE INDUSTRY (COAL)	**EMISSIONS** :	
(i) Units having capacity less than 10 tonnes	Particulate matter (corrected to 6% CO_2)	350 mg/Nm^3
(ii) Units having capacity 10 tonnes or more	Particulate matter (corrected to 6% CO_2)	150 mg/Nm^3

Note: For control of emissions/and proper dispersal of pollutants, the following guidelines shall be followed by the industry :-

(i) A minimum stack height of 20 metres shall be provided.

(ii) All ovens shall be modified to single chimney multi-oven systems.

(iii) Emissions from ovens shall be channelised through inbuilt draft stack. Optimum heat utilization technique shall be used.

(iv) In case of units having capacity 10 tonnes and above, wet scrubbing system shall be provided to control air pollution.

66. SOFT COKE INDUSTRY	Particulate matter (Corrected to 6% CO_2)	350 mg/Nm^3

Note: Wet scrubbing systems alongwith byproduct recovery system shall be provided.

GUIDELINES FOR EMISSION CONTROL TO IMPROVE WORK ZONE ENVIRONMENT (APPLICABLE FOR INDUSTRIES AT SERIAL NUMBERS 64, 65 AND 66):

(a) Water used for quenching and wet scrubbing shall be recalculated and reused through catch-pits.

(b) Leakages in the oven shall be sealed by bentonite or by any suitable paste and by proper maintenance to avoid fugitive emission.

GUIDELINES FOR COAL HANDLING AND CRUSHING PLANT (APPLICABLE TO INDUSTRIES AT SERIAL NUMBERS 64,65 AND 66)

(a) Unloading of coal trucks shall be carried out with proper care avoiding dropping of the materials from height. It is advisable to moist the material by sprinkling water while unloading.

(b) Pulverisation of coal shall be carried out in an enclosed place and water sprinkling arrangement shall be provided at coal heaps, crushing area and on land around the crushing unit.

(c) Work area surrounding the plant shall be asphalted or concreted.

(d) Green belt shall be developed along the boundary of the industry.

(e) Open burning of coal to manufacture soft coke shall be stopped.

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67. EDIBLE OIL & VANASPATI INDUSTRY

EFFLUENTS :

Temperature	Not more than 5°C above
ambient temperature	of the recipient waterbody
pH	6.5—8.5
Suspended solids	150 mg/l
Oil & grease	20 mg/l
BOD(3 days at 27°C)	100 mg/l
COD	200 mg/l
Wastewater Discharge	
(i) Solvent extraction	2.0 cum/tonne of product (oil)
(ii) Refinery/Vanaspati	2.0 cum/tonne of product (refined oil/Vanaspati)
(iii) Integrated unit of extraction & refinery/ Vanaspati	4.0 cum/tonne of refined Vanaspati product
(iv) Barometric cooling water/De-odoriser water	15.0 cum/tonne of refined oil/vanaspati

Note :

(i) The above standards shall be applicable to waste water from processes and cooling.

(ii) BOD shall be made stringent upto 30 mg/l if the recipient fresh water body is source of drinking water supply

(iii) The standards for boiler emissions shall be applicable as prescribed under Schedule I of these rules.

68. ORGANIC CHEMICALS MANUFACTURING INDUSTRY

EFFLUENTS :

(a) Compulsory parameters	pH	6.5—8.5
	BOD(3 days at 27°C)	100 mg/l
	Oil & Grease	10mg/l
	Bioassay test	Minimum90% survival after 96 hours with at 100% effluent

(b) Additional parameters (mg/l)

Nitrate(as N)	10
Arsenic	0.2
Hexavalent Chormium	0.1
Total Chormium	1.0
Lead	0.1
Cyanide as CN	0.2
Zinc	0.5
Mercury	0.01
Copper	2.0
Nickel	2.0
Phenolies as C_6H_3OH	5.0
Sulphide	2.0

Note :

(i) No limit for COD is prescribed but it shall be monitored. If the COD in a treated effluent is persistently greater than 250 mg/l, such industrial units are required to identify chemicals causing the same. In case these are found to be toxic as defined in Hazardous

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Chemicals Rules,1989 in Part I of Schedule-I, the State Boards in such cases may direct the industries to install tertiary treatment system stipulated time limit. This may be done on case to case basis.

(ii) These standards are not applicable to small scale detergent (formulating units).

(iii) The standards for boiler emissions shall be applicable as per the existing emission regulations.

(iv) Industry covered under this group are halo-aliphatics, plasticizers, aromatics (alcohols, phenols, esters, acids and salts, aldehydes and ketone), substituted aromatics, aliphatic (alcohols, esters, acids, aldehydes, ketones, amines and amides) and detergents.

69. FLOUR MILLS

EFFLUENTS :

pH	6.5—8.5
BOD (3 days at 27°C)	100 mg/l
Total Suspended Solids	100mg/l
Oil & Grease	10mg/l
Waste water discharge	2 cubic metre per tonne of wheat processed

Note :

(i) BOD shall be stringent upto 30 mg/l if the recipient freshwater body is a source for drinking water supply.

(ii) BOD shall be allowed upto 350 mg/l for applying on land, provided the land is designed and operated as a secondary treatment system with the requisite monitoring facilities. The drainage water from the land after secondary treatment has to satisfy a limit of 30 mg/l of BOD and 10 mg/l of nitrate expressed as “N”. The net addition to ground water quality should not be more than 3mg/l of BOD and 10 mg/l of nitrate expressed as “N”.

(iii) BOD shall be allowed upto 350 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.

(iv) Suspended solids shall be allowed upto 450 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.

70. BOILERS(SMALL)

Steam generation capacity (ton/hour)	Particulate matters emission (mg/Nm^3)
less than 2	1200*
2 to less than 10	800*
10 to less than 15	600*
15 and above	150**

* to meet the respective standards, cyclone/multicyclone is recommended as control equipment with the boiler.

** to meet the standard, bag filter/ESP is recommended as control equipment with the boiler.

Note :

(i) 12% of CO_2 correction shall be the reference value for particulate matter emission standards for all categories of boilers.

(ii) These limits shall supercede the earlier limits notified under Schedule I at serial number 34 of Environment (Protection) Act, 1986 vide notification GSR 742(E), dated 30th August, 1990.

(iii) Stack Height for small Boilers.
For the small boilers using coal or liquid fuels, the required stack height with the boiler shall be calculated by using the formula.

$H=14\ Q^{0.3}$

Where H—Total stack height in metres from the ground level.

$Q=SO_2$ emission rate in kg/hr.

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In no case the stack height shall be less than 11 metres.

Where providing all stacks are not feasible using above formula the limit of 400 mg/Nm^3 for SO_2 emission shall be met by providing necessary control equipment with a minimum stack height of 11 metres.

71.PESTICIDES INDUSTRY

(i) Compulsory Parameters	mg/l except pH
pH	6.5—8.5
BOD (3 days at 27°C)	100
Oil & Grease	10
Suspended solids	100
Bioassay test	Minimum 90% survival of fish after 96 hours with 90% effluent and 10% dilution water. Test shall be carried out as per IS : 6502-1971.

(ii) Additional Parameters	mg/l
(a) Heavy metal	
Copper	1.0
Manganese	1.0
Zinc	1.0
Mercury	0.01
Tin	0.1
Any other like Nickel	shall not exceed 5 times the drinking water standards (BIS) individually.
(b) Organics	
Phenol & Phenolic Compounds as C_6H_5OH	1.0
(c) Inorganics	
Arsenic as AS	0.2
Cyanide as CN	0.2
Nitrate as NO_3	50
Phospate as P	5.0

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(d) Specific pesticide	(microgram/litre)
Benzene Hexachloride	10
DDT	10
Dimethoate	450
Copper oxychloride	9600
Ziram	1000
2,4D	400
Paraquat	23000
Propanil	7300
Nitrofen	780
Other/below mentioned Pesticides individually	100

Other pesticides :

(i) Insecticides :

Aluminium Phosphide	Lindane	Phrethrum extract
Dichloroves	Malathlon	Quinalphos
EDTC Mixer	Methyl-Bromide	Monocrotophos
Ethylene Dibromide	Nicotine Sulphate	Carbaryl
Ethion	Oxydemeton Methyl	Endosulfan
Fenitrothoron	Methyl Parathion	Fenvalerate
Lime-sulphur	Phosphamidon	Phorate
Temephos		

(ii) Fungicides :

Aureofungin	Organomercurials (MEMC & PMA)
Barium Polysulphide	Sulphur (Collodal), Wettable & Dust)
Cuprous Oxide	Streptocyceline
Ferbam	Thiram
Mancozeb	Zenib
Manab	Carbendazim
Nickel Chloride	Tridemoraph

(iii) Rodenticides :
Comafuryl
Warfarin
Zinc Phosphide

(iv) Nematicides :
Metham N-Sodium

(v) Weedicides
Fluchloralin
Isoproturon
Butachlor
Anilphos

(vi) Plant Growth Regulants :
Chloromequat Chloride
Nemphalene Acetic Acid

(vii) Any other pesticide not specified above

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Note :

(1) Limits shall be complied with at the end of the treatment plant before any dilution.

(2) From the 'Additional Parameters' specified in 71(ii), only the relevant (based on the raw-materials used and products manufactured) may be prescribed by the concerned State Board on a case to case basis.

(3) No limit for COD is prescribed. If the COD in a treated effluent is persistently more than 250 mg/l, such industrial units are required to identify the chemicals causing the same. In case, there are found to be toxic as defined in Schedule I of the Hazardous Chemicals Rules,1989, the State Boards in such cases may direct the industries to install tertiary treatment, stipulating time limit. This may be done on a case to case basis.

(4) Solar evaporation followed by incineration is a recognized practice, provide the guidelines of solar evaporation as given below are followed.

GUIDELINES ON SOLAR EVAPORATION SYSTEM OR WASTEWATER FROM PESTICIDE INDUSTRY.

(i) Solar evaporation pans shall be constructed in such a way that the bottom is atleast one metre above the ground level.

(ii) Solar evaporation pans shall be leak proof and of impervious construction and designed as per IS:7290.

(iii) The solar evaporation pans shall be designed on the basis of evaporation rate matching to the out put of wastewater.

(iv) Wastewater must be pre-treated as below before subjecting to solar evaporation :

(a) Oil and grease and floating organics shall be removed so that the rate of evaporation is not affected.

(b) Acidic/Alkaline waste must be neutralised before solar evaporation to maintain pH in the range of 6.5 to 8.5.

(c) Toxic volatile matter shall be removed so as not to cause air pollution.'

(v) During the rainy season, storm water shall not be allowed to mix with process waste and enter the pans. The wastewater shall in no case outflow from the evaporation pans. Alternative arrangements shall be made to hold the wastewater in proper impervious tanks and if necessary, force evaporated.

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(vi) In no circumstances, the liquid effluent shall be discharged without conforming to the minimal national standards or stored in a holding arrangement which is likely to cause pollution.

(vii) The sludge from the solar evaporation pans shall be incinerated or disposed as per the guidelines for management and handling of hazardous waste, published by the Ministry of Environment & Forests, Government of India, after obtaining authorization from the State Pollution Control Board under the hazardous Waste (Handling and Management)Rules,1989.

(viii) The facility shall be protected from flood and storm to prevent embankments from erosion or any other damage which may render any portion inoperable.

(ix) Facilities shall be protective enclosure to keep wildlife, domestic animals, unauthorized persons, etc. away.

72. OIL DRILLING AND GAS EXTRACTION INDUSTRY

A. STANDARDS FOR LIQUID EFFLUENT

1.0 On-Shore facilities(For Marine Disposal)

pH	5.5—9.0
Oil & Grease	10 mg/l
Suspended solids	100 mg/l
BOD(3 days at 27°C)	30 mg/l

Note :

(i) For on-shore discharge of effluents, in addition to the standards prescribed above, proper marine outfall has to be provided to achieve the individual pollutant concentration level in sea water below their toxicity limits as given below, within a distance of 50 metre from the discharge point, in order to protect the marine aquatic life :

Parameter	**Toxicity limit,mg/l**
Chromium as Cr	0.1
Copper,as Cu	0.05
Cyanide,as CN	0.005
Fluoride,as F	1.5
Lead, as Pb	0.05
Mercury, as Hg	0.01
Nickel, as Ni	0.1
Zinc, as Zn	0.1

(ii) Oil and gas drilling and processing facilities, situated on land and away from saline water sink, may opt either for disposal of treated water by on-shore disposal of by re-injection in abandoned well, which is allowed only below a depth of 1000 metres from the ground level. In case of re-injection in abandoned well the effluent have to comply only with respect to suspended solids and oil and grease 100 mg/l and 10 mg/l, respectively. For on-shore disposal, the permissible limits are given below.

S.No.	Parameter	On-shore discharge standards (Not to exceed)
1.	2.	3.
1.	pH	5.5—9.0
2.	Temperature	40°C
3.	Suspended Solids	100 mg/l
4.	Zinc	2 mg/l
5.	BOD	30 mg/l
6.	COD	100mg/l
7.	Chlorides	600 mg/l
8.	Sulphates	1000 mg/l
9.	TDS	2100 mg/l
10.	%Sodium	60 mg/l
11.	Oil and Grease	10 mg/l
12.	Phenolics	1.2 mg/l
13.	Cyanides	0.2 mg/l
14.	Fluorides	1.5 mg/l
15.	Sulphides	2.0 mg/l
16.	Chromium(Cr+6)	0.1 mg/l
17.	Chromium (Total)	1.0 mg/l
18.	Copper	0.2 mg/l
19.	Lead	0.1 mg/l
20.	Mercury	0.01 mg/l
21.	Nickel	3.0 mg/l

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2.0 Off-shore facilities :

For off-shore discharge of effluents, the oil content of the treated effluent without dilution shall not exceed 40 mg/l for 95% of the observation and shall never exceed 100 mg/l. Three 8–hourly grab samples are required to be collected daily and the average value of oil and grease content of the three samples shall comply with these standards.

B. GUIDELINES FOR DISCHARGE OF GASEOUS EMISSION :

1.0 DG Sets

1.1 DG Sets at drill site as well as production station shall conform with the norm notified under the Environment (Protection) Act,1986.

2.0 Elevated/ground flares

2.1 Cold Venting of gases shall never be resorted to and all the gaseous emissions are to be flared.

2.2 All flaring shall be done by elevated flares except where there is any effect on crop production in adjoining areas due to the flaring. In such cases, one may adopt ground flaring.

2.3 In case of ground flare, to minimize the effects of flaring, the flare pit at Group Gathering Station(GGS)/Oil Collecting Station(OCS) and Group Collection Station(GCS) shall be made of RCC surrounded by a permanent wall (made of refractory brick) of minimum 5m height, to reduce the radiation and glaring effects in the adjoining areas.

2.4 A green belt of 100 m width may be developed around the flare after the refractory wall in case of ground flaring.

2.5 If the ground flaring with provision of green belt is not feasible, enclosed ground flare system shall be adopted, and be designed with proper enclosure height, to meet the ground level concentration(GLC) requirement.

2.6 In case of elevated flaring, the minimum stack height shall be 30m. Height of the stack shall be such that the max. GLC never exceeds the prescribed ambient air quality limit.

3.0 Burning of effluent in the pits shall not be carried out at any stage.

[1][C. GUIDELINES FOR DISPOSAL OF SOLID WASTE, DRILL CUTTING AND DRILLING FLUIDS FOR OFFSHORE AND ONSHORE DRILLING OPERATION-

1. Disposal of Drill Cutting and Drilling Fluids for On-shore Installations:

[1] Substituted "paragraph C", for "paragraph C relating to Guidelines For Disposal of Solid Waste" by Rule 2(iii) of the Environment (Protection) Third Amendments Rules, 2005 notified vide Notification No.G.S.R.546(E), dated 30.8.2005.

(a) Drill Cuttings (DC) originating from on-shore or locations close to shore line and separated from Water Base Mud (WBM) should be properly washed and unusable drilling fluids (DF) such as WBM, Oil Base Mud (OBM), Synthetic Base Mud (SBM) should be disposed off in a well designed pit lined with impervious liner located off-site or on-site. The disposal pit should be provided additionally with leachate collection system.

Design aspects of the impervious waste disposal pit; capping of disposal pit should be informed by the oil industry to State Pollution Control Board (SPCB) at the time of obtaining consent.

(b) Use of diesel base mud is prohibited. Only WBM should be used for on-shore oil drilling operations.

(c) In case of any problem due to geological formation for drilling, low toxicity OBM having aromatic content< 1% should be used. If the operators intend to use such OBM to mitigate specific whole problem/ SBM it should be intimated to Ministry of Environment and Forests/State Pollution Control Board.

(d) The chemical additives used for the preparation of DF should have low toxicity i.e. 96 hr LC_{50} > 30,000 mg/l as per mysid toxicity or toxicity test conducted on locally available sensitive sea species. The chemicals used (mainly organic constituents) should be biodegradable.

(e) DC separated from OBM after washing should have oil content at < 10 gm/kg for disposal into disposal pit.

(f) The waste pit after it is filled up shall be covered with impervious liner, over which, a thick layer of native soil with proper top slope is provided.

(g) Low toxicity OBM should be made available at installation during drilling operation.

(h) Drilling wastewater including DC wash water should be collected in the disposal pit evaporated or treated and should comply with the notified standards for on-shore disposal.

(i) Barite used in preparation of DF shall not contain Hg> 1 mg/kg & Cd> 3mg/kg.

(j) Total material acquired for preparation of drill site must be restored after completion of drilling operation leaving no waste material at site. SPCB should be informed about the restoration work.

(k) In case, environmentally acceptable methods for disposal of drill waste such as (a) injection to a formation through casing annuals, if conditions allow (b) land farming at suitable location (c) bio-remediation (d) incineration or (e) solidification can be considered, in such cases oil industry is required to submit proposal to Ministry of Environment and Forests/State Pollution Control Board (MoEF/SPCB) for approval.

2. Disposal of Drill Cutting and Drilling Fluids for Off-shore Installations:

(a) Use of diesel base mud is prohibited. Only WBM is permitted for offshore drilling. If the operator intend to use low toxicity OBM or SBM to mitigate specific hole problems in the formation, it should be intimated to MoEF/SPCB. The low toxicity OBM should have aromatic content< 1%.

(b) The toxicity of chemical additives used in the DF (WBM or OBM or SBM) should be biodegradable (mainly organic constituents) and should have toxicity of 96 hr LC_{50} Value > 30,000 mg /l as per mysid toxicity or toxicity test conducted on locally available sensitive sea species.

(c) Hexavalent chromium compound should not be used in DF. Alternative chemical in place of chrome lignosulfonate should be used in DF. In case, chrome compound is used, the DF/ DC should not be disposed offshore.

(d) Bulk discharge of DF in offshore is prohibited except in emergency situations.

(e) WBM/OBM /SBM should be recycled to a maximum extent. Unusable portion of OBM should not be discharged into sea and shall be brought to on-shore for treatment & disposal in an impervious waste disposal pit.

(f) Thoroughly washed DC separated from WBM/SBM & unusable portion of WBM/SBM having toxicity of 96 hr LC_{50} > 30,000 mg/l shall be discharged off-shore into sea intermittently, at an average rate of 50 bbl/hr/well from a platform so as to have proper dilution & dispersion without any adverse impact on marine environment.

(g) Drill cutting of any composition should not be discharged in sensitive areas notified by the Ministry of Environment and Forests.

(h) In case of specific hole problem, use of OBM will be restricted with zero discharge of DC. Zero discharge would include re-injection of the DC into a suitable formation or to bring to shore for proper disposal. In such a case, use of OBM for re-injection should be recorded and made available to the regulatory agency. Such low toxic OBM having aromatic content < 1% should be made available at the installation.

(i) In case, DC is associated with high oil content from hydrocarbon bearing formation, then disposal of DC should not have oil content > 10 gm/kg.

(j) The DC wash water should be treated to confirm limits notified under EPA, before disposal into Sea. The treated effluent should be monitored regularly.

(k) Discharge of DC from the installation located within 5 km away from shore should ensure that there is no adverse impact on marine Eco-system and on the shore. If, adverse impact is observed, then the industries have to bring the DC on-shore for disposal in an impervious waste disposal pit.

(l) If any, environmental friendly technology emerges for substitution of DF and disposal technology, it may be brought to the notice of MoEF and regulatory agencies. If the operator desires to adopt such environment friendly technology a prior approval from Ministry of Environment and Forests is required.

(m) Barite used in preparation of DF shall not contain Hg> 1 mg/kg & Cd> 3 mg/kg.

(n) Oil drilling operators are required to record daily discharge of DC & DF to offshore and also to monitor daily the effluent quality, and submit the compliance report once in every six-month to Ministry of Environment and Forests.]

73. [1][PHARMACEUTICAL (MANUFACTURING AND FORMULATION) INDUSTRY]

S. No.	Industry	Parameter	Standards
1	2	3	4
		[2][Effluent Standards	Limiting concentration in mg/l, expect for pH
		i. Compulsory Paramters	
		pH	6.0-8.5
		Oil & grease	10
		BOD (3 days 27°C)	100*
		Total suspended Solids	100
		Bioassay test	90% survival of fish after first 96 hours in 100% effluent **
		ii. Additional Paramters	
		Mercury	0.01
		Arsenic	0.20
		Chromium (Cr^{6+})	0.10
		Lead	0.10
		Cyanide	0.10
		Phenolics (C_6H_5OH)	1.0
		Sulphides (as S)	2.0
		Phosphate (as P)	5.0

Note:

* The BOD and COD limits shall be 30mg/l and 250 mg/l respectively, if treated effluent is discharged directly into a fresh water body i.e., stream, canal, river or lake.

** The Bioassay Test shall be conducted as per IS:6582-1971.

(i) Parameters listed as 'Additional Parameters' shall be prescribed depending upon the process and product.

(ii) Limits for total dissolved solids in effluent shall be prescribed by the concerned pollution control board/pollution control committee depending upon the recipient water body].

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[1] Substituted by Rule 2(b)(i) of the Environment (Protection) Third Amendment Rules, 2009 notified by G.S.R.512(E), dated 9.7.2009

[2] Substituted by Rule 2(b)(ii) of the Environment (Protection) Third Amendment Rules, 2009 notified by G.S.R.512(E), dated 9.7.2009

[1][A. Emission from Incinerator

		Limiting concentration in mg/Nm3, unless stated	Sampling duration in (minutes) unless stated
Particulate Matter		50	30 or more (for sampling about 300 litre emission)
HCI		50	30
SO_2		200	30
CO		100	Daily average
Total Organic Carbon		20	30
Total Dioxins and Furans *	Existing Incinerator	0.2 ngTEQ/Nm^3	8 hours
	New Incinerator	0.1 ngTEQ/Nm^3	8 hours
Sb+As+Pb+Cr+Co+Cu+ Mn+ Ni+V+Cd+Th+Hg and their compounds		1.5	2 hours

* The existing plant shall comply with norms for-dioxins and furans-as 0.1 ng/TEQ/Nrn^3 within 5 years from the date of notification.

Notes:

i. All monitored values shall be corrected to 11 % oxygen on dry basis.

ii. The CO_2 concentration In tail gas shall not be less than 7%,.

iii. In case, halogenated organic waste is less than 1% by weight in input waste, all the facilities in twin chamber incinerator shall be designed so as to achieve a minimum temperature of 850+25°C in primary chamber and 950°C in secondary combustion chamber and with a gas residence time in secondary combustion chamber not less than 2 (two) seconds,

or

all the facilities in single chamber incinerator for gaseous hazardous waste shall be designed so as to achieve a minimum temperature of 950°C in the combustion chamber with a gas residence time not less than 2 (two) seconds.

[1] Inserted by Rule 2 of the Environment (Protection) Second Amendment Rules, 2009 notified by G.S.R.149 (E), dated 4.3.2009.

iv. In case halogenated organic waste is more than l% by weight in input waste, waste shall be incinerated only in twin chamber incinerators and all the facilities shall be designed to achieve a minimum temperature of 850+25°C in primary chamber and 1100°C in secondary combustion chamber with a gas residence time in secondary combustion chamber not less than 2 (two seconds).

v. Scrubber meant for scrubbing emissions shall not be used as quencher.

vi. Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve Total Organic Carbon (TOC) content in the incineration ash and residue less than 3%, and their loss on ignition is less than 5% of the dry weight. In case of non-conformity, ash and/or residue shall be re-incinerated.

vii. The incinerator shall have a chimney of atleast thirty metre height.

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B. Effluent from Incinerator

i. Effluent from scrubber(s) and floor washing shall flow through closed conduit/pipe network.

ii. Storm water shall not be allowed to mix with scrubber water and/or floor washings.

iii. Storm water shall be channelized through separate drains passing through a HDPE lined pit having holding capacity of 10 minutes (hourly average) of rainfall.

iv. The built up in Total Dissolved Solids (TDS) in wastewater of floor washings shall not exceed 1000 mg/l over and above the TDS of raw water used.

v. Effluent shall not be stored in holding tank(s) in such manner which may cause pollution to groundwater.

vi. Effluent (scrubber water and floor washings) shall be discharged into receiving water conforming to the norms prescribed under Schedule VI:

General Standards for Discharge of Environment Pollutions (Part A: Effluents) notified under the Environment (Protection) Rules, 1986].

[1][74 **BRICK KILNS**

Emission Standards

(i) Bull's Trench Kiln (BTK)

	Category*	Limiting concentration in mg/Nm^3
Particulate matter	small	1000
	medium	750
	large	750

		minium (metre)
Stack height	Small	22 or induced draft fan operating with minimum draft of 50 mm WG with 12 metre stack height.
	Medium	27 or induced draft fan operating with minimum draft of 50 mm WG with 15 metre stack height.
	Large	30 or induced draft fan operating with minimum draft 50 mm WG with 17 metre stack height.

*Category	Trench withdh (m)	Production (bricks/day)
Small BTK	<4.50	Less than 15,000
Medium BTK	4.50-6.75	15,000-30,000
Large BTK	Above 6.75	Above 30,000

[1] Substituted by Rule 2 of the Environment (Protection) Fourth Amendment Rules, 2009 notified by G.S.R.543(E), dated 22.7.2009.

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(ii) Down-Draft Kiln (DDK)

	Category++	*Limiting concentration in mg/Nm^3*
Particulate matter	small/large/medium	*1200*
		Minimum (metre)
Stack height	small	12
	medium	15
	large	18

++Category	*Production (bricks/day)*
small DDK	Less than 15,000
medium DDK	15,000-30,000
large DDK	Above 30,000

(iii) Vertical Shaft Kiln (VSK)

	Category**	*Limiting concentraion in mg/l Nm^3*
Particulate matter	small/large/medium	250
		Minimum (metre)
Stack height	small	11 (at least 5.5m from loading platform)
	medium	14 (at least 7.5 m from loading platform)
	large	16 (at least 8.5 m from loading platform)

**Category	*No.of Shafts*	*Production (bricks/day)*
small VSK	1-3	Less than 15,000
medium VSK	4-6	15,000-30,000
large VSK	7 or more	above 30,000

Notes:

1. Gravitational Settling Chamber along with fixed chimney of appropriate height shall be provided for all Bull's Trench kilns.

2. One chimney per shaft in Vertical Shaft Kiln shall be provided. The two chimneys emanating from a shaft shall either be joined (at the loading platform in case of brick chimney or at appropriate level in case of metal chimney) to from a single chimney.

3. The above standards shall be applicable for different kilns if coal, firewood and/or agricultural residues are used as fuel].

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75. SODA ASH INDUSTRY (SOLVAY PROCESS)

PARAMETER	MINAS (Recipient body specified)		
	Marine	Brackish	Inland surface
pH	6.5—9	6.5—9	6.5—9
Temperature	45°C or less	45°C or less	45°C or less
Oil & Grease	2 mg/l	20 mg/l	10 mg/l
Suspended Solids(SS)	500 mg/l	200 mg/l	100 mg/l
Ammoniacal nitrogen	5 mg/l	50 mg/l	30 mg/l
Bio-assay	96 hours	96 hours	96 hours
	30% survival	90% survival	90% survival

Note :- MINAS for disposal in brackish and inland surface water are without any dilution.

Standards for Dual Process Soda Ash Plants :

Parameter	MINAS (Inland Surface Water)
pH	6.5—8.0
Ammoniacal nitrogen, as N(mg/l)	50
Nitrate nitrogen, as N(mg/l)	10
Cyanide, as CN(mg/l)	0.2
Hexavalent chromium(mg/l)	0.1
Total chromium(mg/l)	2.0
Suspended solids(mg/l)	100
Oil and Grease (mg/l)	10

Note : The Standards are to be implemented by the industry in a time targeted schedule [1][by December, 1999]. The progress on the time targeted implementation schedule shall be periodically submitted by the industry to the State Pollution Control Board and Central Pollution Control Board.

[1] Substituted by Rule 2 (ii) of the Environment (Protection) (Second Amendment) Rules, 1999 notified by Notification G.S.R.682(E), dated 5.10.1999.

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76. EMISSION STANDARD FOR SO_2 FROM CUPOLA FURNACE :

Standard for Sulphur Dioxide emission from Cupola Furnace :

Characteristics	Emission limit
Sulphur dioxide (SO_2) emission	300 mg/Nm^3 at 12% CO_2 corrections

To achieve the standard, foundries may install scrubber, followed by a stack six times the diameter of the Cupola beyond the charging door.

Note : In case due to some technical reasons, installation of scrubber is not possible, then value of SO_2 to the ambient air has to be effected through the stack height.

77. SPECIFICATIONS OF MOTOR GASOLINE FOR EMISSION RELATED PARAMETERS :

Sl. No.	Characteristics	Requirement	Method of test ref.to P:of IS:1448
(i)	Reid Vapour Pressure at 38°C,Kpa	35 to 70	P : 39
(ii)	Benzeno, Percent by volume,Max	5.0(1)	P : 104
(iii)	Lead Content(as Pb)g/l,Max	0.15(low leaded)(2) 0.013 (unleaded)	P : 38
(iv)	Sulphur, percent by mass, Max	0.10 (unleaded 0.20 (leaded)	P : 34
(v)	Potential Gum, g/m3, Max	50	ASTM 873 : 8
(vi)	Gum (Solvent Washed)g/m3 Max	40	P : 29
(vii)	Oxygenates Content Ether (MTBE, ETBE) Alcohol, percent by volume, Max	15	
(viii)	Phosphorus	See Foot Note(3)	ASTMD 3231

(1) 3.0 percent by volume maximum in metro cities by 2000 AD.

(2) 0.15 g/l by 31st December, 1996 (for entries country).
0.013 g/l by 1st April 1995 (in four metrocities);

by 1st December,1998(for all State capitals/UTs and major metro cities) and by 1st April,2000 for the entire country.

(3) Phosphorous containing additives shall be absent.

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Note :

(a) Above specifications applied to leaded as well as unleaded petrol except lead content.

(b) For new refineries coming up during or after 1997 the specification applicable by 2000 for existing refineries shall be applicable by 1997.

78. SPECIFICATION OF DIESEL FUEL FOR EMISSION RELATED PARAMETERS :

Sl.No.	Characteristics	Requirement	Method of Test Ref. To P : of IS : 1448
(i)	Density at 15° C, Kg/m3	820 to 880([1])	P : 32
(ii)	Cetane Number, Min	45^{o}([2])	P : 9
(iii)	Distillation 85 percent by volume recovery at ^{o}C Max 95 percent by volume recovery at ^{o}C,Max	350 370	P : 18
(iv)	Sulphur, percent by mass	0.50([3])	P : 33

(1) 820 to 860 by 2000 AD

(2) 48 by 31st December,1998(except in the refineries- Digboi, Gauhati and Bongaigaon Refineries & Petrochemicals Ltd.)

(3) (i) 0.50 percent by mass by 1st April 1996 in four metros and Taj Trapezium;

(ii) 0.25 percent by mass by 1st October,1996 in Taj Trapezium;

(iii) 0.25 percent by mass by 1st April,1996 throughout the country.

Note :

(a) Above specifications apply to HSD only.

(b) For new refineries coming during or after 1997 specification applicable by 2000 for existing refineries shall be applicable by 1997.

(c) 'P' refers to parts of IS : 1448.

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Sl. No.	Industry	Parameter	Standard		
			New Batteries (at Green Field Site)	Rebuild Batteries	Existing Batteries
		Fugitive Visible Emissions			
[1][2]79	**COKE OVEN PLANTS** (by product recovery type)	(a) Leakage from door (b) Leakage from charging lids (c) Leakage from AP Covers (d) Charging emission (Second/charge)	5(PLD)* 1(PLL)* 4(PLO)* 16(with HPLA)*	10(PLD)* 1(PLL)* 4(PLO)* 50 (with HPLA)*	10(PLD)* 1 (PLL)* 4(PLO)* 75
	Stack Emission of Coke Oven				
		(a) SO_2(mg/Nm^3) (b) NOx,(mg/ Nm^3) (c) SPM,(mg/Nm^3)	800 500 50	800 500 50	800 500 50
		(d) SPM emission during charging – for stamp charging batteries (stack emission) mg/Nm^3	25	25	25
		(e) SPM emission during coke pushing (stack emission) gm/ton of coke	5	5 (applicable to stationary land based system)	-
		(f) Sulphur in Coke Oven gas used for heating (mg/Nm^3)	800	-	-
	Emission for quenching operation				
		(a) Particulate matter gm/tonne of coke produced	50	50	-
	Benzo-Pyerine (BaP) concentration in work zone air (µg/m^3)				
		(a)Battery area (top of the battery) (b) Other units in coke oven plant (c)Ambient standards (mg/Nm^3)	5 2 10	5 2 10	5 2 10

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[1] Substituted by Rule 2(vi) by Rule 2(VI) of the Environment (Protection) First Amendment Rules, 2006 notified vide Notification G.S.R.46(E), dated 3.2.2006.

[2] Sl. No. 79 and entries relating thereto inserted by the Environment (Protection) Second Amendment Rules, 1997 vide G.S.R. 631(E), dated 31.10.1997.

For control of emissions and to maintain environmental quality in work zone area, the following guidelines shall be followed, namely:-

(i) New coke oven units shall follow any of the low-emission procedures, such as, coke dry cooling, non-recovery coke-ovens. Indirect Quenching Process, Jumbo coke oven reactor, Modified Wet Quenching System with appropriate environmental controls (e.g. baffles, filtering media, collection and treatment of residual water from quench tower and recycling; Use of process water as quenching water shall not be permissible).

(ii) Effective pollution control measures (for e.g. Extensive maintenance and cleaning of oven doors and frame seals, ascension pipes, charging holes and lids and other equipment; On-main charging system(HPLA);

Luting charging holes with clay-suspension; Modified guide/transfer car with emission control system etc. shall be used to reduce coal charging and coke pushing emissions.

(iii) During rebuilding or installing new coke oven batteries, the following clean technology and pollution control measures be adopted:

(a) air-cooled self-sealing doors;

(b) the hydro-jet cleaning system shall be provided for the door and door frame cleaning with a facility of hydro jet pressure of 600 kg/cm^2;

(c) the charging should be accomplished with hermetically sealed charging sleeves and screw feeder in charging car. The charging car should also be equipped with magnetic lid lifter and lid and frame cleaning mechanism (applicable to top charging batteries);

(d) to provide aspiration through high-pressure ammonia liquor (HPLA) injection in goose neck and emission should be transferred directly to gas collecting mains;

(e) water sealed AP covers should be provided;

(f) computerized combustion control and moisture control systems.

(iv) In addition to the above the new coke oven batteries, which will be installed after the date of publication of this notification at green field site and rebuild batteries wherever technically feasible should also be equipped to treat their pushing emissions with stationary land-based system with collection hood and wet scrubbing units for gas cleaning.

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(v) In the case of existing coke ovens with wet quenching, the new procedures as in (i) and (ii) shall be adopted.

(vi) The fugitive visible emission standards i.e. PLD*, PLL* and PLO*, charging emission (second/charge).

Note: Units set up after the publication of this notification shall be treated as new units.

*HPLA - Aspiration through high pressure liquor injection in gooseneck;
*PLD - Percent leaking doors;
* PLL - Percent leaking lids; and
* PLO - Percent leaking off takes].

[1][80. SPECIFICATIONS OF TWO-STROKE ENGINE OIL :

Specification	Standard	Test Procedure
Two-stroke engine oil grade JASO-FC as per JASO M-345-93 specification And API TC as per specification No.ASTM D 4859	Minimum smoke Index of 85.	JASO-M342-92 for JASO-FC and ASTM D-4857 for API TC

The above specification shall be effective from the 1st day of April,1999.]

[2][81. BATTERY MANUFACTURING INDUSTRY

(i) Lead Acid Battery Manufacturing Industries. Emission Standards.

Source	Pollutant	Concentration based Standards (mg/Nm^3)
Grid casting	Lead Particulate matter	10 25
Oxide manufacturing	Lead Particulate matter	10 25
Paste mixing	Lead Particulate matter	10 25
Assembling	Lead Particulate matter	10 25
PVC Section	Particulate matter	150

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1 Sl. No. 80 and entries relating thereto inserted by the Environment (Protection) Amendment Rules, 1998 vide G.S.R. 504 (E), dated 20.8.1998.

2 Sl. No. 81 to 87 and entries relating thereto inserted by the Environment (Protection) Amendment Rules, 1998 vide G.S.R. 7 (E), dated 22.12.1998.

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- To comply with the respective standards, all the emissions from above-mentioned sources shall be routed through stack connected with hood and fan in addition to above, installation of control equipment viz. Bag filter/ventury scrubber, is also recommended.
- The minimum stack height shall be 30 m.

Liquid Effluent Discharge Standards

Pollutant	Concentration based standards
pH	6.5—8.5
Suspended solids	50 mg/1
Lead	0.1 mg/l

(ii) Dry Cell Manufacturing Industry : Emission Standards

Pollutant	Concentration based Standards (mg/Nm^3)
Particulate matter	50
Manganese as Mn	5

- To Comply with the respective standards, all the emissions from above-mentioned sources shall be routed through stack connected with hood and fan. In addition to above, installation of control equipment viz. bag filter/ventury scrubber, is also recommended.
- The minimum stack height shall be 30m.

Effluent Standards

Pollutant	Concentration based standards
pH	6.5---8.5
Total suspended solids	100 mg/l
Manganese as Mn	2 mg/l
Mercury as Hg	0.02 mg/l
Zinc as Zn	5 mg/l

(iii) Secondary Lead Smelters

Pollutant	Concentration based standards
Lead as Pb	10 mg/Nm^3
Particulate matter	50 mg/Nm^3
Minimum stack height	30 m

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82. ENVIRONMENTAL STANDARDS FOR GAS/NAPTHA-BASED THERMAL POWER PLANTS

(i) Limit for emissions of NOx

(a) For existing units---150ppm (v/v) at 15% excess oxygen.

(b) For new units with effect from 1.6.1999.

Total generation of gas turbine		Limit for Stack NOx emission [v/v),at 15% excess oxygen]	
(a)	400 MW and above	(i) (ii)	50 ppm for the units burning natural gas. 100 ppm for the units burning naphtha.
(b)	Less than 400 MW but Upto 100 MW	(i) (ii)	75 ppm for the units burning natural gas. 100 ppm for the units burning naphtha
(c)	Less than 100 MW		100 ppm for units burning natural gas or naphtha as fuel
(d)	For the plants burning gas in a conventional boiler.		100 ppm

(ii) Stack height H in m should be calculated using the formula $H=14\ Q^{0.3}$, where Q is the emission rate of SO_2 in kg/hr, subject to a minimum of 30 mts.

(iii) Liquid waste discharge limit.

Parameter	Maximum limit of concentration (mg/l except for pH and temperature)
pH	6.5-8.5
Temperature	As applicable for other thermal power Plants
Free available chlorine	0.5
Suspended solids	100.0
Oil and grease	20.0
Copper (total)	1.0
Iron (total)	1.0
Zinc	1.0
Chromium (total)	0.2
Phosphate	5.0

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[1][83. STANDARDS/GUIDELINES FOR CONTROL OF NOISE POLLUTION FROM STATIONARY DIESEL GENERATOR(DG) SETS

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84. TEMPERATURE LIMIT FOR DISCHARGE OF CONDENSER COOLING WATER FROM THERMAL POWER PLANT

A . New thermal power plants commissioned after June 1,1999.

New thermal power plants, which will be using water from rivers/lakes./ reservoirs shall install cooling towers-irrespective location and capacity. Thermal power plants which will use sea water for cooling purposes, the condition below will apply.

B. New projects in coastal areas using sea water.

The thermal power plants using sea water should adopt suitable system to reduce water temperature at the final discharge point so that the resultant rise in the temperature of receiving water does not exceed 7°C over and above the ambient temperature of the receiving water bodies.

C. Existing thermal power plants.

Rise in temperature of condenser cooling water from inlet to the outlet of condenser shall not be more than 10°C.

D. Guidelines for discharge point :

1. The discharge point shall preferably be located at the bottom of the water body at mid-stream for proper dispersion of thermal discharge.
2. In case of discharge of cooling water into sea, proper marine outfall shall be designed to achieve the prescribed standards. The point of discharge may be selected in consultation with concerned State Authorities/NOI.
3. No cooling water discharge shall be permitted in estuaries or near ecologically sensitive areas such as mangroves, coral reefs/spawning and breeding grounds of acquatic flora and fauna.

85. ENVIRONMENTAL STANDARDS FOR COAL WASHERIES

1. Fugitive emission standards.

- The difference in the value of suspended particulate matter, delta (Δ), measured between 25 and 30 metre from the enclosure of coal crushing plant in the downward and leeward wind direction shall not exceed 150 microgram per cubic meter. Method of measurement shall be High Volume Sampling and Average flow rate, not less than 1.1 m^3 per minute, using upwind downwind method of measurement :

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[1] Serial No..83 and entries relating thereto omitted by Rule 2 (b) of the Environment (Protection) Second Amendment Rules, 2002 notified vide notification G.S.R. 371(E), dated 17.5.2002.

2. Effluent discharge standards

- The coal washeries shall maintain the close circuit operation with zero effluent discharge.

- If in case due to some genuine problems like periodic cleaning of the system, heavy rainfall etc. it become necessary to discharge the effluent to sewer land stream then the effluent shall conform to the following standards at the final outlet of the coal washery.

S.No.	Parameter	Limits
1.	pH	5.5—9.0
2.	Total suspended solids	100 mg/l
3.	Oil & Grease	10 mg/l
4.	B.O.D (3 days 27°C)	30 mg/l
5.	COD	250 mg/l
6.	Phenolics	1.0 mg/l

3. Noise level standards

- Operational/Working zone—not to exceed 85 dB(A) Leq for 8 hours exposure.

- The ambient air quality standards in respect of noise as notified under Environmental (Protection)Rules,1986 shall be followed at the boundary line of the coal washery.

4. Code of practice for Coal Washery.

- Water or Water mixed chemical shall be sprayed at all strategic coal transfer points such as conveyors, loading/unloading points etc. As far as practically possible conveyors, transfer points etc. shall be provided with enclosures.

- The crushers/pulverisers of the coal washeries shall be provided with enclosures, fitted with suitable air pollution control measures and finally emitted through a stack of minimum height of 30m. conforming particulate matter emission standard of 150 mg/Nm3 or provided with adequate water sprinkling arrangement.

- Water sprinkling by using fine atomizer nozzeles arrangement shall be provided on the coal heaps and on around the crushers/pulverisers.

- Area, in and around the coal washery shall be pucca either asphalted or concreted.

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- Water consumption in the coal washery shall not exceed 1.5 cubic meter per tonne of coal.

- The efficiency of the setting ponds of the waste water treatment system of the coal washery shall not be less than 90%.

- Green belt shall be developed along the road side, coal handling plants, residential complex, office building and all around the boundary line of the coal washery.

- Storage bunkers, hoppers, rubber decks in chutes and centrifugal chutes shall be provided with proper rubber linings.

- Vehicles movement in the coal washery area shall be regulated effectively to avoid traffic congestion. High pressure horn shall be prohibited. Smoke emission from heavy duty vehicle operating in the coal washeries should conform the standards prescribed under Motor Vehicle Rules,1989.

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86. WATER QUALITY STANDARDS FOR COASTAL WATERS MARINE OUTFALLS

In a coastal segment marine water is subjected to several types of uses. Depending of the types of uses and activities, water quality criteria have been specified to determine its suitability for a particular purpose. Among the various types of uses there is one use that demands highest level of water quality/purity and that is termed a "designated best use" in that stretch of the coastal segment. Based on this, primary water quality criteria have been specified for following five designated best uses :-

Class	Designated best use
SW-1(See Table 1.1.)	Salt pans, Shell fishing, Mariculture and Ecologically Sensitive Zone
SW-II (See Table 1.2)	Bathing, Contact Water Sports and Commercial fishing.
SW-III (See Table 1.3)	Industrial cooling, Recreation(non-contact) and Aesthetics
SW-IV (See Table 1.4)	Harbour
SW-V (See Table 1.5)	Navigation and Controlled Waste Disposal

The Standards alongwith rationale/remarks for various parameters for different designated best uses, given in Table 1.1 to 1.5

TABLE 1.1

PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-1 WATERS

(For Salt pans, Shell fishing, Mariculture and Ecologically Sensitive Zone)

S. No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.5---8.5	General broad range, conductive for propagation of acquaitc lives is given. Value largely dependant upon soil-water interation.
2.	Dissolved Oxygen	5.0 mg/l or 60 per cent saturation value whichever is higher	Not less than 3.5 mg/l at any time of the year for protection of aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour.	Specially caused by chemical compound like creosols, phenols, naptha pyridine benzene, toluene etc. causing visible colouration of salt crystal and fainting fish flesh.
4.	Floating Matters	Nothing obnoxious or detrimertal for use purpose	Surfactants should not exceed an upper limit of 1.0 mg/l and the concentratic not to cause any visible foam.
5.	Suspended Solids	None from sewage or industrial waste origin	Settleable innert matters not in such concentration that would impair any usages specially assigned to this class.
6.	Oil and Grease (including Petroleum Products)	0.1 mg/l	Concentration should not exceed 0.1 mg/l as because it has effect on fish eggs and larvae.
[1][7.	Heavy Metals : Mercury (as Hg) Lead (as Pb) Cadmium (as Cd)	 0.001 mg/l 0.001 mg/l 0.01 mg/l]	Values depend on : (i) Concentration in salt,fish and shell fish. (ii) Average per capita consumption per day. (iii)Minimum ingestion rate that induces symptoms of resulting diseases.

Note : SW-1 is desirable to be safe and relatively free from hazardous chemicals like pesticides, heavy metals and radionuclide concentrations. Their combined (synergistic or antagonistic) effects on health and aquatic lives are not yet clearly known. These chemicals undergo bio-accumulation, magnification and transfer to human and other animals through food chain. In areas where fisheries, salt pans are the governing considerations, and presence of such chemicals apprehended/reported, bioassay test should be performed following appropriate methods for the purpose of setting case specific limits.

[1] Substituted by Rule 2(iii) of the Environment (Protection) (Second Amendment) Rules, 1999 published in the Notification G.S.R.682(E), dated 5.10.1999.

TABLE 1.2

PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-II WATERS

(For Bathing, Contact Water Sports and Commercial Fishing)

S.No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.5---8.5	Range does not cause skin or eye irritation and is also conducive for propagation of aquatic lives.
2.	Dissolved Oxygen	4.0 mg/l or 50 per cent saturation value whichever is higher.	Not less than 3.5 mg/l at anytime for protection of aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour	Specially caused by chemical compound like creosols phenols, naptha, benzene, pyridine toluene etc. causing visible colouration of water and tainting of and odour in fish flesh.
4.	Floating Matters	Nothing obnoxious or detrimental for use purposes.	None in such concentration that would impair usages specially assigned to this class.
5.	Turbidity	30 NTU (Nephelo Turbidity Unit)	Measured at 0.9 depth
6.	Fecal Coliform	100/100 ml(MPN)	The average value not exceeding 200/100 ml in 20 per cent of samples in the year and in 3 consecutive samples in monsoon months.
7.	Biochemical Oxygen Demand (BOD) (3 days at 27°C)	3 mg/l	Restricted for bathing (aesthetic quality of water). Also prescribed by IS : 2296-1974.

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TABLE 1.3
PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-III WATERS
[For Industrial Cooling, Recreation (non-contact) and Aesthetics]

S.No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.5---8.5	The range is conducive for propagation of aquatic species and restoring natural system.
2.	Dissolved Oxygen	3.0 mg/l or 40 per cent saturation value whichever is higher.	To protect aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour	None in such concentration that would impair usages specifically assigned to this class.
4.	Floating Matters	No visible, obnoxious floating debris, oil slick, scum.	As in (3) above.
5.	Fecal Coliform	500/100 ml(MPN)	Not exceeding 1000/100 ml in 20 percent of samples in the year and in 3 consecutive samples in monsoon months.
6.	Turbidity	30 NTU	Reasonably clear water for Recreation Aesthetic appreciation and Industrial cooling purposes.
*7.	Dissolved Iron (as Fe)	0.5 mg/l or less	It is desirable to have the collective concentration dissolved Fe and Mn less or equal to 0.5 mg/l to avoid scaling effect.
*8.	Dissolved Manganese (as Mn)	0.5 mg/l or less	

* Standards included exclusively for Industrial Cooling purpose. Other parameters same.

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TABLE 1.4

PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-IV WATERS

(For Harbour Waters)

S.No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.0---9.0	To minimize corrosive and scaling effect.
2.	Dissolved Oxygen	3.0 mg/l or 40 per cent saturation value whichever is higher.	Considering bio-degradation of oil and inhibition to oxygen production thorugh photosynthesis.
3.	Colour and Odour	No visible colour or offensive odour	None from reactive chemicals which may corrode paints/ metallic surfaces.
4.	Floating materials, Oil, grease and scum (including Petroleum products)	10 mg/l	Floating matter should be free from excessive living organisms which may clog or coat operative parts of marine vessels/equipment.
5.	Fecal Coliform	500/100 ml(MPN)	Not exceeding 1000/100 ml in 20 per cent of samples in the year and in 3 consecutive samples in monsoon months.
6.	Biochemical Oxygen Demand (3 days at 27°C)	5mg/l	To maintain water relatively free from pollution caused by sewage and other decomposable wastes.

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TABLE 1.5

PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-V WATERS

(For Navigation and Controlled Waste Disposal)

S.No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.0---9.0	As specified by New England Interstate Water Pollution Control Commission.
2.	Dissolved Oxygen	3.0 mg/l or 40 per cent saturation value whichever is higher.	To protect aquatic lives.
3.	Colour and Odour	None in such concentrations that would impair any usages specifically assigned to this class.	As in (i) above.
4.	Sludge deposits, Solid refuse floating solids, oil grease and scum.	None except for such small amount that may result from discharge of appropriately treated sewage and or industrial waste effluents.	As in (i) above.
5.	Fecal Coliform	500/100 ml (MPN)	Not exceeding 1000/100 ml in 20 per cent of samples in the year and in 3 consecutive samples in monsoon months.

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87. EMISSION REGULATIONS FOR RAYON INDUSTRY

A. Existing Plants

Estimation of Uncontrolled Emission Quantity (EQ) of CS_2 :

For VSF,

EQ = 125 kg of CS_2/t of fibre

For VFY,

EQ = 225 kg of CS_2/t of fibre

Stack Height (H) requirement, m	Remarks
11 Q 0.41-3Vs D/u	A minimum of 80% of total emission shall pass through stack. If the calculated stack height is less than 30m, a minimum of height 30 m shall be provided

Where Q ----CS_2 emission rate, kg/hr

VS---stack exit velocity, m/sec.

D ---diameter of stack, m.

U ----annual average wind speed at top of stack, m/sec.

Multiple Stacks

1. If there are more than one stack existing in the plant, the required height of all stacks shall be based on the maximum emission rate in any of the stacks. In other words, all the stacks carrying CS_2 emission shall be of same heights (based on the maximum emission rate).

2. Number of stacks shall not be increased from the existing number. However, the number of stacks may be reduced. The existing stacks may be rebuilt and if stacks are to be relocated condition 3 below applies.

3. Spacing among the stacks (x) at the minimum shall be 3.0 H (in m). If distance, x, between two stacks is less than 3.0 H (in m), emission shall be considered as single point source and height of both the stacks shall be calculated considering all emission is going through one stack.

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B. Ambient Air Quality Monitoring

The industry shall install three air quality monitoring stations for CS_2 and H_2S measurements in consultation with State Pollution Control Board (SPCB) to ensure attainment of WHO recommended ambient air quality norms (CS_2 = 100 ug/m^3 and H_2S = 150 ug/m^3, 24 = hr. average).

[1][C. For new plants/expansion projects being commissioned on or after 1.6.1999

For new plants or expansion projects, the emission standards for existing plants covered in (a) above shall apply subject to compliance of the ambient air quality norms for CS_2 and H_2S indicated in (b) above. The new plants or expansion projects shall provide adequate space for undertaking retrofittings.

(Note : a and b above also apply to new plants or expansion projects).]

[2][88. EMISSION STANDARDS FOR NEW GENERATOR SETS (UPTO 19 KILOWATT) RUN ON PETROL AND KEROSENE WITH IMPLEMENTATION SCHEDULE.

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The emission standards for portable generator sets run on petrol and kerosene shall be follows :-

A. From June 1,2000

Class	Displacement (CC)	CO(g/kw-hr)		HC+NOx(g/kw-hr)	
		2-stroke engine	4-stroke engine	2-stroke engine	4-stroke engine
1.	≤65	603	623	166	65
2.	>65 ≤ 99	-	623	-	36
3.	>99 ≤225	-	623	-	19.3
4.	>225	-	623	-	16.1

[1] Substituted by Rule 2(i) of the Environment (Protection) Second Amendment Rules, 2006 notified by G.S.R.640(E), dated 16.10.2006.

[2] Sl. No. 88 and 89 and entries relating thereto inserted by the Environment (Protection) (Second Amendment) Rules, 1999 vide G.S.R. 682 (E), dated 5.10.1999.

B. From June 1,2001

Class	Displacement (CC)	CO(g/kw-hr)	HC+NOx(g/kw-hr)
1.	≤65	519	54
2.	>65 ≤99	519	30
3.	>99 ≤225	519	16.1
4.	>225	519	13.4

C. Test method shall be as specified in SAE J 1088. Measurement mode shall be D1 cycle specified under ISO 8178 (Weighting Factor of 0.3 for 100 % load, 0.5 for 75% load and 0.2 for 50% load).

D. Following organizations shall test and certify the generator sets :-

[1][(i) Automotive Research Association of India, Pune.

(ii) Indian Institute of Petroleum, Dehradun.

(iii) Indian Oil Corporation, R&D Centre, Faridabad.

(iv)]Vehicle Research Development Establishment, Ahmedbagar.

[2][(v)International Centre for Automotive Technology, Manesar (Haryana)]

These organizations shall submit the testing and certification details to the Central Pollution Control Board, annually. The Central Pollution Control Board may send the experts in the field to oversee the testing.

89 . NOISE STANDARDS FOR FIRE-CRACKERS

A. (i) The manufacture, sale or of fire-crackers generating noise level exceeding 125 dB(AI) of 145dB(C) at 4 metres distance from the point of bursting shall be prohibited.

(ii) For individual fire-cracker constituting the series (joined fire-crackers), the above mentioned limit be reduced by 5 $\log_{10}$ (N) dB, where N= number of crackers joined together.

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1 Renumbered as (i), (ii), (iii) and (iv) respectively by Rule 2(a) of the Environment (Protection) Second Amendment Rules, 2008 notified by G.S.R.280(E), dated 11.4.2008.

2 Inserted by Rule 2(a), ibid.

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B. The broad requirements for measurement of noise from fire-crackers shall be-

(i) The measurements shall be made on hard concrete surface of minimum 5 metre diameter or equivalet.

(ii) The measurements shall be made in free field conditions i.e., there shall not be any reflecting surface upto 15 metre distance from the point of bursting.

(iii) The measurement shall be made with an approved sound level metre.

C. The Department of Explosive shall ensure implementation of these standards.

[1][D. The fire crackers for the purpose of export shall be exempted from the sub-paragraphs A, B and C above subject to the compliance of the following conditions, namely :-

(i) the manufacturer shall have an export order;
(ii) the fire crackers shall conform to the level prescribed in the country to which it is exported;
(iii) they shall have a different packing colour code, and
(iv) there shall be a declaration on the box "not for sale in India" or "only for export in other countries".]

Note : dB(A1) : A-weighted impulse sound pressure level in decibel.

$dB(C)_{pk}$: C – weighted peak sound pressure level in decibel.]

Footnote : The Principal Rules were published in the Gazette of India vide Notification No.S.O.844 (E), dated the19th November, 1986 and subsequently amended vide :

(1)	S.O.82(E), dt. 16th February, 1987	(13)	S.O.136(E),dt.9th February, 1990
(2)	S.O393 (E), dt 16th April, 1987;	(14)	G.S.R.742(E),dt.13th August, 1990
(3)	S.O.443(E),dt 18th April, 1987	(15)	S.O.23(E),dt.16th January, 1991
(4)	S.O.64(E),dt. 18th January, 1988	(16)	S.O.80(E),dt. 8th February, 1991
(5)	G.S.R.919(E),dt.12thSept., 1988	(17)	S.O.114(E),dt.19th February,1991
(6)	S.O.8(E),dt. 3rd January 1989	(18)	G.S.R.85(E),dt.20th February, 1991
(7)	G.SR.913(E),dt. 24th October 1989	(19)	G.S.R.93(E),dt 21h February, 1991
(8)	S.O.914(E),dt. 24th October, 1989	(20)	S.O.190(E),dt.18th March, 1991
(9)	G.S.R.931(E),dt.27th October, 1989	(21)	S.O.416(E),dt. 20th June, 1991
(10)	G.S.R.103(E),dt. 25thDec.,1989	(22)	S.O.479(E), dt. 25th July, 1991
(11)	S.O.12(E),dt. 8th January, 1999	(23)	S.O.23(E),dt 9th January, 1992
(12)	G.S.R.54(E),dt.5th February, 1990		

[1] Inserted sub paragraph D by Rule 2(ii) of the Environment (Protection) Second Amendment Rules, 2006 notified by G.S.R.640(E), dated 16.10.2006.

[1][90. STANDARDS FOR COAL MINES

1. AIR QUALITY STANDARDS

The Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur dioxide (SO_2) and Oxides of Nitrogen (NOx) concentration in downwind direction considering predominant wind direction, at a distance of 500 metres from the following dust generating sources shall not exceed the standards specified in the Tables I, II and III given below:

Dust Generating Sources

Loading or unloading, Haul road, coal transportation road, Coal handling plant (CHP), Railway sliding, Blasting, Drilling, Overburden dumps, or any other dust generating external sources like coke ovens (hard as well as soft), briquette industry, nearby road etc.

Table-I

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
I New Coal Mines (Coal Mines commenced operation after the date of publication of this notification)	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	360 µg/m^3 500 µg/m^3	- High Volume Sampling (Average flow rate not less than 1.1 m^3/min)
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average * 24 hours **	180 µg/m^3 250 µg/m^3	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	- Improved west and Gaeke method - Ultraviolet fluorescene
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	- Jacob & Hochheiser Modified (Na-Arsenic) Method - Gas phase Chemiluminescence

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[1] Serial No.90 to 93 and entries relating thereto were inserted by Rule 2(1) of the Environment (Protection) Amendment Rules, 2000 notified vide notification G.S.R. 742(E), dated 25.9.2000.

Table-II

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	**2**	**3**	**4**	**5**
II Existing coal fields/mines given below: Karanpura, Ramgarh, Giridih, Rajhara, Wardha, Nagpur, Silewara, Pench Kanhan, Patharkhera, Umrer, Korba, Chirimiri, Central India Coalfields, (including Baikunthpur, Bisrampur), Singrauli, Ib Valley, Talcher, Godavary Valley and any other	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	430 µg/m^3 600 µg/m^3	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average * 24 hours **	215 µg/m^3 300 µg/m^3	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1. Improved west and Gaeke method 2. Ultraviolet fluorescene
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemilumine-scence

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Table-III

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	**2**	**3**	**4**	**5**
III Coal mines located in the coal fields of • Jharia • Raniganj • Bokaro	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	500 µg/m^3 700 µg/m^3	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average * 24 hours **	250 µg/m^3 300 µg/m^3	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1.Improved west and Gaeke method 2.Ultraviolet fluorescene
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemilumine-scence

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Note:

* Annual Arithmetic mean for the measurements taken in a year, following the guidelines for frequency of sampling laid down in clause 2.

** 24 hourly / 8 hourly values shall be met 92% of the time in a year. However, 8% of the time it may exceed but not on two consecutive days.

Unauthorised construction shall not be taken as a reference of nearest residential or commercial place for monitoring.

In case any residential or commercial or industrial place falls within 500 metres of any dust generating sources, the National Ambient Air Quality Standards notified under schedule VII shall be applicable.

2. FREQUENCY OF SAMPLING

– Air quality monitoring at a frequency of once in a fortnight at the dust generating sources given in clause 1 shall be carried out.

– As a result of monthly monitoring, if it is found that the value of the pollutant is less than 50% of the specified standards for three consecutive months, then the sampling frequency may be shifted to two days in a quarter year (3 months).

– In case, the value has exceeded the specified standards, the air quality sampling shall be done twice a week. If the results of four consecutive weeks indicate that the concentration of pollutants is within the specified standards, then fortnight monitoring may be reverted to.

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3. EFFLUENT STANDARDS

The standards for effluent discharge into sewer or stream or land, are given below:

pH	–	5.5 to 9.0
Chemical Oxygen Demand (COD)	–	250 mg/l
Total Suspended Solids (TSS)	–	100 mg/l 200 mg/l (Land for irrigation)
Oil & Grease (O & G)	–	10 mg/l

(Monitoring frequency of these parameters shall be once in a fortnight)

Optional parameters : All other parameters indicated in the general standards for discharge of environment pollutants under Schedule VI, shall be in addition to the effluent standards specified under clause 3. (Monitoring frequency shall be once in a year for the optional parameters)

4. NOISE LEVEL STANDARDS

	6.00 AM – 10.00 PM	**10.00 PM – 6.00 AM**
Noise level	**Leq 75 dB(A)**	**Leq 70 dB(A)**

(Monitoring frequency for noise level shall be once in a fortnight)
Occupational exposure limit of noise specified by Director General of Mines Safety (DGMS) shall be complied with by the local mines.

91. NOISE LIMIT FOR GENERATOR SETS RUN WITH PETROL OR KEROSENE

1. Noise limit

Noise limit for new generator sets run with petrol or kerosene shall be as given below:

	Noise Limit from	
	[1][September 1, 2002]	[2][September 1, 2003]
Sound Power level L_{wa}	90 dBA	86 dBA

2. Applicability

These rules shall apply to all new generator sets using petrol or kerosene as fuel, manufactured in or imported into India:

Provided that these rules shall not apply to:

a) any genset manufactured or imported for the purpose of exports outside India, or

b) the genset is intended for the purpose of sample only and not for sale in India.

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3. Requirement of certification

Every manufacturer or importer (hereinafter referred to as "supplier) of genset (hereinafter referred to as "product") to which these rules apply must have a valid certificate of type approval for all the product models being manufactured or imported after the specified dates.

4. Verification of conformity of production (COP)

Every supplier shall subject its products to the verification for conformity of production, by certification body specified in clause 8, every year.

5. Sale of generator sets not complying with these rules

The sale of product model, not having valid type approval certificate, or not complying with the noise limits, as determined by the verification for conformity of production, shall be prohibited, in India.

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1 Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 2001 published vide Notification No.G.S.R.628(E), dated 30.8.2001 from 'September 1. 2001 to September 1, 2002'.

2 Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 2001 published vide Notification No.G.S.R.628(E), dated 30.8.2001 from 'September 1. 2002 to September 1, 2003'.

6. Requirement of conformance labelling

6(1) The supplier of the 'product' must affix a conformance label on the product meeting the following requirements:

a) the label shall be durable and legible

b) the label shall be affixed on a part necessary for normal operation of the 'product' and not normally requiring replacement during the 'product' life.

6(2) The conformance label must contain the following information:

a) name & address of the supplier (if the address is described in the owners manual, it may not be included in the label)
b) statement that "this product conforms to the Environment (Protection) Rules, 1986
c) type approval certificate number and time phase (i.e. Sept 2001 or Sept 2002)

7. Nodal agency

(1) The Central Pollution Control Board shall be the nodal agency for implementation of these rules.
(2) In case of any dispute or difficulty in implementation of these rules the matter shall be referred to the nodal agency.
(3) The nodal agency shall constitute a Standing Committee to advise it on all matters; including the disputed matters, related to the implementation of these rules.

8. Certification body

The following agencies are authorised for type approval and for verification of conformity of production.

(1) Automative Research Association of India, Pune;
(2) National Physical Laboratory, New Delhi;
(3) Naval Science & Technology Laboratory, Visakhapatnam;
(4) Fluid Control Research Institute, Palghat; and
(5) National Aerospace Laboratory, Bangalore.

9. Compliance and testing procedure

The compliance and testing procedure shall be prepared and published by Central Pollution Control Board, with the help of the certification agencies.

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92. STANDARDS FOR EFFLUENTS FROM TEXTILE INDUSTRY

Parameter	Concentration not to exceed, milligram per litre (mg/l), except pH
pH	5.5 – 9.0
Total suspended solids	100
Bio-chemical oxygen demand (BOD)	30
Chemical oxygen demand (COD)	250
Total residual chlorine	1
Oil and grease	10
Total chromium as Cr	2
Sulphide as S	2
Phenolic compounds as C_6H_5OH	1

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Note:

1. Where the treated effluent is discharged into municipal sewer leading to terminal treatment plant, the BOD may be relaxed to 100 mg/l and COD to 400 mg/l

2. The quantity of effluent (litre per kilogram of product) shall not exceed 100, 250 and 80 in composite cotton textile industry, composite woolen textile industry and textile processing industry, respectively.

93. PRIMARY WATER QUALITY CRITERIA FOR BATHING WATER

In a water body or its part, water is subjected to several types of uses. Depending on the types of uses and activities, water quality criteria have been specified to determine its suitability for a particular purpose. Among the various types of users there is one use that demands highest level of water quality or purity and that is termed as "Designated Best Use" in that stretch of water body. Based on this, water quality requirements have been specified for different uses in terms of primary water quality criteria. The primary water quality criteria for bathing water are specified along with the rationale in Table 1.

Table 1

PRIMARY WATER QUALITY CRITERIA FOR BATHING WATER
(Water used for organised outdoor bathing)

CRITERIA		RATIONALE
1.Fecal Coliform MPN/100 ml:	500 (desirable) 2500 (Maximum Permissible)	To ensure low sewage contamination Fecal coliform and fecal streptococci are considered as they reflect the bacterial pathogenicity.
2.Fecal Streptococci MPN/100 ml:	100 (desirable) 500 (Maximum Permissible)	The desirable and permissible limits are suggested to allow for fluctuation in environmental conditions such as seasonal change, changes in flow conditions etc.
2. pH:	Between 6.5 – 8.5	The range provides protection to the skin and delicate organs like eyes, nose, ears etc. which are directly exposed during outdoor bathing.
3.Dissolved Oxygen:	5 mg/l or more	The minimum dissolved oxygen concentration of 5 mg/l ensures reasonable freedom from oxygen consuming organic pollution immediately upstream which is necessary for preventing production of anaerobic gases (obnoxious gases) from sediment.
4.Biochemical Oxygen Demand 3 day, 27^0C:	3 mg/l or less	The Biochemical Oxygen Demand of 3 mg/l or less of the water ensures reasonable freedom from oxygen demanding pollutants and prevent production of obnoxious gases.]

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[1][94. NOISE LIMIT FOR GENERATOR SETS RUN WITH DIESEL

1. Noise limit for diesel generator sets (upto 1000 KVA) manufactured on or after the [2][1st January, 2005].

The maximum permissible sound pressure level for new diesel generator (DG) sets with rated capacity up to 1000 KVA, manufactured on or after the [2][1st January, 2005] shall be 75 dB(A) at 1 metre from the enclosure surface.

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1 Serial No.94 and 95 and entries relating thereto were inserted by Rule 2(c) of the Environment (Protection) Second Amendment Rules, 2002 notified vide Notification G.S.R.371(E), dated 17.5.2002.

2 Substituted by Rule 2(a) (i) of the Environment (Protection) Second Amendment Rules, 2004 notified vide Notification No. G.S.R.448 (E), dated 12.7.2004 (Earlier it was 1st July 2003 as per the Environment (Protection) Second Amendment, Rules, 2002 notified vide G.S.R. 371 (E), dated 17.5.2002. Subsequently, substituted as 1st July, 2004 by the Environment (Protection) Amendment Rules, 2003 notified by G.S.R.520 (E), dated 1.7.2003 and later substituted as 1st January, 2005 by the Environment (Protection) Second Amendment Rules, 2004 notified by G.S.R. 448, dated 12.7.2004).

The diesel generator sets should be provided with integral acoustic enclosure at the manufacturing stage itself.

The implementation of noise limit for these diesel generator sets shall be regulated as given in paragraph 3 below.

2. Noise limit for DG sets not covered by paragraph 1.

Noise limits for diesel generator sets not covered by paragraph 1, shall be as follows:

2.1 Noise from DG set shall be controlled by providing an acoustic enclosure or by treating the room acoustically, at the users end.

2.2 The acoustic enclosure or acoustic treatment of the room shall be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under such circumstances the performance may be checked for noise reduction upto actual ambient noise level, preferably, in the night time). The measurement for Insertion Loss may be done at different points at 0.5 m from the acoustic enclosure/room, and then averaged.

2.3 The DG set shall be provided with proper exhaust muffler with insertion loss of minimum 25 dB(A).

2.4 These limits shall be regulated by the State Pollution Control Boards and the State Pollution Control Committees.

2.5. Guidelines for the manufacturers/users of Diesel Generator sets shall be as under:

1. The manufacturer shall offer to the user a standard acoustic enclosure of 25 dB(A) insertion loss and also a suitable exhaust muffler with insertion loss of 25 dB(A).

2. The user shall make efforts to bring down the noise levels due to the DG set, outside his premises, within the ambient noise requirements by proper siting and control measures.

3. Installation of a DG set must be strictly in compliance with the recommendations of the DG set manufacturer.

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4. A proper routine and preventive maintenance procedure for the DG set should be set and followed in consultation with the DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use.

3. LIMITS OF NOISE FOR DG SETS (UPTO 1000 KVA) MANUFACTURED ON OR AFTER THE [1][1ST JANUARY, 2005].

3.1 Applicability

1. These rules apply to DG sets upto 1000 KVA rated output, manufactured or imported in India, on or after [1][1st January, 2005].

2. These rules shall not apply to:
   (a) DG sets manufactured or imported for the purpose of exports outside India; and
   (b) DG sets intended for the purpose of sample and not for sale in India.

3.2 Requirement of Certification

[2][Every manufacturer or assembler or importer (hereinafter referred to as "manufacturer")] of DG set (hereinafter referred to as "product") to which these regulations apply must have valid certificates of Type Approval and also valid certificates of Conformity of Production for each year, for all the product models being [3][manufactured or assembled or imported] from [1][1st January, 2005] with the noise limit specified in paragraph 1.

3.3 Sale, import or use of DG sets not complying with the rules prohibited

No person shall sell, import or use of a product model, which is not having a valid Type Approval certificate and Conformity of Production certificate.

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1 Substituted by Rule 2(a) (i) of the Environment (Protection) Second Amendment Rules, 2004 notified vide Notification No. G.S.R.448 (E), dated 12.7.2004 (Earlier it was 1st July 2003 as per the Environment (Protection) Second Amendment, Rules, 2002 notified vide G.S.R. 371 (E), dated 17.5.2002. Subsequently, substituted as 1st July, 2004 by the Environment (Protection) Amendment Rules, 2003 notified by G.S.R.520 (E), dated 1.7.2003 and later substituted as 1st January, 2005 by the Environment (Protection) Second Amendment Rules, 2004 notified by G.S.R. 448, dated 12.7.2004).

2 Substituted by Rule 2(a) (i) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

3 Substituted by Rule 2(a) (ii) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

3.4 Requirement of Conformance Labelling

(i) The [1][manufacturer] of the 'product' must affix a conformance label on the product meeting the following requirements:

(a) The label shall be durable and legible.

(b) The label shall be affixed on a part necessary for normal operation of the 'product' and not normally requiring replacement during the 'product' life.

(ii) The conformance label must contain the following information:

(a) Name and address of the [2][manufacturer] (if the address is described in the owner's manual, it may not be included in the label.)

(b) Statement "This product conforms to the Environment (Protection) Rules,1986".

(c) Noise limit viz. 75 dB(A) at 1 m.

(d) Type approval certificate number.

(e) Date of manufacture of the product.

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3.5 Nodal Agency

(i) The Central Pollution Control Board shall be the nodal agency for implementation of these regulations.

(ii) In case of any dispute or difficulty in implementation of these regulations, the matter shall be referred to the nodal agency.

(iii) The nodal agency shall constitute a Committee to advise it on all matters; including the disputed matters, related to the implementation of these regulations.

3.6 Authorised agencies for certification

The following agencies are authorized to carry out such tests as they deem necessary for giving certificates for Type Approval and Conformity of Production testings of DG sets and to give such certificates:-

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[1] Substituted by Rule 2(b) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

[2] Substituted ibid.

(i) Automotive Research Association of India, Pune

(ii) National Physical Laboratory, New Delhi

(iii) Naval Science & Technology Laboratory, Visakhapatnam

(iv) Fluid Control Research Institute, Palghat

(v) National Aerospace Laboratory, Bangalore

3.7 Compliance and Testing Procedure

The compliance and testing procedure shall be prepared and published by the Central Pollution Control Board, with the help of the certification agencies.

[1][4.0 Exemption from the provisions of paragraph 1 and3, for the products (diesel generator sets upto 30 KVA) purchased by the Ministry of Defence, Govt. of India

The products manufactured in or imported into India till [2][30th April, 2007] for the purpose of supplying to the Ministry of Defence, shall be exempted from the regulations given in paragraph 1 to 3 above, subject to the following conditions, namely:-

(i) The [3][manufacturer] shall manufacture or import the products only after getting purchase order from the ministry of Defence and shall maintain the record of receipts, production/import, dispatch, etc. for inspection by the Central Pollution Control Board.

(ii) The special dispensation for noise norms shall be only for the mobile Defence vehicles which, with the present design/configuration, cannot carry the gensets with acoustic enclosures.

(iii) Director, Ministry of Defence shall ensure and maintain the serial number of all gensets for the Army and he shall also direct the manufacturers of these genets to emboss on the engine and the main body of the gensets, the words '**For the use of Army only'.**

(iv) The genset serial number shall be specially assigned by Ministry of Defence with the request for proposal and contract purchase order and this information shall be forwarded to the Central Pollution Control Board for inspection as and when required.

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1 Inserted by Rule 2 of the Environment (Protection) Second Amendment Rules, 2005 notified vide Notification G.S.R.315(E), dated 16.5.2005.

2 Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 2006 notified by G.S.R.464(E), dated 7.8.2006.

3 Substituted by Rule 2(c) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

(v) Registers shall be maintained at the manufacturers premises and in the Ministry of Defence to ensure that the number of gensets manufactured under special dispensation are not misused.

(vi) The gensets procured under this dispensation shall be operated in the remote areas and not in the cities.

(vii) This shall be a one time exemption during which the Army shall remodel its vehicles to contain the new gensets and also obtain the necessary Type Approval of the gensets.]

[1][5.0 Exemption from the provisions of paragraph 1 and 3 for sixteen Diesel Generator sets of 45 KVA purchased by the Ministry of Defence, Government of India

The 45 KVA DG sets manufactured in India for the purpose of their use in Mobile Decontamination System for use by the Ministry of Defence shall be exempted from the regulations given in paragraph 1 to 3 above subject to the following conditions, namely:-

(i) The special dispensation for the noise norms shall be only for the DG sets to be used in Mobile Decontamination System (MDS) by Army which, with the present design/configuration cannot carry the gensets with acoustic enclosures.

(ii) The Director, Ministry of Defence shall ensure and maintain the serial number for sixteen gensets and he shall also direct the manufacturers of these generator sets to emboss on the engine and main body of the gensets, the words "For the use of Army only in Mobile Decontamination System (MDS)".

(iii) A register shall be maintained at the manufacturers premises and in the Ministry of Defence to ensure that only sixteen numbers of 45 KVA gensets are manufactured under special dispensation and are not misused elsewhere.]

[2][6.0 Transportation of Diesel Generator Sets (above 250 KVA)

(i) Diesel Generator set shall be transported after fulfilling the requirement of certification specified in paragraph 3.2 as a complete unit with acoustic enclosure, or dismantled, with relevant genset number specified on acoustic enclosure and silencer for reassembling of the site of its operation.

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1 Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 2007 notified by G.S.R. 566(E), dated 29.8.2007.

2 Inserted by Rule 2(d) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

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(ii) Compliance with the noise norms shall be monitored after reassembling the D.G. set at the location of the installation by the concerned State Pollution Control Board or, as the case may be, the Union Territory Pollution Control Committee.]

95. EMISSION LIMITS FOR NEW DIESEL ENGINES (UP TO 800 KW) FOR GENERATOR SETS (GENSETS) APPLICATIONS

[1][1. Emission Limits

The emission limits for new diesel engines upto 800 kW for gensets applications shall be as given in the Table below:

[2][TABLE

Capacity of diesel engines	**Date of imple-mentation**	**Emission Limits (g/kw-hr) for**				**Smoke Limit (light absorption coefficient, m^{-1}) (at full load)**	**Test Cycle**	
		NO_X	**HC**	**CO**	**PM**		**Torque %**	**Weighting Factor**
Upto 19 kW	1.7.2005	9.2	1.3	3.5	0.3	0.7	100	0.05
							75	0.25
>19 kW upto 176 kW	1.1.2004	9.2	1.3	5.0	0.5	0.7	50	0.30
	1.7.2004	9.2	1.3	3.5	0.3	0.7	25	0.30
>176 kW upto 800 kW	1.11.2004	9.2	1.3	3.5	0.3	0.7	10	0.10

Explanation: This extension [3][for engines upto 19 kW] shall be applicable only to those suppliers:

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1 Substituted by Rule 2(b) (i) of the Environment (Protection) Amendment Rules, 2003 notified vide Notification G.S.R. 520 (E), dated 1.7.2003.

2 Substituted by Rule 2(b) of the Environment (Protection) Second Amendment Rule, 2004 notified vide Notification G.S.R.448(E), dated 12.7.2004.

3 For the word 'this extension', the word 'this extension for engines upto 19 kW added by Corrigendum notified vide Notification G.S.R.520(E), dated 12.8.2004.

(I) Who have obtained Type Approval Certificate for atleast one of their engine models in this range upto 30th June, 2004. [1][or]

(II) Who have submitted the bank guarantee and also contributed towards the study being carried out by the Union Institute of Science, Bangalore, for development of gentset diesel engines to comply with emission limits.]

Note I:- The diesel engine [2][suppliers] in the category of engines upto 19 kW, who are unable to meet the emission limits fixed for such diesel engines for genstes applications vide the notification of the Government of India, in the Ministry of Environment and Forests number G.S.R. 371 (E) dated 17th May, 2002 (herein referred to as the said notification), may avail the benefit of extension of time provided under this notification subject to the condition that every such [1][supplier] shall submit (i) an affidavit to the Central Pollution Control Board or the respective State Pollution Control Board or Committees where they are located to the effect that the specified emission limits shall be compiled with by them as per the extended date of implementation given hereinabove for that category of engines without seeking further extension of time and (ii) a bank guarantee of Rs. 50,000 (Rupees Fifty Thousand) which in case of non compliance shall stand forfeited.

Note II:- The diesel engine [1][supplier] in the category of engines more than 19 kW and upto 800 kW, who are unable to meet the emission limits fixed for such diesel engines for gensets applications vide the said notification may avail the benefit of extension of time provided under this notification subject to the condition that every such [1][supplier] shall submit (i) an affidavit to the Central Pollution Control Board or the respective State Pollution Control Board or Committees where they are located to the effect that the specified emission limits shall be compiled with by them as per the extended date of implementation given hereinabove for that category of engines without seeking further extension of time and (ii) a bank guarantee of Rs 10,00,000/- (Rupees ten lakhs) per parent engine model which in case of non compliance shall stand forfeited.

Note III:- The diesel engine [1][supplier] in the category of engines of more than 176 kW and upto 800 kW shall, in addition to the conditions specified in Note II above, also give an affidavit to the Central Pollution Control Board or to the respective State Pollution Control Boards or Committees where they are located to the effect that they shall develop either individual or a common test facility and get the same approved by the certification agencies mentioned in paragraph 8 of serial number 95 of Schedule I.]

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[1] The word 'or' added by Corrigendum notified vide Notification G.S.R.520(E), dated 12.8.2004 .

[2] For the word 'manufacturers' or 'manufacturer' , the word 'supplier' substituted by Rule 2 of the Environment (Protection) Amendment Rules, 2004 notified vide Notification G.S.R.92(E), dated 29.1.2004.

[1][***Explanation***: - For the purposes of this paragraph, 'supplier' means manufacturer of new diesel engines for genset applications in India and importer of such diesel engines for gensets applications and diesel gensets imported into India.]

2. Applicability

These rules shall apply to all new diesel engines for genset applications (herein after referred to as 'engine') manufactured in India and all diesel engines for genset applications and diesel gensets (herein after referred to as 'product'), imported into India, after the effective date:

Provided that these rules shall not apply to:

(i) any engine manufactured or engine or product imported for the purpose of export outside India, or;

(ii) any engine or product intended for the purpose of sample only and not for sale in India.

3. Requirement of certification

Every manufacturer of engine or every importer of engine or product must have valid certificates of Type. Approval and certificates of Conformity of Production for each year, for all engine models being manufactured or for all engine or product models being imported, after the effective date with the emission limit as specified in paragraph 1.

4. Sale, Import or use of engine or product not complying with these rules

No person shall sell, import or use of an engine or a product which is not having a valid Type Approval certificate and Conformity of Production certificate as per paragraph 3.

5. Requirement of conformance labelling

(i) All the engines (individually or as part of the product) shall be clearly engraved 'Genset Engine' on the cylinder block.

(ii) The engine or the product must be affixed with a conformance label meeting the following requirements:-

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[1] Inserted by Rule 2 (ii) of the Environment (Protection) Amendment Rules, 2004 notified vide Notification G.S.R.92(E), dated 29.1.2004.

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(a) the label shall be durable and legible;

(b) the label shall be affixed on a part necessary for normal operation of the engine or the product and not normally requiring replacement during the life of the engine or the product.

(iii) The conformance label must contain the following information:

(a) name and address of the engine manufacturer or the engine or product importer (if the address is given in the owner's manual, it may not be included in the label);

(b) statement that 'this engine or product conforms to the Environment (protection) Rules, 1986';

(c) type approval certificate number;

(d) date of manufacture of engine or in case of import, the date of import of the engine or the product.

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6. Compliance with BIS specifications

All engines up to [1][19 kw] (individually or as part of the product) shall carry ISI mark and meet relevant BIS specifications (IS 10001).

7. Nodal agency

(i) The Central Pollution Control Board shall be the, nodal agency for implementation of these rules.

(ii) In case of any dispute or difficulty in implementation of these rules the matter shall be referred to the nodal agency.

(iii) The nodal agency shall constitute a Committee to advise it on all matters, including the disputed matters, related to the implementation of these rules.

8. Authorized agencies for certification

The following agencies are authorized to carry out such tests as they deem necessary for giving certificates of Type Approval and Conformity of Production tests for Diesel engines and to give such certificates:-

(i) Automotive Research Association of India, Pune.
(ii) Vehicle Research and Development Establishment, Ahmednagar.

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[1] Substituted by Rule 2(c) of the Environment (Protection) Amendment Rules, 2003 notified vide Notification G.S.R.520(E), dated 1.7.2003.

[1][(iii) International Centre for Automotive Technology, Manesar (Haryana)]

9. Compliance and testing procedure

The compliance and testing procedure shall be prepared and published by the Central Pollution Control Board with the help of the Certification Agencies.

10. Fuel Specification

The specification of commercial fuel applicable for -diesel gensets shall be the same as applicable for commercial HSD(High Speed Diesel) applicable for diesel vehicles in the area, from time to time].

[2][96. EMISSION STANDARDS FOR DIESEL ENGINES (ENGINE RATING MORE THAN 0.8 MW (800 KW) FOR POWER PLANT, GENERATOR SET APPLICATIONS AND OTHER REQUIREMENTS

TABLE

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Parameter		Area Category	Total engine rating of the plant (includes existing as well as new generator sets)	Generator sets commissioning date		
				Before 1.7.2003	Between 1.7.2003 and 1.7.2005	On or after 1.7.2005
NO_X (as NO_2) (At 15% O_2, dry basis, in ppmv		A	Up to 75 MW	1100	970	710
		B	Up to 150 MW			
		A	More than 75 MW	1100	710	360
		B	More than 150 MW			
NMHC (as C) (at 15% O_2), mg/Nm^3		Both A and B		150	100	
PM (at 15% O_2), mg/Nm^3	Diesel Fuels- HSD & LDO	Both A and B		75	75	
	Furnace Oils- LSHS & FO	Both A and B		150	100	
CO (at 15% O_2), mg/Nm^3		Both A and B		150	150	

[1] Inserted by Rule 2(b) of the Environment (Protection) Second Amendment Rules, 2008 notified by G.S.R.280(E), dated 11.4.2008.

[2] Serial No.96 and entries relating thereto inserted by Rule 2 of the Environment (Protection) Third Amendment Rules, 2002 notified vide Notification G.S.R.489(E), dated 9.7.2002.

Parameter	Area Category	Total engine rating of the plant (includes existing as well as new generator sets)	Generator sets commissioning date		
			Before 1.7.2003	Between 1.7.2003 and 1.7.2005	On or after 1.7.2005
Sulphur content in fuel	A		<2%		
	B		<4%		
Fuel specification	For A only	Up to 5 MW	Only Diesel Fuels (HSD, LDO) shall be used.		
Stack height (for generator sets commissioned after 1.7.2003)	Stack height shall be maximum of the following, in metre: (i) 14 $Q^{0.3,}$ Q=Total SO_2 emission from the plant in kg/hr. (ii) Minimum 6m.above the building where generator set is installed. (iii) 30m.				

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Note:

1. **Acronyms used:**

MW	:	Mega (10^6) Watt	FO	:	Furnace Oil
NO_X	:	Oxides of Nitrogen	HSD	:	High Speed Diesel
NO_2	:	Nitrogen Dioxide	LDO	:	Light Diesel Oil
O_2	:	Oxygen	LSHS	:	Low Sulphur Heavy Stock
NMHC	:	Non-Methane Hydrocarbon	kPa	:	Kilo Pascal
C	:	Carbon	mm	:	Milli (10^{-3}) metre
PM	:	Particulate Matter	kg/hr	:	Kilo (10^3) gram per hour
CO	:	Carbon Monoxide	mg/Nm^3	:	Milli (10^{-3})gram per Normal metre cubic
SO_2	:	Sulphur Dioxide			
ppmv	:	Part per million(10^6) by volume			

2. Area categories A and B are defined as follows:

Category A: Areas within the municipal limits of towns/cities having population more than 10 lakhs and also up to 5 km beyond the municipal limits of such towns/cities.

Category B: Areas not covered by category A.

3. The standards shall be regulated by the State Pollution Control Boards or Pollution Control Committees, as the case may be.

4. Individual units with engine ratings less than or equal to 800 KW are not covered by this notification.

5. Only following liquid fuels viz. High Speed Diesel, Light Diesel Oil, Low Sulphur Heavy Stock and Furnace Oil or liquid fuels with equivalent specifications shall be used in these power plants and generator sets.

6. For expansion project, stack height of new generator sets shall be as per total Sulphur Dioxide emission (including existing as well as additional load).

7. For multi engine plants, fuels shall be grouped in cluster to get better plume rise and dispersion. Provision for any future expansion should be made in planning stage itself.

8. Particulate matter, Non-Methane Hydrocarbon and Carbon Monoxide results are to be normalized to 25^0C, 1.01Kilo Pascal (760 mm of mercury) pressure and zero percent moisture (dry basis).

9. Measurement shall be performed at steady load conditions of more than 85% of the rated load.

10. Continuous monitoring of Oxides of Nitrogen shall be done by the plants whose total engine capacity is more than 50 Mega Watt. However, minimum once in six month monitoring for other parameters shall be adopted by the plants.

11. Following methods may be adopted for the measurement of emission parameters:-

Sl No.	**Emission Parameters**	**Measurement Methods**
1.	Particulates	Gravimetric
2.	SO_2	Barium Perchlorate – Thorin indicator method
3.	NO_x	Chemiluminescence, Non Dispersive Infra Red, Non Dispersive Ultra-Violet (for continuous measurement), Phenol disulphonic method
4.	CO	Non Dispersive Infra Red
5.	O_2	Paramagnetic, Electrochemical Sensor
6.	NMHC	Gas Chromatograph-Flame Ionisation Detector

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[1][97.BOILERS USING AGRICULTURE WASTE AS FUEL

Step Grate Particulate matter	250 mg / Nm^3
Horse Shoe/ Pulsating Particulate matter	500 mg / Nm^3 (12% of CO_2)
Spreader stroker Particulate matter	500 mg / Nm^3 (12% of CO_2);

98. GUIDELINES FOR POLLUTION CONTROL IN GINNING MILLS

Measures for Noise Control

(i) Creating separate soundproof enclosures for the fans within the ginning area.

(ii) Keeping the fans outside the ginning room in separate enclosures.

(iii) Roller gins may be covered by sound proof enclosures and use of pneumatic feeding of raw cotton while suction of ginned cotton is introduced to considerably reduce the dust pollution level.

Measures for Dust Control

(i) The fugitive emission can be largely controlled by employing mechanical or pneumatic handling of raw material and ginned material through covered ducts and providing overhead hoods connected to exhaust through ducts and filters; use of lifting platforms for bale formers.

(ii) The overhead hoods with exhaust arrangement can be provided at:

(a) The saw-ginning machine where manual handling to maintain proper feeding in the machine.

(b) At the feeding point of the roller ginning machine when manual feeding is carried out.

(c) At the collection points of ginned cotton from saw ginning condenser]

[1] Entry 97 and 98 added by Rule 2 (iv) of the Environment (Protection) Third Amendment Rules, 2005 notified vide Notification G.S.R. 546(E), dated 30.8.2005.

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[1][99. SPONGE IRON PLANT (ROTARY KILN)

A. **Emission Standards***

	Particulate matter	Fuel Type	Limiting value for concentration
		Coal	100 mg/Nm^3
		Gas	50 mg/Nm^3
	Carbon Monoxide (Vol/Vol.)	Coal/gas	1%
	Stack Height** (minimum)	Coal/gas	30.0m

Note:-

* Emission shall be normalized at 12% CO_2 in stack emission,

** Stack height shall be calculated as $H=14.0\ Q^{0.3}$ where Q is emission of Sulphur Dioxide (SO_2) in kg/hr. i.e.

SO_2(kg/hr)	Height (Meter)
Upto 12.68	30
12.69-33.08	40
33.09-69.06	50
69.07-127.80	60
127.81-213.63	70

(De-dusting unit)	Particulate matter (mg/m^3)	Existing unit 100	New Unit 50

Note:-

(i) Stack attached to de-dusting unit l have minimum height of 30.0 metre.

(ii) If, De-dusting unit is connected to After Burner Chamber (ABC), emission shall be emitted through common stack (minimum height 30.0 metre) having separate arrangements for emission monitoring for de-dusting unit.

[1] Inserted by Rule 2 (i) of the Environment (Protection) Fourth Amendment Rules, 2008 notified by G.S.R.414(E), dated 30.5.2008.

(Rotary Kiln/De-dusting unit)

B. Fugitive Emission Standards

Particulate matter ($\mu g/m^3$)	Existing Unit	New Unit
	3000	2000

Note:-

(i) the existing industry shall comply with a standard of 2000 ($\mu g/m^3$) after one year from the date of notification.

(ii) Fugitive emission shall be monitored at a distance 10.0 metre from the source of fugitive emission as per following:

Area	Monitoring location
Raw material handling area	Wagon tippler, Screen area, Transfer points, Stock bin area
Crusher area	Crushing plant, vibrating screen, transfer points
Raw material feed area	Feeder area, Mixing area, Transfer Points
Cooler discharge area	Over size discharge area, Transfer points
Product processing area	Intermediate stock bin area, Screening plant, Magnetic separation unit, Transfer points, Over size discharge area, Product separation area, Bagging area
Other areas	As specified by State Pollution Control Board/ Pollution Control Committees.

C. Effluent Standards

pH	5.5-9.0
Total suspended solids	100mg/l
Oil & Grease	10 mg/l
Chemical oxygen demand	250mg/l

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Note:-

(i) All effort shall be made to reuse and re-circulate the water and to maintain 'Zero discharge'.

(ii) Stormwater drain shall be provided within the premises of the industry so as to avoid mixing with effluent].

[1][100. COMMON HAZARDOUS WASTE INCINERATOR

A. Emission

	Limiting concentration in mg/Nm^3 unless stated	Sampling Duration in (minutes) unless stated
Particulate Matter	50	30
HCL	50	30
SO_2	200	30
CO	100	30
	50	24 hours
Total Organic Carbon	20	30
HF	4	30
NOx (NO and NO_2, expressed as NO_2	400	30
Total dioxins and furans	0.1 ngETQ/Nm^3	8 hours
Cd+Th+their compounds	0.05	2 hours
Hg and its compounds	0.05	2 hours
Sb+As+Pb+Co+Cr+Cu+Mn+Ni+V+their compounds	0.50	2 hours

[1] Inserted by Rule 2 of the Environment (Protection) Fifth Amendment Rules, 2008 notified by G.S.R.481(E), dated 26.6.2008.

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Notes:

i. All monitored values shall be corrected to 11 % oxygen on dry basis.

ii. The CO_2 concentration in tail gas shall not be less than 7%.

iii. In case, halogenated organic waste is less than 1% by weight in input waste, all the facilities in twin chamber incinerators shall be designed to achieve a minimum temperature of 950°C in secondary combustion chamber and with a gas residence time in secondary combustion chamber not less than 2 (two) seconds.

iv. In case halogenated organic waste is more than 1% by weight in input waste, waste shall be incinerated only in twin chamber incinerators and all the facilities shall be designed to achieve a minimum temperature of 1100°C in secondary combustion chamber with a gas residence time in secondary combustion chamber not less than 2 (two seconds).

v. Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve Total Organic Carbon (TOC) content in the slag and bottom ashes less than 3%, or their loss on ignition is less than 5% of the dry weight].

[1][101. INCINERATOR FOR PESTICIDE INDUSTRY

A. EMISSION

		Limiting concentration in mg/Nm^3 unless stated	Sampling Duration in (minutes) unless stated
Particulate Matter		50	30
HCL		50	30
SO_2		200	30
CO		100	Daily average
Total Organic Carbon		20	30
Total Dioxins and Furans*	Existing Incinerator	0.2 ngTEQ/Nm^3	8 hours
	New Incinerator	0.1	8 hours
Sb+As+Pb+Cr +Co+Cu+Mn+Ni +V+ their compounds		1.5	2 hours

* The existing plant shall comply with norms for dioxins and furans as 0.1 ng/TEQ/Nm^3 within a period of five years from the date of publication of this notification.

Notes:

i. All monitored values shall be corrected to 11% oxygen on dry basis.

ii The CO_2 concentration in tail gas shall note be less than 7%.

iii. In case, halogenated organic waste is less than 1% by weight in input waste, all the facilities in single chamber incinerators shall be designed so as to achieve a minimum temperature of 1100°C, in the incinerator. For fluidized bed technology Incinerator, temperature shall be maintained at 950°C.

[1] Inserted by Rule 2 of the Environment (Protection) Seventh Amendment Rules, 2008 notified by G.S.R.600(E), dated 18.8.2008.

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iv. In case halogenated organic waste in more than 1% by weight in input waste, waste shall be incinerated only in twin chamber incinerators and all the facilities shall be designed to achieve a minimum temperature of 1100°C in secondary combustion chamber with a gas residence time in secondary combustion chamber not less than two seconds.

v. Scrubber meant for scrubbing emissions shall not be less used as quencher.

vi Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve Total Organic Carbon (TOC) content in the slag and bottom ashes less than 3%, and their loss on ignition is less than 5% of the dry weight.

vii The incinerators shall have a chimney of atleast thirty metre height.

B. Wastewater

i Wastewater (scrubber water and floor washings) shall be discharged into receiving water conforming to the norms prescribed under Schedule VI: General Standards for Discharge of Environment Pollutions (Part A : Effluents) notified under the Environment (Protection) Rules, 1986.

ii The built up in Total Dissolved Solids (TDS) in wastewater of floor washings shall not exceed 1000 mg/l over and above the TDS of raw water used.

[1][102. REFRACTORY INDUSTRY

A. Emission Standards

(i) Down Draft Kiln (Fuel:Coal)

	Category *	limiting concentration (mg/Nm^3)
Particulate matter	Small/ medium/large	350
		Minimum (metres)

[1] Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 2009 notified by G.S.R.97(E), dated 18.2.2009.

Stack height	Small	15
	Medium	18
	Large	21

(ii) Other than Down Draft Kiln (Fuel:Coal)

	Category *	Limiting concentration (mg/Nm^3)
Particulate matter	Small	300
	Medium	200
	Large	150
		Minimum (metres)
Stack height	Small	15
	Medium	18
	Large	21

(iii) Box, Tunnel Down Draft Kiln, etc. (Fuel:Natural Gas/Producer Gas/LPG or a combination of Fuels/Furnance Oil as Secondary Fuel)

	Category*	Limiting concentration (mg/Nm^3)
Particulate matter	Small	200
	Medium/ Large	150
		Minimum (metres)
Stack height	Small	12
	Medium	15
	Large	18
	Category*	Production (tpa)
	small kiln	<15,000
	Medium kiln	15,001-50,000
	Large kiln	above 50,000

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(iv) Rotary Kiln (Fuel: Furnance Oil)

	Category**	Limiting concentration (mg/Nm^3)
Particulate matter	Small	200
	Medium/ Large	150
		Minimum (metres)
Stack height	Small	35
	Medium	45
	Large	60
	Category**	Production (tpd)
	Small/rotary kiln	<50
	medium rotary kiln	51-100
	large rotary kiln	Above 100

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Note:-

(i) All values of particulate matter are to be corrected at 6 per cent Carbon Dioxide.

(ii) Fugitive emission shall not exceed 10 mg/m^3 from any process or plant.

(iii) Each stack shall be at least 2 metre above the top most point of the building, shed or plant in the industry excluding bucket elevator, mill house and vibrating screen.

(iv) If more than one kiln is connected to single stack, sum of the production capacity of all the kilns would be considered for determining the capacity of the kiln and accordingly depending upon the total capacity, emission standard and stack height would be implemented.

(v) Monitoring of stack shall be carried out at the time of charging and after the completion of charging and average of these two results shall be considered as emission level.

B. EFFLUENT STANDARDS

		Limiting value for concentration (mg/l except for pH)	
	Inland Surface Water	Public Sewer	Land for Irrigation
pH	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
Oil and Grease	10	20	10
BOD BOD $_{3\ days,\ 27^{o}C}$	30	250	100
COD	250	-	-
Suspended Solids	100	600	200
Phenols	1.0	5.0	-
Cyanide as CN	0.2	2.0	0.2
Cr(Hexavalent)	0.1	2.0	1.0
Cr(Total)	2.0	2.0	2.0]

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[1][103 CASHEW SEED PROCESSING INDUSTRY

A. EMISSION STANDARDS

	Process	Limiting concentration in mg/Nm^3
Particulate Matter	Roasting	250
	Cooking (roasted shell/deoiled cake as fuel)	150
	Borma Oven Heater (roasted shell/deoiled cake as fuel)	150

[1] Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 2010 notified vide GSR 1(E), dated 1.1.2010.

		Minimum (metres)
Stack height	Roasting	20
	Cooking	15
	Borma Oven	15
	Heater	

Note:

- All values of particulate matter shall be corrected at 4% Carbon Dioxide.
- Each stack shall be at least 2 metres above the top most point of the building, shed or plant in the industry.
- The emissions from 'Dog-house' shall be channelized alongwith Roasting-drum emissions and shall pass through wet scrubber.
- Bio-gasifier shall be installed if roasted shells are used as fuel in the unit.

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B-EFFLUENT STANDARDS

Limiting concentration in mg/l, except for pH

	Inland surface Water	Public sewer	Land for Irrigation
pH	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5
Oil & Grease	10	20	10
$BOD_{3days,\ 27oC}$	30	250	100
Suspended Solids	100	600	200
Phenols	1.0	5.0	-]

[1][104 PLASTER OF PARIS INDUSTRY

A. Stack Emission Standards
Stack Production Capacity upto 30 tonnes per day (tpd)

	Source	Limiting concentration in mg/Nm^3
Particulate Matter	Crusher	500
	Calciner	500
	Furnace/Grinder	150
Production capacity above 30 tpd		
Particulate matter	Crusher/ Calciner/ Furnace Grinder	150

Notes:

1. The units having production capacity up to 30 tpd shall channelize their emission through a stack or chimney of height at least ten metres above ground level or three metres above the top of shed or building of the industry, whichever is more.

2. The units having production capacity above 30 tpd shall channelize their emission through a stack or chimney of height at least thirty metres above the ground level or three metres above the top of shed or building whichever is more.

B. FUGITIVE EMISSION STANDARDS (µG/M^3)

Particulate Matter 2,000

Note: Fugitive emission shall be monitored at a distance of 10 $\pm$ 1 metres from the source, irrespective of production capacity.]

[1] Inserted by Rule 2 of the Environment (Protection) Second Amendment Rules, 2010 notified vide G.S.R..61(E), dated 5.2.2010.

(F. No. Q-15017/95/2000-CPW)

(R. K. VAISH)
JOINT SECRETARY TO THE GOVT. OF INDIA

Note :

The principal rules were published in the Gazette of India vide number S.O. 844(E), dated the 19th November, 1986 and subsequently amended vide S.O. 433(E), dated the 18th April, 1987, S.O.64(E) dated the 18th January, 1988, S.O. 3(E) dated 3rd January, 1989, S.O. 190(E), dated the 15th March, 1989, G.S.R. 913(E), dated the24th October, 1989, S.O. 12(E), dated the 8th January, 1990, G.S.R.742(E), dated the 30th August, 1990, S.O. 23(E), dated the16th January, 1991, G.S.R. No.93(E), dated the t21st February, 1991, G.S.R. 95(E), dated the 12th February, 1992, G.S.R. 329(E), dated the 13th March, 1992, G.S.R. 475(E), dated the 5th May, 1992, G.S.R. 797 (E), dated the 1st October, 1992, G.S.R. 386(E), dated the 28th April, 1993, G.S.R. 422(E), dated the 19th May, 1993, G.S.R. 801(E), dated the31st December, 1993, G.S.R. 176(E), dated the 3rd April, 1996, G.S.R. 631(E), dated the 31st October, 1997, G.S.R. 504(E), dated the 20th August, 1998, G.S.R.7 (E), dated the 2nd January, 1999, G.S.R. 682(E), dated the 5th October, 1999, G.S.R.742(E), dated the 25th September, 2000, G.S.R. 72(E), dated the 6th February, 2001, G.S.R. 54(E), dated the 22nd January, 2002, G.S.R. 371(E), dated the 17th May, 2002, G.S.R. 489(E), dated the 9th July, 2002, S.O.1088(E), dated the 11th October, 2002, G.S.R. 849(E), dated the 30th December, 2002, G.S.R. 520(E), dated the 1st July, 2003, G.S.R. 92(E), dated the 29th January, 2004, G.S.R.448(E), dated the 12th July, 2005, Corrigenda G.S.R. 520(E), dated the 12th August, 2004, G.S.R.272(E), dated the 5th May, 2005, G.S.R.315(E), dated the 16th May, 2005 and G.S.R.546(E), dated 30th August, 2005, G.S.R.46(E), dated the 3rd February, 2006, G.S.R.464(E), dated the 7th August, 2006, G.S.R.640(E), dated the 16th October, 2006, G.S.R.566(E), dated the 29th August, 2007, G.S.R.704(E), dated the 12th November, 2007, G.S.R.186(E), dated the 18th March, 2008, G.S.R.280(E), dated the 11th April, 2008, G.S.R.344(E), dated the 7th May 2008, G.S.R.414(E), dated the 30th May, 2008, G.S.R.481(E), dated the 26th June, 2008, G.S.R.579(E), dated the 6th August, 2008, G.S.R.600(E), dated the 18th August, 2008, G.S.R.752(E), dated the 24th October, 2008, G.S.R.97(E), dated the 18th February, 2009, G.S.R.149(E), dated the 4th March, 2009, G.S.R.512(E), dated the 9th July, 2009, G.S.R.543(E), dated the 22nd July, 2009, G.S.R.595(E), dated 21st August, 2009, G.S.R.794(E), dated the 4th November, 2009, G.S.R.826(E), dated the 16th November, 2009 G.S.R.1(E), dated 1st January, 2010 and G.S.R.61(E), dated the 5th February, 2010.

APPENDIX A

FORM I

(See rule 7)

NOTICE OF INTENTION TO HAVE SAMPLE ANALYSED

To

……
……

Take this notice that it is intended to have analysed the same of …… Which has been taken today, the ……. day of ……19…… from ……(Name and designation of the person who takes the sample)

_____

*Specify the place where the sample is taken.

(SEAL)

DATE

FORM II

(See rule 8)

MEMORANDUM TO GOVERNMENT ANALYST

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From

…….
…….

To

The Government Analyst

…….
…….

The portion of sample described below is sent herewith for analysis under rule 6 of the Environment (Protection) Rules, 1986.

The portion of the sample has been marked by me with the following mark :

Details of the portion of sample taken

Name and designation of person who sends sample

Date……. (SEAL)

FORM III
(See Rule 8)

REPORT BY GOVERNMENT ANALYST

Report No. ……..
Date . ……

I hereby certify that I …….. Government Analyst duly appointed under section 13 of the Environment (Protection) Act, 1986 received on the …… day of …….. 19…….. from ...……
[1] …….……
a sample of …….. for analysis.

The sample was in a condition fit for analysis as reported below :

I further certify that I have analysed the aforementioned sample on …… …… and declare the result of the analysis to be as follows :

2……
……

The Condition of seals, fastening of sample on receipt was as follows :

……
……

Signed this …….day of …...……..
19……..

Signature

Address……

(Government Analyst)

……
……
……

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[1] Here write the name of the officer/authority from whom sample was obtained.
[2] Here write full details of analysis and refer to method of analysis.

FORM IV
(See rule 11)

FORM OF NOTICE

By registered post
acknowledgement due

From (1)

Shri ……
……
……

To

……
……
……

Notice under section 19(b) of Environment (Protection) Act, 1986

Whereas an offence under the Environment (Protection) Act, 1986 has been committed/ is being committed by …… (2) I/we hereby give notice of 60 days under section 19(b) of the Environment (Protection) Act, 1986 of my/our intention to file a complaint in the court against ……(2) for violation of section of the Environment (Protection) Act, 1986.

In support of my/our notice, I am /we are enclosed the following documents(3) as evidence of proof of the Environment (Protection) Act, 1986.

Signature(s)

Place…….
Dated ……

Explanation :

(1) In case the notice is given in the name of a Company, documentary evidence authorising the persons to sign the notice on behalf of the company shall be enclosed to this notice.

Company for this purpose means a company defined in explanation to sub-rule(6) of rule 4.

(2) Here give the name and address of the alleged offender. In case of a manufacturing/processing/operation unit, indicate the name/location/nature of activity etc.

(3) Documentary evidence shall include photograph/ technical reports/ health report of the area, etc. for enabling enquiry into the alleged violation/ offence.

[No. 1(18)/86-PL]
T.N. SESHAN, Secy.

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[1][FORM-V]

(See rule 14)

Environmental statement for the financial year ending the 31st March ……..

PART-A

(i) Name and address of the owner/occupier of the industry operation or process

(ii) Industry category Primary – (STC Code) Secondary – (SIC Code)

(iii) Production capacity – Units ----------

(iv) Year of Establishment

(v) Date of last environmental statement submitted

PART-B

Water and Raw Material Consumption

(i) Water consumption m3/d
Process
Cooling
Domestic

Name of Products	Process water consumption per unit of product output.	
	During the previous financial year	During the current financial year
	(1)	(2)
(1)		
(2)		
(3)		

1 Substituted by Rule 2(b) of Environment (Protection) Amendment Rules, 1993 notified vide G.S.R. 386 (E) dated 22.04.1993.

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(ii) Raw material consumption

*Name of raw materials	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

(1) Pollutants	Quality of Pollutants discharged (mass/day)	Concentrations of pollutants discharges (Mass/volume)	Percentage of variation from prescribed standards with reasons.
(a) Water (b) Air			

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PART-D

HAZARDOUS WASTES

(As specified under [1][Hazardous Wastes (Management, Handling and Transboundry Movement) Rules, 2008)]

Hazardous Wastes	Total Quantity (Kg.)	
	During the previous financial year	During the current financial year

(a) From process

(b) From pollution control facilities

[1] The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 notified vide S.O.2265(E), dated 24.9.2008.

PART-E
Solid Wastes

	Total Quantity	
	During the previous financial year	During the current financial year

(a) From process

(b) From pollution control facilities

(c) (1) Quantity recycled or re-utilized within the unit.

(2) Sold

(3) Disposed

PART-F

Please specify the characterizations (in terms of composition of quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

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PART-G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

PART-H

Additional measures/investment proposal for environmental protection including abatement of pollution, prevention of pollution.

PART-I

Any other particulars for improving the quality of the environment.

[F.No. Q-15015/1/90-CPA]
MUKUL SANWAL, Jt. Secy.

[1][SCHEDULE II]

(See rule 3)

General standards for discharge of effluents

Sl. No.	Parameter	Standards			
		Inland surface water	Public sewers	Land for irrigation	Marine coastal areas
		(a)	(b)	(c)	(d)
1.	Colour and odour	See Note 1	-	See Note 1	See Note 1
2.	Suspended solids, mg/l, Max	100	600	200	(a) For process waste water-100 (b) For cooling water effluent-10 per cent above total suspended matter of influent cooling water.
3.	Particle size of suspended solids	Shall pass 850 micron IS Sieve			(a) Floatable solids,Max 3 mm (b) Settleable solids Max 850 microns.
4.	Dissolved Solids (inorganic), mg/a, max.	2100	2100	2100	
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 0 °C, Max	Shall not exceed 40 in any section of the stream within 15 meters down stream from the effluent outlet	45 at the point of discharge	-	45 at the point of discharge.
7.	Oil and grease, mg/l max.	10	20	10	20
8.	Total residual chlorine, mg/l, Max.	1.0	-	-	1.0
9.	Ammonical nitrogen (as N), mg/l, Max.	50	50	-	50
10.	Total kjeldahl nitrogen (as N), mg/l, Max.	100	-	-	100
11.	Free Ammonia (as NH_3), Mg/l, Max.	5.0	-	-	5.0
12.	Biochemical Oxygen Demand [2][3 days at 27°C] Max.	30	350	100	100

OMITTED
Indincode

[1] Schedule II inserted vide G.S.R. 919(E) dt. 12.9.88, published in the Gazette no. 488 dt. 12.9.88 and omitted by G.S.R.801(E), dated 31.12.1993.

[2] Substituted by Rule2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176, dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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	-	0.01
16.	Lead (as Pb), Mg/l, Max.	0.1	1.0	-	1.0
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.	Boron (as B), mg/l, Max	2.0	2.0	2.0	-
25.	Percent sodium, Max.	-	60	60	-
26.	Residual Sodium carbonate, mg/l, Max.	-	-	5.0	-
27.	Cynide (as CN), mg/l, Max.	0.2	2.0	0.2	0.2
28.	Chloride (as Cl), mg/l, Max.	1000	1000	600	-
29.	Fluoride (as F), mg/l, Max.	2.0	15	-	15
30.	Dissolved Phosphates (as P) mg/l, Max.	5.0	-	-	-
31.	Sulphate (as SO_4), mg/l, Max.	1000	1000	1000	-
32.	Sulphide (as S), mg/l, Max.	2.0	-	-	5.0
33.	Pesticides	Absent	Absent	Absent	Absent
34.	Phenolic compounds (as C_6H_5OH) mg/l, Max.	1.0	5.0	-	5.0
35.	Radioactive materials :				
	(a) Alpha emitters MC/ml. Max.	$10-^{7}$	$10-^{7}$	$10-^{8}$	$10-^{7}$
	(b) Beta emitters μc/ml. Max	$10-^{6}$	$10-^{6}$	$10-^{7}$	$10-^{6}$

Note : 1. All efforts should be made to remove colour and unpleasant odocur as far as practicable.

2. The standards mentioned in this notification shall apply to all the effluents discharged such as industrial mining and mineral processing activities municipal sewage etc.

3. [1][***…..]

1 Omitted by Rule 2 of the Environment (Protection) Fourth Amendment Rules, 1992 vide Notification GSR 797(E) dated 01.01.1992, Gazette No. 396 dated 01.01.1992.

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[1][SCHEDULE III]

(See rule 3)

AMBIENT AIR QUALITY STANDARDS IN RESPECT OF NOISE

Area Code	Category of Area	Limits in dB(A) Leq.	
		Date Time	Night Times
(A)	Industrial Area	75	70
(B)	Commercial Area	65	55
(C)	Residential Area	55	45
(D)	Silence Zone	50	40

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Note :

1. Day time is reckoned in between 6 a.m. and 9 p.m.

2. Night time is reckoned in between 9 p.m. and 6 a.m.

3. Silence zone is defined as areas upto 100 meters around such premises as hospitals, educational institutions and courts. The Silence zones are to be declared by the Competent Authority.

   Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these zones.

4. Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.

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[1] Schedule III inserted vide GSR 1063(E), dt. 26.12.89, published in the Gazette No. 643 dt. 26.12.89.

[1][SCHEDULE IV]
(See rule 3)

STANDARDS FOR EMISSION OF SMOKE, VAPOUR ETC. FROM MOTOR VEHICLES :

(1) Every motor vehicles shall be manufactured and maintained in such condition and shall be so driven that smoke, visible vapour, grit, sparks, ashes, cinders or oily substance do not emit therefrom.

(2) On and from the 1st day of March, 1990, every motor vehicle in use shall comply with the following standards :

(a) Idling CO (Carbon monoxide) emission limit for all four wheeled petrol driven vehicles shall not exceed 3 per cent by volume;

(b) Idling CO emission limit for all two and three wheeled petrol driven vehicles shall not exceed 4.5 per cent by volume;

(c) Smoke density for all diesel driven vehicles shall be as follows :

Method of Test	Maximum smoke density		
	Light absorption coefficient m-1	Bosch units	Harridge units
(a) Full load at a speed of 60% to 70% of maximum enginerated speed declared by the manufacturer.	3.1	5.2	75
(b) Free acceleration	2.3	-	65

(3) On and from the 1st day of April, 1991 all petrol driven vehicles shall be so manufactured that they comply with the mass emission standards as specified at Annexure 'I'. The breakdown of the operating cycle used for the test shall be as specified at Annexure 'II' and the reference fuel for all such tests shall be as specified in Annexure 'III' to this Schedule.

(4) On and from the 1st day of April, 1991, all diesel driven vehicles shall be so manufactured that they comply with the mass emission standards based on exhaust gas capacity as specified at Annexure 'IV' to this Schedule.

(5) On and from the 1st day of April, 1992, all diesel driven vehicles shall be so manufactured that they comply with the following levels of emission under the Indian driving cycle :-

[1] Schedule IV inserted vide G.S.R. 54 (E) dt. 5.2.90 published in the Gazette No. 45 dt. 5.2.90.

Mass of Carbon Monoxide (CO) Maximum, Grams per KWH	Mass of Hydroxy carbons (HC) Maximum Grams per KHW	Mass of Nitrogen Oxides (NC) Maximum Grams per KWH
14	3.5	18

(6) Each motor vehicle manufactured on and after the dates specified in paragraphs (2), (3), (4) and (5) shall be certified by the manufacturers to tbe conforming to the standards specified in the said paragraphs and the manufacturers shall further certify that the components liable to effect the emission of gaseous pollutants are so designed, constructed and assembled as to enable the vehicle, in formal use, despite the vibration to which it may be subjected, to comply with the provisions of the said paragraphs.

(7) Test for smoke emission level and carbon monoxide level for motor vehicles –

(a) Any officer not below the ranks of a sub-inspector of police or an inspector of motor vehicles, who has reason to believe that a motor vehicle is by virtue of smoke emitted from it or other pollutants like carbon monoxide emitted from it, is likely to cause environmental pollution, endangering the health or safety of any other user of the road or the public, may direct the driver or any person incharge of the vehicle to submit the vehicle for undergoing a test to measure the standard of black smoke or the standard of any of the other pollutants.

(b) The driver or any person incharge of the vehicle shall upon demand by any officer referred to in sub-paragraph (a) submit the vehicle for testing for the purpose of measuring the standard of smoke or the levels of other pollutants or both.

(c) The measurement of standard of smoke shall be done with a smoke meter of a type approved by the State Government and the measurement of other pollutants like carbon monoxide shall be done with instruments of a type approved by the State Government.

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ANNEXURE-I

(See paragraph 3)

MASS EMISSION STANDARDS FOR PETROL DRIVEN VEHICLES

1. Type Approval Tests :

Two and Three Wheeler Vehicles

Reference Mass, R (Kg)	CO (g/km)	HC(g/km)
1	2	3
R ≤ 150	12	8
150<R≤350	$12 + \frac{18\,(R-150)}{200}$	$8 + \frac{4\,(R-150)}{200}$
R>350	30	12

Two and Three Wheeler Vehicles

Reference Mass, R (Kg)	CO (g/km)	HC(g/km)
1	2	3
rw≤1020	14.3	2.0
1020<rw≤1250	16.5	2.1
1250<rw≤1470	18.8	2.1
1470<rw≤1700	20.7	2.3
1700<rw≤1930	22.9	2.5
1930<rw≤2150	24.9	2.7
rw>2150	27.1	2.9

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2. Conformity of Production tests :

Two and Three Wheeler vehicles :

Reference Mass, R (Kg)	CO (g/km)	HC(g/km)
1	2	3
R - 150	15	10
150<R≤350	$15 + \frac{25\,(R-150)}{200}$	$10 + \frac{5\,(R-150)}{200}$
R>350	40	15

Light Duty Vehicles :

Reference Mass, rw (Kg)	CO (g/km)	HC(g/km)
1	2	3
rw≤1020	17.3	2.7
1020<rw≤1250	19.7	2.7
1250<rw≤1470	22.5	2.8
1470<rw≤1700	24.9	3.0
1700<rw≤1930	27.6	3.3
1930<rw≤2150	29.9	3.5
rw>2150	32.6	3.7

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For any of the pollutants referred to above of the three results obtained may exceed the limit specified for the vehicles by not more than 10 per cent.

Explanation : Mass emission standards refers to the gm. of Pollutants emitted per Km. run of the vehicle as determined by the chassis dynamometer test using the Indian Driving Cycle.

ANNEXURE-II
(See Paragraph 3)

BREAKDOWN OF THE OPERATING CYCLE, USED FOR THE TESTS

No. of Operation		Acceleration (m/acc^2)	Speed (Km/h)	Duration of each operation(s)	Cumulative time(s)
1		2	3	4	5
01.	Idling	-	-	16	16
02.	Acceleration	0.65	0-14	6	22
03.	Acceleration	0.56	14 – 22	4	26
04.	Declaration	-0.63	22 – 13	4	30
05.	Steady speed	-	13	2	32
06.	Acceleration	0.56	13 – 23	5	37
07.	Acceleration	0.44	23 – 31	5	42
08.	Deceleration	-0.56	31 – 25	3	45
09.	Steady Speed	-	25	4	49
10.	Deceleration	-0.56	25 – 21	2	51
11.	Acceleration	0.45	21 – 34	8	59
12.	Acceleration	0.32	34 – 42	7	66
13.	Deceleration	0.46	42 – 37	3	69
14.	Steady speed	-	37	7	76
15.	Deceleration	-0.42	37 – 34	2	78
16.	Acceleration	0.32	34 – 42	7	85
17.	Deceleration	-0.46	42 – 27	9	94
18.	Deceleration	-0.52	27 – 14	7	101
19.	Deceleration	-0.56	14 – 00	7	108

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ANNEXURE-III
(See Paragraph 3)

REFERENCE FUEL FOR TYPE AND PRODUCTION CONFORMITY TESTS

S. No.	Characteristics	Requirements		Method of test (ref. of P: or IS: 1448*)
		87 Octane	93 Octane	
1	2	3	4	5
1.	Colour, visual	Orange	Red	-
2.	Copper-strip corrosion for 3 hours at 50°C	Not worse than No. 1		P : 15 (1968)
3.	Density at 15°C	Not limited but to be reported		P : 16 (1967)
4.	Distillation :			P: 18 (1967)
	(a) Initial boiling point * methods for test for petroleum and its products.	Not limited but to be reported		
	(b) Recovery up to 20°C percent by volume min.	10	10	
	(c) Recovery upto 125°C 50 percent by volume	50	50	
	(d) Recovery upto 130°C percent by volume	90	90	
	(e) Final boiling point, Max.	215°C	215°C	
	(f) Residue percent by volume Max.	2	2	
5.	Octane number (Research method) Max.	87	94	P : 27 (1960)
6.	Oxidation stability in minutes, Min.	360	360	P : 28 (2966)
7.	Residue on evaporation mg/100 ml. Max.	4.0	4.0	P : 29 (1960) (Air-jat solvent washed)
8.	Sulphur, total, percent by weight Max.	0.25	0.20	P : 34 (1966)
9.	Lead content (as Pb), g/l Max.	0.56	0.80	P : 37 (1967) or P :38 (1967)
10	Reid Vapour pressure at 38 degree C. kg/Cm^3 Max.	0.70	0.70	P : 39 (1967)

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[1]ANNEXURE-IV
(See Paragraph 4)

LIMIT VALUES OF EXHAUST GAS CAPACITY APPLICABLE FOR DIESEL DRIVEN VEHICLES THE ENGINE TESTS AT STEADY SPEED

Nominal Flow G(l/s)	Absorption Coefficient (Km-1)	Nominal Flow G(l/s)	Absorption Coefficient (K9-1)
42	2.00	120	1.20
45	1,91	125	1.17
50	1.82	130	1.15
55	1.75	135	1.31
60	1.68	140	1.11
65	1.61	145	1.09
70	1.56	150	1.07
75	1.50	155	1.05
80	1.46	160	1.04
85	1.41	165	1.02
90	1.38	170	1.01
95	1.34	175	1.00
100	1.31	180	0.99
105	1.27	185	0.97
110	1.25	190	0.96
115	1.22	195	0.95
		> 200	0.93

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[1] Annexure IV inserted vide G.S.R. 54 (E) dt. 5.2.90 published in the Gazette no. 45 dt. 5.2.90.

[1][SCHEDULE V]
(See rule 12)

S. No.	Place at which the discharge of any environmental Pollutant in excess of prescribed standards occurs or is apprehended to occur	Authorities or agencies to be intimated	Appointed under
1	2	3	4
1.	Factories as defined under the Factories Act, 1948		
	(a) owned by Central Government and engaged in carrying out the purposes of the Atomic Energy Act;1962;	(i) The Atomic Energy Regulatory Board (AERB)	The Atomic Energy Act, 1962
		(ii) The Ministry of Environment and Forests.	
	(b) Factories other than those mentioned in paragraph (a)	(i) The Chief Inspector of Factories	The Factories Act, 1948
		(ii) The Inspector of Factories having local jurisdiction.	- do -
		(iii) The Ministry of Environment and Forests	
2.	Mine as defined under the Mines and Minerals (Regulation and Development) Act, 1957	(i) The Controller General, Indian Bureau of Mines	The Mines and Mineral (Regulation & Development)Act,1957

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[1] Schedule II relating to rule 12 re-numbered as Schedule V vide G.S.R. 422 (E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.
Entries relating to S.No. 2 corrected in terms of S.O. 64(E) published in Gazette No. 42 dt. 18.01.1988 and corrigendum No. G.S.R. 434(E) dt. 07.04.1988 published in the Gazette No. 181 dt. 07.04.1988.

		(ii)	Regional Controller of Mines having local jurisdiction	- do -
		(iii)	The Ministry of Environment and Forests.	-
3.	Port as defined under the Indian Ports Act, 1908	(i)	Conservator of Ports	The Indian Ports Act, 1908
		(ii)	The Ministry of Environment & Forests	-
4.	Plantation as defined under the Plantations Labour Act, 1951	(i)	The Chief Inspector of Plantations.	The Plantations Labour Act, 1951
		(ii)	The Inspector of Plantation having local jurisdiction.	- do -
		(iii)	The Ministry of Environment & Forests.	-
5.	Motor Vehicles as defined under the Motor Vehicles Act, 1939	(i)	State Transport Authority	The Motor Vehicles Act, 1939
		(ii)	Regional Transport Authority having regional jurisdiction.	- do -
		(iii)	The Ministry of Environment & Forests.	-
6.	Ship as defined under the Merchant Shipping Act, 1958	(i)	Director General of Shipping	The Merchant Shipping Act, 1958
		(ii)	Surveyor having jurisdiction.	- do -
		(iii)	The Ministry of Environment & Forests.	-

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[1][SCHEDULE – VI]

(See rule 3A)

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

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
1.	Colour and odour	See 6 of Annexure-I	--	See 6 of Annexure -I	See 6 of Annexure-I
2.	Suspended solids mg/l, Max.	100	600	200	(a) For process waste water- 100 (b) For cooling water effluent 10 percent above total suspended matter of influent.
3.	Particulate size of suspended solids	Shall pass 850 micron IS Sieve	--	--	(a) Floatable solids, max. 3 mm. (b) Settleable solids, max. 850 microns.
[2]4.	***	*	--	***	--
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

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[1] Schedule VI inserted by Rule 2(d) of the Environment (Protection) Second Amendment Rules, 1993 notified vide G.S.R. 422(E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.

[2] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
7.	Oil and grease mg/l Max.	10	20	10	20
8.	Total residual chlorin mg/l Max.	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 [1][3 days at 27°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	--	0.01
16.	Lead (as Pb) mg/l, Max.	0.1	1.0	--	2.0
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

[1] Substituted by Rule2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176, dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

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S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
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
[1]24.	* * *	*	*	*	*
[1]25.	* * *	*	*	*	*
[1]26.	* * *	*	*	*	*
27.	Cyanide (as CN) mg/l Max.	0.2	2.0	0.2	0.2
[1]28.	* * *	*	*	*	*
29.	Fluoride (as F) mg/l Max.	2.0	15	--	15
30.	Dissolved Phosphates (as P), mg/l Max.	5.0	--	--	--
[2]31.	* * *	*	*	*	*
32.	Sulphide (as S) mg/l Max.	2.0	--	--	5.0
33.	Phenoile compounds (as C_6H_5OH) mg/l, Max.	1.0	5.0	--	5.0

[1] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

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S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
34.	Radioactive materials :				
	(a) Alpha emitter micro curie/ml.	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	(b) Beta emitter micro curie/ml.	10^{-6}	10^{-6}	10^{-7}	10^{-6}
35.	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
36.	Manganese (as Mn)	2 mg/l	2 mg/l	--	2 mg/l
37.	Iron (as Fe)	3 mg/l	3 mg/l	--	3 mg/l
38.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	--	0.2 mg/l
39.	Nitrate Nitrogen	10 mg/l	--	--	20 mg/l
[1]40.	* * *	*	*	*	*

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[1] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No. G.S.R. 801(E) dated 31.12.1993

WASTE WATER GENERATION STANDARDS - PART-B

S.No.	Industry	Quantum
1.	Integrated Iron & Steel	16 m^3/tonne of finished steel
2.	Sugar	0.4 m^3/tonne of cane crushed
3.	Pulp & Paper Industries	
	(a) Larger pulp & paper	
	(i) Pulp & Paper	175 m^3/tonne of paper produced
	(ii)Viscose Staple Fibre	150 m^3/tonne of product
	(iii)Viscose Filament Yarn	500 m^3/tonne of product
	(b) Small Pulp & Paper :	
	(i) Agro residue based	150 m^3/tonne of paper produced
	(ii) Waste paper based	50 m^3/tonne of paper produced
4.	Fermentation Industries :	
	(a) Maltry	3.5 m^3/tonne of grain produced
	(b) Brewery	0,.25 m^3/KL of beer produced
	(c) Distillery	12 m^3/KL of alcohol produced
5.	Caustic Soda	
	(a) Membrane cell process	1 m^3/tonne of caustic soda produced excluding cooling tower blowdown
	(b) Mercury cell process	4 m^3/tonne of caustic soda produced (mercury bearing) 10% blowdown permitted for cooling tower
6.	Textile Industries : Man-made Fibre	
	(i) Nylon & Polyster	120 m^3/tonne of fibre produced
	(ii) Vixcose rayon	150 m^3/tonne of product
7.	Tanneries	28 m^3/tonne of raw hide
8.	Starch. Glucose and related products	8 m^3/tonne of maize crushed
9.	Dairy	3 m^3/KL of Milk

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10.	Natural rubber processing industry	4 m^3/tonne of rubber
11.	Fertilizer	
	(a) Straight nitrogenous fertilizer	5 m^3/tonne of urea or equivalent produced
	(b) Straight phosphatic fertilizer (SSP & TSP) excluding manufacture of any acid	0.5 m^3/tonne of SSP/TSP
	(c) Complex fertilizer	Standards of nitrogenous and phosphatic fertilizers are applicable depending on the primary product

LOAD BASED STANDARDS - PART-C

[1][1. Petroleum Oil Refinery:

Parameter 1	Standard 2
	Quantum limit in Kg/l 1,000 tonne of crude processed
1. Oil & Grease	2.0
2. BOD $_{3\ days,\ 27^{o}C}$	6.0
3. COD	50
4. Suspended Solids	8.0
5. Phenols	0.14
6. Sulphides	0.2
7. CN	0.08
8. Ammonia as N	6.0
9. TKN	16
10. P	1.2
11. Cr (Hexavalent)	0.04
12. Cr(Total)	0.8
13. Pb	0.04
14. Hg	0.004
15. Zn	2.0
16. Ni	0.4
17. Cu	0.4
18. V	0.8
19. Benzene	0.04
20. Benzo (a) – Pyrene	0.08

[1] Substituted by Rule 2(ii)(a) of the Environment (Protection) Amendment Rules, 2008 notified by G.S.R.186(E), dated 18.3.2008

Notes:

(i) Quantum limit shall be applicable for discharge of total effluent (process effluent, cooling water blow down including sea cooling water blow down, washings, etc.) to receiving environment (excluding direct application on land for irrigation/horticulture purposes within the premises of refinery).

(ii) In order to measure the quantity of effluent (separately for discharge to receiving environment, application for irrigation/horticulture purposes within the premises of refinery & blow-down of cooling systems), appropriate flow measuring devices (e.g. V-notch, flow meters) shall be provided with.

(iii) Quantum of pollutants shall be calculated on the basis of daily average of concentration values (one 24-hourly composite sample or average of three grab samples, as the case may be), average flow of effluent during the day and crude throughput capacity of the refinery.

(iv) Limit for quantity of effluent discharged (excluding blow-down from seawater cooling) shall be 400 m^3/1000 tonne of crude processed. However, for refineries located in high rain fall area, limit of quantity of effluent only during rainy days shall be 700 m^3/1000 tonne of crude processed].

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2. Large Pulp & Paper, News Print/ Rayon grade Plants of capacity above 24000 tonne/ Annum

Parameter	Quantum
Total Organic Chloride (TOCI)	2 kg/tonne of product.

GENERAL EMISSION STANDARDS - PART-D

I. Concentration Based Standards

Sl. No.	Parameter	Standard Concentration not to exceed (in mg/Nm^3)
1.	Particulate Matter (PM)	150
2.	Total Fluoride	25
3.	Asbestos	4 Fibres/cc and dust should not be more than 2 mg/Nm^3

4.	Mercury	0.2
5.	Chlrine	15
6.	Hydrochloric acid vapour and mist	35
[1]7.	* * *	*
8.	Sulphuric acid mist	50
9.	Carbon monoxide	1% max. (v/v)
[1]10.	* * *	*
11.	Lead	10 mg/Nm^3
[1]12.	* * *	*

II. Equipment based Standards

[2][For dispersal of sulphur dioxide, in minimum stack height limit is accordingly prescribed as below]

Sl. No.	Parameter	Standard	
1.	Sulphur dioxide	Stack-height limit in metre	
	(i) Power generation capacity :		
	- 500 MW and more	275	
	- 200/210 MW and above to less than 500 MW	220	
	- less than 200/210 MW	H=14(Q) $^{0.3}$	
	(ii) Steam generation capacity		
	- Less than 2 tonne/h	Less than 8.5 MT	9
	- 2 to 5 tonne/h	8.5 to 21 MT	12
	- 5 to 10 tonne/h	21 to 42 MT	15
	- 10 to 15 tonne/h	42 to 64 MT	18
	- 15 to 20 tonne/h	64 to 104 MT	21
	- 20 to 25 tonne/h	104 to 105 MT	24
	- 25 to 30 tonne/h	105 to 126 MT	27
	- More than 30 tonne/h	More than 126 MT	30
		or using the formula H=14(Q)$^{0.3}$	

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[1] Omitted by Rule 2 (g) (iv) of the Environment (Protection) Third Amendment Rules, 1993 vide G.S.R. 801(E) dated 31.12.1993.

[2] Substituted by Rule 2(h)(i), ibid.

Note : H – Physical height of the stack in metre
Q – Emission rate of SO_2 in kg/hr.

III. Load/Mass based Standards

Sl. No.	Industry	Parameter	Standard	
1.	Fertiliser (Urea)			
	Commissioned Prior to 1.1.82	Particulate Matter (PM)	2 kg/tonne of product	
	Commissioned after 1.1.82	Particulate Matter (PM)	0.5 kg/tonne of product	
2.	Copper, Lead and Zinc Smelter/converter	Sulphur dioxide	4 kg/tonne of concentrated (100% acid produced	
3.	Nitric Acid	Oxides of Nitrogen	3 kg/tonne of weak acid (before concentration) produced	
[1][4.	Sulphuric Acid Plant		Quantum Limit in kg/tonne	
			Plant capacity for 100% concentration of	
			Existing Unit	New Unit
		Sulphuric Acid (tonne/day)		
	Sulphur dioxide (SO_2)	Upto 300	2.5	2.0
		Above 100	2.0	1.5]
5.	Coke Oven	Carbon Monoxide	3 kg/tonne of coke produced.	
[2][6.	Petroleum Oil Refinery (Sulphur Recovery)	Installed Capacity of SRU* (tonne/day)	Kg/tonne of sulphur in the feed to SRU	
			Existing SRU	New SRU
	Sulphur Dioxide	Above 20	26	10
		5 to 20	80	40
		Upto 5	120	80

* SRU – Sulphur Recovery Unit]

[1] Substituted by Rule 2(ii) of the Environment (Protection) Third Amendment Rules, 2008 notified by G.S.R.344(E), dated 7.5.2008.

[2] Substituted by Rule 2 of the Environment (Protection) Fifth Amendment Rules, 2009 notified by G.S.R.595(E), dated 21.8.2009.

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7. Aluminium Plants :

(i)	Anode Bake Oven Total Fluoride		0.3 Kg/MT of Aluminium
(ii)	Pot room		
(a)	VSS	-do-	4.7 Kg/MT of Aluminium
(b)	HSS	-do-	6 Kg/MT of Aluminium
(c)	PBSW	-do-	2.5 Kg/MT of Aluminium
(d)	PBCW	-do-	1.0 Kg/MT of Aluminium

Note : VSS = Vertical Stud Soderberg
HSS = Horizontal Stud Soderberg
PBSW = Pre Backed Side Work
PBCW = Pre Backed Centre Work

8. Glass Industry :

(a) Furnace Capacity

(i)	Up in the product draw capacity of 60 MTD/Day	Particulate matter	2 Kg/hr ca
(ii)	Product draw capacity more than 60 MT/Day	-do-	0.8 Kg/MT of Product drawn

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***NOISE STANDARDS - PART-E**

A. Noise Limits for Automobiles (Free Field Distance at 7.5 Metre in dB(A) at the manufacturing Stage

(a) Motorcycle, Scooters & Three Wheelers	80
(b) Passenger Cars	82
(c) Passenger or Commercial vehicles upto 4 MT	85
(d) Passenger or Commercial vehicles above 4 MT and upto 12 MT	89
(e) Passenger or Commercial vehicles exceeding 12MT	91

* Standards notified at S. No. 46 may also be referred.

[1][AA. Noise limits for vehicles at manufacturing stage

The test method to be followed shall be IS:3028-1998.

(1) Noise limits for vehicles applicable at manufacturing stage from the year 2003

Serial Number	Type of vehicle	**Noise limits dB(A)**	Date of implementation
(1)	(2)	**(3)**	(4)
1.	**Two wheeler**		1st January,2003
	Displacement upto 80 cm^3	75	
	Displacement more than 80 cm^3 but upto 175 cm^3	77	
	Displacement more than 175 cm^3	80	
2.	**Three wheeler**		1st January,2003
	Displacement upto 175 cm^3	77	
	Displacement more than 175 cm^3	80	
3.	**Passenger Car**	75	1st January, 2003
4.	**Passenger or Commercial Vehicles**		1st July, 2003
	Gross vehicle weight upto 4 tonnes	80	
	Gross vehicle weight more than 4 tonnes but upto 12 tonnes.	83	
	Gross vehicle weight more than 12 tonnes.	85	

(2)Noise limits for vehicles at manufacturing stage applicable on and from 1stApril, 2005

Serial Number	Type of vehicles	**Noise limits dB(A)**
1.0	**Two wheelers**	
1.1	Displacement upto 80 cc	75
1.2	Displacement more than 80 cc but upto 175 cc	77
1.3	Displacement more than 175 cc	80
2.0	**Three wheelers**	
2.1	Displacement upto 175 cc	77
2.2	Displacement more than 175 cc	80
3.0	**Vehicles used for the carriage of passengers and capable of having not more than nine seats, including the driver's seat**	74

[1] Substituted by Rule 2 of the Environment (Protection) Fourth Amendment Rules, 2002 notified vide Notificat6ion G.S.R.849(E), dated 30.12.2002 (Earlier 'AA – Noise limits for vehicles w.e.f. 1st January 2003' inserted by Rule 2 (2) of the Environment (Protection) Amendment Rules, 2000 notified vide Notification G.S.R. 742(E), dated 25.9.2000.)

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4.0	**Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat, and a maximum Gross Vehicle Weight (GVW) of more than 3.5 tonnes**	
4.1	With an engine power less than 150 KW	78
4.2	With an engine power of 150 KW or above.	80
5.0	**Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat : vehicles used for the carriage of goods.**	
5.1	With a maximum GVW not exceeding 2 tonnes	76
5.2	With a maximum GVW greater than 3 tonnes but not exceeding 3.5 tonnes	77
6.0	**Vehicles used for the transport of goods with a maximum GVW exceeding 3.5 tonnes.**	
6.1	With an engine power less than 75 KW	77
6.2	With an engine power of 75 KW or above but less than 150 KW.	78
6.3	With an engine power of 150 KW or above.	80]

[1][Provided that for vehicles mentioned at serial numbers 3.0 to 6.3, the noise limits for the following States shall be applicable on and from the date specified against that State,-

(i) Himachal Pradesh with effect from 1st October, 2005
(ii) Jammu and Kashmir with effect from 1st October, 2005
(iii) Madhya Pradesh with effect from 1st September, 2005
(iv) Punjab with effect from 1st October, 2005
(v) Rajasthan with effect from 1st June, 2005
(vi) Uttar Pradesh (Mathura, Kannauj, Muzaffarnagar, Aligarh, Farukkabad, Saharanpur, Badaun, Barreily, Moradabad, Hathras, Rampur, Bijnor, Agra, Pilibhit, J.P. Nagar, Mainpuri, Lalitpur, Hardio, Ferozabad, Jhansi, Shahjahanpur, Etawah, Jalon, Lakhimpur, Kheri, Etah, Mahoba, and Sitapur) with effect from 1st June, 2005.
(vii) Uttranchal with effect from 1st July, 2005.]

B. Domestic appliances and construction equipments at the manufacturing stage to be achieved by 31st December,1993.

(a) Window Air Conditioners of 1 ton to 1.5 ton 68
(b) Air Coolers 60
(c) Refrigerators 46
[2][(d) * * * …… …]
(e) Compactors (rollers),Front Loaders,Concrete mixers,Cranes(moveable),Vibrators and Saws 75

[1] Inserted by the Environment (Protection) Amendment Rules, 2005 notified vide Notification G.S.R.272 (E), dated 5.5.2005.

[2] Entry (d) relating to 'Diesel Generator of Domestic Purposes…….85 – 90' omitted by Rule 3 of the Environment (Protection) Second Amendment, Rules, 2002 notified vide Notification G.S.R. 371(E), dated 17.5.2002.

ANNEXURE-I

(For the purposes of Parts – A, B and C)

The State Boards shall following guide-lines in enforcing the standards specified under the schedule VI :

(1) the waste waters and gases are to be treated with the best available technology (BAT) in order to achieve the prescribed standards.

(2) the industries need to be encouraged for recycling and reuse, of waste materials as far as practicable in order to minimize the discharge of wastes into the environments.

(3) the industries are to be encouraged for recovery of biogas, energy and reusable materials.

(4) while permitting the discharge of effluent and emission into the environment, State Boards have to take into account the assimilative capacities of the receiving bodies, especially water bodies so that quality of the intended use of the receiving waters is not affected. Where such quality is likely to be effected discharges should not be allowed into water bodies.

(5) the Central and State Boards shall put emphasis on the implementation of clean technologies by the industries in order to increase fuel efficiency and reduce the generation of environmental pollutants.

(6) All efforts should be made to remove colour and unpleasant odour as far as practicable.

(7) The standards mentioned in the Schedule shall also apply to all other effluents discharged such as industrial mining, and mineral processing activities and sewage.

(8) the limit given for the total concentration of mercury in the final effluent of caustic soda industry, is for the combined effluent from (a) Cell house, (b) Brine Plant, (c) Chlorine handling, (d) hydrogen handling and (e) hydro choleric acid plant.

(9) [1][(a)….(f)]

(10) All effluents discharge including from the industries such as cotton textile, composite woolen mills, synthetic rubber, small pulp & paper, natural rubber, petro-chemicals, tanneries, point dyes,

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[1] Omitted by Rule 4 of the Environment (Protection) Rules, 1996 notified by notification G.S.R. 176(E), dated 2.4.1996.

slaughter houses, food & fruit processing and diary industries into surface waters shall conform to be BOD limit specified above, namely 30 mg/l. For discharge an effluent having a BOD more than 30 mg./l, the standards shall conform to those given, above for other receiving bodies, namely, sewers, coastal waters, and land for irrigation.

(11) [1][***…….]

(12) In case of fertilizer industry the limits in respect of chromium and fluoride shall be complied with at the outlet of chromium and fluoride removal units respectively.

(13) In case of pesticides :

(a) The limits should be complied with at the end of the treatment plant before dilution.

(b) Bio-assay test should be carried out with the available species of fish in the receiving water, the COD limits to be specified in the consent conditions should be correlated with the BOD limits.

(c) In case metabolites and isomers of the Pesticides in the given list are found in significant concentration, standards should be prescribed for these also in the same concentration as the individual pesticides.

(d) Industries are required to analyze pesticides in waste water by advanced analytical methods such as GLC/HPLC.

([2]14) The chemical oxygen demands (COD) concentration in a treated effluent, if observed to be persistently greater than 250 mg/l before disposal to any receiving body (public sewer, land for irrigation, inland surface water and marine coastal areas), such industrial units are required to identify chemicals causing the same. In case these are found to be toxic as defined in the Schedule I of the Hazardous Rules 1989 the State Board in such cases shall direct the industries to install tertiary treatment stipulating time limit.

(15) Standards specified in Part A of Schedule – VI for discharge of effluent into the public sewer shall be applicable only if such sewer leads to a secondary treatment including biological treatment system, otherwise the discharge into sewers shall be treated as discharge into inland surface waters].

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1 Omitted by Rule, 2(k) (vii) of the Environment (Protection) Third amendment Rules, 1993 vide G.S.R. 801 (E), dated 31.12.1993.

2 Inserted by rule 2(k) (ix), ibid.

ANNEXURE-II

(For the purpose of Part-D)

The State Boards shall follow the following guidelines in enforcing the standards specified under Schedule VI:

(a) In case of cement plants, the total dust (from all sections) shall be within 400 mg/Nm^3 and 250 mg/Nm^3 for the plants upto 200 t/d and more than 200 t/d capacities respectively.

(b) In respect of calcinations process (e.g. Aluminum Plants) Kilns. and step Grate Bagasse fired-Boilers. Particulate Matter (PM) emissions shall be within 250 mg/Nm^3.

(c) In case of thermal power plants commissioned prior to 01.01.1982 and having generation capacity less than 62.5 MW, the PM emission shall be within 350 mg/Nm^3.

(d) In case of Lime Kilns of capacity more than 5 t/day and upto 40 t/day, the PM emission shall be within 500 mg/Nm^3.

(e) In case of horse shoe/pulsating Grate and Spreader Stroker Bagasse-fired-Boilders, the PM emission shall be within 500 (12% CO_2) and 800 (12% CO_2) mg/Nm^3 respectively. In respect of these boilers, if more than attached to a single stack, the emission standards shall be fixed, based on added capacity of all the boilers connected with the stack.

(f) In case of asbestos dust, the same shall not exceed 2mg/Nm^3.

(g) In case of the urea plants commissioned after 01.01.92, coke ovens and lead glass units, the PM emission shall be within 50 mg/Nm^3.

(h) In case of small boilers of capacity less than 2 tons/hour and between 2 to 5 tons/ hour, the PM emissions shall be within 1000 and 1200 mg/Nm^3.

(i) In case of integrated Iron and Steel Plants, PM emission upto 400 mg/Nm^3 shall be allowed during oxygen lancing.

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(j) In case of stone crushing units, the suspended PM contribution value at a distance of 40 meters from a controlled, isolated as well as from a unit located in cluster should be less than 600 micrograms/Nm^3. [1][* * *] These units must also adopt the following pollution control measures :

(i) Dust containment cum suppression system for the equipment;

(ii) Construction of wind breaking walls;

(iii) Construction of the metalled roads within the premises;

(iv) Regular cleaning and wetting of the ground within the premises;

(v) Growing of a green belt along with periphery.

(k) In case of Ceramic industry, from the other sources of pollution, such as basic raw materials and processing operations, heat recovery dryers, mechanical finishing operation, all possible preventive measures should be taken to control PM emission as far as practicable.

2. The total fluoride emission in respect of Glass and Phosphatic Fertilizers shall not exceed 5 mg/Nm^3 and 25 mg/Nm^3 respectively.

[2]3. [In case of copper, lead and zinc smelting, the off-gases may, as far as possible, be utilized for manufacturing sulphuric acid]

[3]4. [In case of cupolas (Foundries) having capacity (melting rate) less than 3 tonne/hour, the particulate matter emission shall be within 450 mg/Nm^3. In these cases it is essential that stack is constructed over the cupolas beyond the charging door and the emissions are directed through the stack, which should be at least six times the diameter of cupola. In respect of Arc Furnaces and Induction Furnaces, provision has to be made for collecting the fumes before discharging the emissions through the stack].

[No. Q-15017/24/89-CPW]
MUKUL SANWAL, Jt. Secy.

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1 Omitted by Rule 2(i)(iii) of the Environment (Protection) Third Amendment Rules, 1993, vide G.S.R. 801(E) dated 31.12.1993.

2 Substituted by Rule 2(1)(i); Ibid.

3 Added by Rule 2(1)(ii), Ibid.

[1][SCHEDULE VII]

[See Rule 3(3B)]

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in 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 hour**	100 180	100 180	- UV photometric - Chemilminescence - 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 EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/m^3	8 hours** 1 hour**	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

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[1] Substituted by Rule 3 of the Environment (Protection) Seventh Amendment Rules, 2009 notified by G.S.R. 826 (E) dated 16.11.2009.

(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C_6H_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.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.]

[File No. Q-15017/43/2007-CPW]
RAJNEESH DUBE, Jr. Secretary

Note : The principal rules were published in the Gazette of India vide Number S.O. 844(E), dated the 19th November, 1986 and subsequently amended vide S.O. 433 (E) dated 18th April, 1987, S.O. 64 (E) dated the 18th January, 1988, S.O. 8(E) dated the 3rd January, 1989, S.O. 190 (E) dated the 15th March, 1989, G.S.R. 913 (E) dated the 24th October, 1989, S.O. 12(E), dated the 8th January, 1990, GSR 742 (E), dated 30th August, 1990, S.O. 23(E), dated the 16th January, 1991, GSR 93(E), dated the 21st February, 1991, GSR 95(E) dated the 12th February, 1992, GSR 329 (E) dated the 13th March, 1992, GSR 475(E), dated the 5th May, 1992, GSR 797 (E) dated the 1st October, 1992, GSR 386(E), dated the 28th April, 1993, GSR 422(E), dated the 19th May, 1993, GSR 801(E) dated the 31st December, 1993, GSR 176(E), dated the 2nd April, 1996, GSR 97(E), dated the 18th February, 2009, GSR 149(E), dated the 4th March, 2009, GSR 512(E), dated the 9th July, 2009, GSR 543(E), dated the 22nd July, 2009, GSR 595(E), dated the 21st August, 2009 and GSR 794(E), dated the 4th November, 2009.

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