

THE ENVIRONMENT (PROTECTION) RULES, 1986

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THE ENVIRONMENT (PROTECTION)

RULES, 1986¹

1. Vide Notification No. S.O. 844 (E), dated 19th November, 1986 published in Gazette of India, Extraordinary, Pt. 11, sec. 3(i), dated 19th November, 1986.

In exercise of 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.

2. Definitions. -In these rules, unless the context otherwise requires -

- (a) “Act” means the Environment (Protection) Act, 1986 (29 of 1986);

¹[(aa) “areas” means all areas where the hazardous substances are handled;]

- (b) “Central Board” means the Central Board for the Prevention and Control of Water Pollution 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;

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

1. Ins. by G.S.R. 93 1 (E) dated 27th October 1989 (w.e.f. 27-10-1989).

3. Standards for emission or discharge of environmental pollutants:

(1) For the purposes 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 ¹ [Schedules I to IV]

²[* * *]

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

³(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.

⁴[(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 ⁵[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 therefor in writing;

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

⁶[(3B) Any emission or discharge of environmental pollutants from the industries, operations or possesses shall not exceed the relevant concentration in ambient air as indicated and set out against each pollutants in (3) to (5) of

the 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 environment 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 specified 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 with by such industry, operation or process by the 31 st day of December, 1991.]

⁷[(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 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 31 st day of December, 1993.

(7) Notwithstanding anything contained in sub-rule (3) or sub-rule (6) all industry, operation or process which has commenced production after the 16th day of May, 1981 but before the 31 st 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 31 st day of December, 1992.]

⁸[(8) On and from the 1st day of June 2001, the following coal based thermal power plants shall use ⁹[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:

¹⁰[Provided that any thermal power plant using Fluidised Bed Combustion or Circulating Fluidised Bed Combustion or Atmospheric Fluidised Bed Combustion or Pressurised Fluidised Bed Combustion or Integrated Gasification Combustion 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;

(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 up to the unloading 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.]

(e) ‘Urban area’ means an area limit of a city having a population of more than million according to 1991 census.].

1. Subs. by G.S.R. 422(E) dated 19th May 1993 (w.e.f 19.5.1993).
2. Proviso to sub-rule (1), rule 3 omitted by S.O. 23(E), dated 16th January 1991 (w.e.f 16.1.1991).
3. Ins. by S.O. 23(E) dated 16th January 1991 (w.e.f 16.1.1991).
4. Ins. by G.S.R. 422 (E) dated 19th May 1993 (w.e.f 19.05.1993).
5. Subs. by G.S.R. 80(E) dated 31st December 1993 (w.e.f 31.12.1993).
6. Ins. by G.S.R. 176(E) dated 2nd April 1996 (w.e.f. 3.4.1996).
7. Added by G.S.R. 95 (E), dated 12th February 1992 (w.e.f. 12-2-1992).
8. Ins. by G.S.R. 560 (E) dated 19th September 1997 (w.e.f. 19-9-1997).
9. Subs. by G.S.R. 378(E) dated 30th June 1998 (w.e.f. 3-7-1998).
10. Ins. by G.S.R. 378(E) dated 30th June 1999 (w.e.f. 3-7-1998).

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 which such direction is given.

¹[(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 tile proposed direction.

²[(3-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 all 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 (3-a) 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 (3-b) above for the stoppage or regulation of electricity or 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 tile 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 a 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 all 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 the 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 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
 - (iii) Is sent by registered post to that person.

Explanation: For the purposes 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.

1. Renumbered by S.O. 64(E), dated 18th January 1988 (w.e.f. 18-1-1988).
2. Ins. by S.O. 64 (E) dated 18th January 1988 (w.e.f. 18-1-1988).

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 ail area.
 - (ii) The maximum allowable limits of concentration of various environment Pollutants (including noise) for an area.
 - (iii) Tile likely emission or discharge of environmental Pollutants from all industry, process or operation proposed to be prohibited or restricted.
 - (iv) The topographic and climatic features of ail 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 all 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.
 - (x) Any other factors as may be considered by the Central Government to be relevant to the protection of the environment in ail 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 location 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, given 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 location of the industries and carrying on of processes or operations in that area.
- (c) Any person interested in filing an objection against the imposition of prohibition or restriction on carrying on of processes of 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 tile objections received against such notification and may ¹[within ²[there hundred and sixty-five days] from such date of publication,] impose prohibition or restrictions on location of such industries and tile carrying on of any process or operation in an area.
- ³[(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).]
1. **Ins. by G.S.R. 562(E) dated 27th May 1992.**
 2. **Subs. by G.S.R. 884 (E) dated 20th November 1992.**
 3. **Ins. by G.S.R. 320(E) dated 16th March 1994 (w.e.f. 16-03-1994).**
- ¹**[6. Procedure for taking samples: -**The Central Government of the officer empowered to take samples under section II shall collect the sample in sufficient quantity to be divided into two uniform parts and effectively seal and suitably mark the same and permit the person from whom the sample is taken to add his own seal or mark to all or any of the portions so scaled 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 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 for analysis.]

1. Subs. by S.O. 64(E), dated 18th January 1988, (w.e.f. 18-01-1988).

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 analyzed.

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 official 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 records 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;
- (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 into time to time.

10. Qualifications of Government Analyst: -A person shall not be qualified for appointment or recognized as a Government Analyst unless lie is a-

- (a) Graduate in science from a recognized University with five years' experience in a laboratory engaged in environmental investigations, 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 investigation, testing or analysis.

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

- (1) 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:
 - (i) The Central Board; and
 - (ii) The Ministry of Environmental and Forests (represented by the Secretary of the Government of India);

- (b) If the alleged offence has taken place in a State:
- (i) The State Board; and
 - (ii) The Government of the State (represented by the Secretary to the State Government in-charge of environment); and
 - (iii) The Ministry of Environment and Forests (represented by tile Secretary to the Government of India).
- (3) The notice shall be sent by registered post-acknowledgement due.
- (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 standard 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 forthwith 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 operations in a district or other region of a State or Union territory specified by whatever (resignation, by the Government of the said State or Union territory, and in whose jurisdiction the industry, process or operation is located;
- (ii) The Central Board or a State Board, as the case may be, and its regional officer having local jurisdiction who have been delegated powers under sections 20, 21, 23 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), and section 24 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1 981);
- (iii) The Statutory authorities or agencies specified in column 3 in relation to places mentioned in column 2 against thereof of.] ²[Schedule V]

- 1. Ins. by S.O. 82(E), dated 16th February, 1987 (w.e.f. 16.02.1987),**
- 2. Subs. by G.S.R. 422 (E) dated 19th May 1993 (w.e.f. 19-05-1993).**

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 environmental, human beings, other living creatures, plants and property;
 - (ii) The substances that it may be or likely to be or 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 protection of Environment.
 - (v) Any other factor its 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 exports the Central Government shall follow the procedure herein after 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 applies 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 thirty days from the date of publication of the notification in the Official Gazette.

(iv). The Central Government shall within a period of sixty 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. Ins. by G.S.R. 93(E) dated 27th October 1989 (w.e.f. 27-10-1989).

¹[14. Submission of environment 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 authorisation under the Hazardous Waters (Management and Handling) Rules, 1989 issued under the Environment (Protection) Act, 1986 (29 of 1986) shall submit all environmental ²[statement] for the financial year ending on the 31st March in Form V to the concerned State Pollution Control Board on or before the thirtieth day of September] every year, beginning.

1. Ins. by G.S.R. 329(E) dated 13th March 1992 (w.e.f. 13-03-1992).

2. Subs. by G.S.R. 386(E) dated 22nd April 1993 (w.e.f. 22-04-1993).

SCHEDULE ¹[1]

(See Rule 3)

Sl. No.	Industry	Parameter	Standards
1	2	3	4
1.	Caustic Soda Industry		Concentration not to exceed, milligramme per liter (except for pH and flow.
		Total concentration of mercury in the final effluent *	0.01
		Mercury bearing waste-water generation (flow)	10 kiloliters/tonne of caustic soda produced
		pH	

		*Final effluent is the combined from (a) Cell house, (b) Brine plant, (c) Chlorine handling, (d) Hydrogen handling, (e) Hydrochloric acid plant.		
2.	Man-Made fiber (synthetic)	Concentration not to exceed, milligramme per liter (except for pH and flow.		
		Suspended solids	100	
		² [Bio-Chemical oxygen demand, (3-days at 72 degree C)]	30	
		pH	5.5 to 9.0	
3	Oil-refinery industry	Concentration not to exceed, milligramme per liter (except for pH and flow.		
		Oil and grease	10 7	
		Phenol	1	0.7
		Sulphide	0.5	0.35
		² [Bio-Chemical oxygen demand, (3-days at 27 degree c)]	0.15	10.5
		Suspended solids	20	14
		pH	6 to 8.5	

4.	Sugar Industry		Concentration not to exceed, milligramme per liter
		² [Bio-chemical oxygen demand, (3 days at 27degree C)]	100 for disposal on land 30 for disposal in surface waters
		Suspended Solids	100 for disposal on land 30 for disposal in surface waters
5.	Thermal Power Plants		Maximum, limiting concentration, milligramme per liter (except for pH and temperature)
	Condenser cooling waters	PH	6.5 – 8.5

- Renumbered as Sch. 1 by S.O. 82(E), dated 16th February 1987 (w.e.f. 16-02-87).**
- Subs. by G.S.R. 176(E) 2nd April 1996 (w.e.f. 3-4-1996).**

Sl. No.	Industry	Parameter	Standards
1	2	3	4
	(Once through cooling system)	Temperature	Not more than 5 ⁰ C 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
		Phosphate	0.5
		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 State
	Ash-pond effluent	PH	6.5-8.5
		Suspended solids	100
		Oil and grease	20
6.	Cotton textile industries (composite and Processing)		Concentration not to exceed, milligramme per litre (except for pH and bio-assay)
	Common:	PH	5.5 to 9
		Suspended solid	100
		¹ [Bio-chemical oxygen demand, (3 days at 27 ⁰ C)]	150
		Oil and grease	10
		Bio-assay test	90% survival of fish after 96 hours
	Special:	Total chromium (as Cr)	2
Sulphide (as S)		2	
Phenolic compounds (as C ₆ H ₅ OH)		5	

1. Subs. by G.S.R. 176(E), dated 2nd, April, 1996 (w.e.f. 3.4.1996).

The special parameters 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 up to 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.

Sl. No.	Industry	Parameter	Standards
1	2	3	4
7.	Composite woolen mills		Concentration not to exceed, milligramme per litre (except for pH and bio-assay)
	Common:	Suspended solids	100
		pH	5.5 to 9.0
		¹ [Bio- chemical oxygen demand, (3-days at 27 ⁰ C)]	100
		Oil and Grease	10
		Bio-assay	90% survival of fish after 96 hours
	Special	Total chromium (as Cr)	2
		Sulphide (as S)	2
		Phenolic compound (as C ₆ H ₅ OH)	5

1. Subs. by G.S.R. 176(E) dated 2nd April 1996 (w.e.f 3.4.1996).

The special parameters 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, sulphide 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 up to 30 according to the requirement by the State Boards for the State 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.

Sl. No.	Industry	Parameter	Standards
1[8	Composite woolen mills		Concentration not to exceed, milligramme per litre (except for pH and bio-assay)

	Common:	Suspended solids	100
		PH	6 to 8.5
		Temperature	Shall not exceed 50 C above the ambient temperature of the receiving body
		Mercury (as Hg)	0.01
		Hexavalent	0.1
		Chromium (as Cr) 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

1. Ins. by S.O. 393(E) dated 16th April 1987 (w.e.f 16.4.1987).

Sl. No.	Industry	Parameter	Standards
1	2	3	4

		Chloride (as Cl)	1000
		Sulphate (as SO ₄) Phenolic Compounds as (C ₆ H ₅ OH)	1000
		Oil and Grease	10
		Bio-assay Test (with 1:8 dilution of effluents)	90% survival of test animals after 96 hours

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

9.	Electroplating		Concentration not exceed, milligrammes per litre (except for pH and temperature)
		pH	6.0 to 9.0
		Temperature	Shall not exceed 5 0 C above, the ambient temperature of the receiving body
		Oil and Grease	10
		Suspended Solids	100
		Cyanides (as CN)	0.2
		Ammonical	50
		Nitrogen (as N) total Residual	1.0
		Chloride (as Cl) Cadmium (as Cd)	2.0
		Nickel (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
10.	Cement Plants		Not to exceed- milligrammes per normal cubic metre
	Plant Capacity: 200 tonnes per day	Total dust (All sections)	100
	Greater than 200 tonnes per day	Total dust (All sections)	250

The Central and State Pollution Control Boards may fix stringent standards, not exceeding 250 milligrammes per normal cubic metre for smaller plants and 150 milligrammes per normal cubic metre for larger plants if the industry is located in an area, which, in their opinion, requires more stringent standards.

Where continuous monitoring integrators are provided on dust emission lines, the integrated average values over a period, to be fixed by the Central and State Boards but not exceeding 72 hours shall be considered instead of momentary dust emission values for conformity to standards.]

Sl. 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 micro-grammes per cubic metre.]
² [12.	Coke ovens		Concentrations in the effluents when discharged into inland surface waters not to exceed milligramme per litre (except for pH)
		PH	5.5-9.0
		³ [Biochemical Oxygen Demand (3 days at 27 °C)]	30
		Suspended Solids	100
		Phenolic Compounds (as C ₆ H ₅ OH)	5
		Cyanides (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 to exceed milligramme per litre (except for colour, and pH)
		Colour	Absent

		pH	5.5-9.0
		³ [Biochemical Oxygen Demand (3 days at 27 ⁰ C)]	50
		Chemical Oxygen Demand	250
		Oil & Grease	10.0
14.	Small Pulp and Paper Industry		Concentration not to exceed milligramme per litre (except for pH and sodium absorption ratio)
	Discharge	pH	5.5-9.0
	Into inland	Suspended Solids	100
	Surface water	BOD	30
	Disposal	pH	5.5-9.0
	On land	Suspended Solids	100
		BOD	100
		Sodium absorption Ratio	26

1. Ins. by S.O. 443 (E) dated 18th April 1987 (w.e.f 18.4.1987).
2. Ins. by S.O. 64(E) dated 18th January 1988 (w.e.f 18.1.1988).
3. Subs. by G.S.R. 176(E) dated 2nd April, 1996 (w.e.f 3.4.1996).

Sl. No.	Industry	Parameter	Standards
1	2	3	4
15.	Fermentation Industry (Distilleries, Maltries and Brewerise)		Concentration in the effluent not to exceed milligramme per litre (except for pH and colour & odour)
		PH	5.5-9.0
		Colour & odour	¹ [All efforts should be made to remove colour and unpleasant odour as far as practicable]
		Suspended Solids ² [BOD (3 days at 27 ⁰ C)]	100
		Disposal into inland surface water/river/stream	30 mg /l-

		Disposal on land or for irrigation	100 mg/l-.]
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³[Notes. -(1) Waste water generation shall not exceed 250 cubic metre per tonne of paper produced.]

⁴[* * *]

Sl. No.	Industry	Parameter	Standards			
1	2	3	4			
16.	Leather Tanneries		Concentration in the effluents not to exceed milligramme per litre (except for pH and per cent sodium)			
			Inland Surface water	Public Sewers	Land for Irrigation	Marine Coastal areas
			(a)	(b)	(c)	(d)
		Suspended Solids	100	600	200	100
		² [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	600	-
		Hexavalent	0.1	0.2	0.1	1.0
		Chromium (Cr+6) Total Chromium (as Cr)	2.0	2.0	2.0	-
		Sulphides (as S)	2.0	5.0	-	5.0
		Sodium per sent	-	60	60	-
		Boron (as B)	2.0	2.0	2.0	-
		Oil & Grease	10	20	10	20

1. Subs. by S.O. 12(E), dated 8th January, 1990 (w.e.f 8-1-1990).
2. Subs. by G.S.R. 176(E) dated 2nd April 1996 (w.e.f. 3-4-1996).
3. Added by S.O. 12(E), dated 8th January 1990 (w.e.f. 8-1-1990).
4. Notes 2 to 7 omitted by G.S.R. 176(E), dated 2nd April 1996 (w.e.f 3-4-1996).

Sl. So.	Industry	Parameter	Standards	
1	2	3	4	
17.	Fertilizer Industry		Concentration in the effluents not to exceed milligramme per litre (except for pH)	
	Effluents –straight nitrogenous Fertilizers Excluding the Calcium Ammonium Nitrate Fertilizer		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
		Total Kjeldahl Nitrogen	100	150
		Free Ammonical Nitrogen	4	4
		Nitrate Nitrogen	10	10
		Cyanide 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
	To be complied with at the outlet of Chromate removal unit. Straight Nitrogenous Fertilizers Including Calcium Ammonium Nitrate and Ammonium Nitrate Fertilizers		Plants Commissioned January 1, 1982 Onwards	Plants Commissioned Prior to January 1, 1982
			(a)	(b)
		pH	6.5-80	6.5-8.0
		Ammonical Nitrogen	50	75
		Total Kjeldahl Nitrogen	100	150

THE ENVIRONMENT (PROTECTION)

		Free Ammonical Nitrogen	4	4
		Nitrate Nitrogen	20	20
		Cyanide 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	0.1	0.1
		Chromium as Cr* Total Chromium	2.0	2.0
	* To be complied with at the outlet of Chromate removal unit. Complex Fertilizers, excluding Calcium Ammonium Nitrate, Ammonium Nitrate & Ammonium Nitrophosphate Fertilizes		Plants commissioned January 1, 1982 Onwards	Plants commissioned Prior to January 1, 1982
			(a)	(b)
		pH	6.5-80	6.5-80
		Ammonical Nitrogen	50	75
		Free Ammonical	4	4
		Nitrogen Total Kjeldahl Nitrogen	100	150
		Nitrate Nitrogen	10	10
		Cyanide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2
		Phosphate as p	5	5
		Oil and Grease	10	10
		Suspended Solids	100	100
		*Fluoride as f	10	10
		*Hexavalent	0.1	0.1
		Chromium as Cr **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 Nitrate	100	100
		Nitrate Nitrogen	20	20
		Cyanide as CN	0.2	0.2
		Vanadium as v	0.2	0.2
		Arsenic as	0.2	0.2
		Phosphate as P	5	5
		Oil and Grease	10	10
		Suspended Solids	100	100
		* Fluoride as F	10	10
			(a)	(b)
		** Hexavalent	0.1	0.1
		Chromium as Cr		
		**Total Chromium as Cr	2.0	2.0
* To be complied with at the outlet of Fluoride removal unit. If the recipient system so demands, Fluoride as F shall be limited to 1.5 mg/l.				
**To be complied with at the outlet of Chromate removal unit.				

	Straight Phosphatic Fertilizers	PH	7.0-9.0
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		Phosphate as P	5
		Oil and Grease	10
		Suspended Solids	100
		*Fluoride as F	10
		**Hexavalent	0.1
		Chromium as Cr **Total Chromium as Cr	2.0
	Emissions		
	Phosphatic Fertilizers (Fluoride and Particulate matter emission)	Phosphoric acid manufacturing 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)	Prilling Tower Commissioned prior to 1-1-1982 Commissioned after 1-1-1982	150 milligramme per normal cubic metre or 2 Kilogramme per tonne of product 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 demands, Fluoride as F shall be limited to 1.5 mg/l

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

18.	Aluminium	Particulate Matter Emissions: __Calcination __Smelting	250 milligramme per normal cubic metre of particulate matter 150 milligramme per normal cubic metre of particulate matter
19.	Calcium Carbide	Particulate Matter Emissions: __Kiln __Arc Furnace	250 milligramme per normal cubic metre 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 Emission of Oxides of sulphur in Smelter & Converter	150 milligramme per normal cubic metre off-gases must be utilised 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) acid produced
22.	Nitric Acid (emission of oxides of nitrogen)	Emission of Oxides of Nitrogen	3 kilogramme of oxides of nitrogen per tonne of weak acid (before concentration) produced
23.	Sulphuric Acid (emission of Sulphur dioxide and acid mist)	Sulphur dioxide Emissions Acid Mist	4 kilogramme per tonne of concentrated (One hundred per cent) acid produced 50 milligramme per normal cubic metre
24.	Iron & Steel (Integrated)	Particulate Matter Emission ___ Sintering Plant ___ Steel making ___ during normal operations ___ during oxygen lancing ___ Rolling Mill ___ Carbon monoxide from coke oven	150 milligramme per normal cubic metre 150 milligramme per normal cubic metre 400 milligramme per normal cubic metre 150 milligramme per normal cubic metre 3 kilogramme per tonne of coke produced]
1[25.	Thermal Power Plants	*Particulate matter Emissions:	

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

		___ generation capacity 210 MW or more	150 milligramme per normal cubic metre
		___ generation capacity less than 210 MW	350 milligramme per normal cubic metre
26.	Natural rubber industry		Concentration in the effluents not to exceed milligramme per litre (exceed for pH)

	Discharge into inland Colour & Odour surface waters		Absent
		PH	6.0-9.0
		BOD	50
		COD	250
		Oil & Grease	10
		Sulphides	2
		Total Kjeldhal 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 Colour & Odour irrigation		Absent
		pH	6.0-8.0
		BOD	100
		COD	250

1. Ins. by S.O. 8 (E) dated 3rd January 1989 (w.e.f. 3.1.1989).

		Oil & Grease	10
		Suspended solids	200
		Dissolved	2100]
1[27.	All type of Asbestos	Emissions	
	Manufacturing units:	Pure asbestos material	
	(including all processes	total dust	4 fibre */cc
	Involving the use of Asbestos)		2 mg/m ³ (normal)

*Fibre of length more than 5 micrometre and diameter less than 3 micrometre with an aspect ratio of 3 or more.

28.	Chlor Alkali (Caustic soda)	Emissions	Concentration in mg/m ² (normal)
	(a) Mercury cell	Mercury (from hydrogen gasholder stack)	0.2
	(b) All Processes	Chlorine (from hypo tower)	15.0

	(c) All processes	Hydrochloric acid vapour and Mist (from hydrochloric acid plant)	35.0
29.	Large pulp and paper	Emissions	Concentration in mg/m ² (normal)
		Particulate matter	250 **
		H ₂ S	10

**This standard of 250 mg/m³ (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/m³ (normal).

30.	Integrated Iron and Steel Plants:		
		I. Emissions	
	(a)Coke oven	Particulate matter	50
	(b) Refractory material particulate matter Plant		150
		II. Effluents	Concentration in mg/litre (except for pH)
	(a) Coke oven By product plant:	pH	6.0-8.5
		Suspended solids	100
		Phenol	1.0
		Cyanide	0.2

1. Ins. by G.S.R. 913(E) dated 24th October, 1989 (w.e.f 24-10-1989).

		1[BOD (3 days at 27 ⁰ C)]	30
		COD	250
		Ammonical nitrogen	50
		Oil and Grease	10
	(b) Other plants such as sintering plants, blast furnace, steel		
	Melting and rolling mill:	pH	6.0-9.0
		Suspended solids	100
		Oil and Grease	10

31.	Reheating (Reverberatory) Furnaces:	Emissions	Concentration in mg/m ³ (normal)
	Capacity: All sizes		150
	Sensitive area	Particulate matter	
	Other area	Particulate matter	450]
2[32.	Foundries:	Emissions	
	(a) Cupola Capacity (melting rate); Less than 3 MT/hr.	Particulate matter	450
	3MT/ hr. and above	Particulate Matter	150

Note. - It is essential that the stack is constructed over the cupola beyond the charging door and the emissions are directed through the stack which should be at least six times the diameter of the cupola.

	(b) Arc Furnace		
	Capacity: All sizes	Particulate Matter	150
	(b) Induction furnaces 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/limits	
		Power generation capacity:	
		-500 MW and above	275
		-275 MW/210 MW and above to	220
		Less than 500 MW	
		Less than 200MW/210 MW	$H = 14(Q)^{0.3}$ where Q is emission rate of SO ₂ in kg/hr. and H is stack height in metres.

1. Subs. by G.S.R. 176(E) dated 2nd April 1996 (w.e.f. 3-4-1996).
2. Ins. by G.S.R. 742(E) dated 30th August 1990 (w.e.f. 30-8-1990).

		Steam generating capacity:	
		Less than 2 ton/hr.	2-1/2 times the neighboring 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 10ton/hr.	18
		__More than 15 ton/hr. to 20 ton/hr.	15
		__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) where Q is emission rate of SO ₂ in kg/hr. and H is stack height in metres

34.	Shall boilers	Emissions	
	Capacity of boiler	Particulate Matter	
	_Less than 2 ton/hr.		1600
	-2 to 15 ton/hr.		1200
	-More than 15 ton/hr.		150
*All emissions normalized to 12 per cent carbon dioxide			

35.	Oil refineries (Sulphur dioxide)	Emissions	
		_Distillation (Atmospheric plus vacuum)	0.25 kg/MT of feed**
		_Catalytic cracker	2.5 kg/MT of feed
		_Sulphur recovery unit	120 kg/MT of sulphur in the feed
**Feed indicates the feed for that part of the process under consideration only.			

36.	Aluminium Plants	Emissions	
	(a)Aluminium plants:		
	(i) Raw material handling	Primary and secondary crusher Particulate Matter	150
	(ii) Precipitation area	Particulate Matter	250
	_Calcination	Carbon monoxide Stack height	1% max. $H = 14(Q)^{0.3}$ where Q is emission rate of SO ₂ in kg/hr. and H is stack height in metres
	(b) Smelter plants		
	(i) Green anode shop	Particulate Matter	150
	(ii) Anode bake oven	Particulate Matter	150
		Total fluoride (F)	0.3 kg/MT of Aluminium
	(iii) Potroom	Particulate Matter	
		Total fluoride (F)	150
		VSS	4.7 kg/Mt of Aluminium produced

Sl. No.	Industry	Parameter	Standards (Concentrations in mg/l except for pH temperature specific pesticides and Bio-assay test)
(1)	(2)	(3)	(4)
		HSSs	6.0 kg/MT of Aluminium produced
		PBSW	2.5 kg/MT of Aluminium produced

		PBCW	1.0 kg/MT of Aluminium produced
		Stack height	$H = 14(Q)^{0.3}$ Where Q is emission rate of SO ₂ in kg/hr. and H is stack height in metres
<p>Note. - VSS= Vertical stud soderberg</p> <p>HSS= Horizontal stud soderberg</p> <p>PBSW= Prebacked side worked</p> <p>PBCW= Prebacked centre worked</p>			

37.	Stone crushing unit	Suspended Particulate Matter (SPM)	The standards consist of two parts:
			(i) Implementation of the following pollution control measures:
			(a) Dust containment cum suppression system of 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.
			(ii) Quantitative standard for the SPM:
			The suspended Particulate Matter contribution value at a distance of 40 metres from a controlled isolated as well as from a unit located in a cluster should be less than 600mg/Nm ³ . The measurements are to be conducted at least twice a month for all the 12 months in a year.
38.	Petrochemicals (Basic and Effluents intermediates)	PH	6.5-8.5
		¹ [BOD (3 days at 27 ⁰ C)]	50

1. Subs. by G.S.R. 176(E) dated 2nd April 1996 (w.e.f. 3-4-1996).

Sl. No.	Industry	Parameter	Standards (Concentrations in mg/l except for pH temperature specific pesticides and Bio-assay test)
(1)	(2)	(3)	(4)
		**Phenol	5
		Sulphide (as S)	2
		COD	250
		Cyanide (as CN)	0.2
		***Fluoride (as F)	15
		Total suspended solids	1000
		Hexavalent Chromium (as CR ₀)	0.1
		****Total Chromium (as CR)	2.0

*State Boards may prescribe 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 conformed to at the outlet of fluoride removal unit. However, at the disposal point fluoride concentration shall be lower than 5 mg/l.

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

39.	Pharmaceutical Manufacturing and formulation industry	Effluents	
		1. pH	5.5-9.0
		2. Oil and Grease	10

		3. Total suspended solids	100
		4. ¹ [BOD (3 days at 27 °C)]	30
		5. Bio-assay test	90% survival of fish after 96 hrs. in 100% effluent
		6. Mercury	0.01
		7. Arsenic	0.20
		8. Chromium (Hexavalent)	0.10
		9. Lead	.10
		10. Cyanide	0.10
		11. Phenolics (as C ₆ H ₅ OH)	1.00
		12. Sulphides (as S)	2.00
		13. Phosphates (as P)	5.00

Note. -

- (1) Parameters listed as I to 13 are compulsory for formulators. However, the remaining parameters (6 to 13) will be optional for others.
- (2) State Board may prescribe limit for chemical oxygen demand (COD) correlated with BOD limit.
- (3) State Board may prescribe limit for total dissolved solids depending upon uses of recipient water body.
- (4) Limits should be complied with at the terminal of the treatment unit before letting out of the factory boundary limits.
- (5) For the compliance of limits, analysis should be done in the composite sample collected every hour for a period of 8 hours.

40.	Pesticide Manufacturing and Formulation industry	Effluents	
		1. Temperature	Shall not exceed 5 ⁰ C above the receiving water temperature
		2. pH	6.5-8.5
		3. Oil and Grease	10
		4. 1[BOD(3days at 27 ⁰ C)]	30
		5. Total suspended solids	100
		6. Bio-assay test	90 % survival of fish after 96% hours in 100 per cent effluent
		7. (a) Specific pesticides:	
		Benzene hexachloride	10
		Carboryl	10
		DDT	10
		Endosulfan	10
		Diamethoate	450
		Fenitrothion	10
		Malathion	10
		Phorate	10
		Methyl parathion	10
		Phenthoate	10
		Pyrethrums	10
		Copper oxychloride	9600
		Copper sulphate	50
		Ziram	1000
		Sulphur	30
		Paraquat	2300
		Proponil	7300
		Nitrogen	780
		(b) Heavy metals:	
		Copper	1.00
		Manganese	1.00
		Zinc	1.00
		Mercury	0.01
		Tin	0.10
		Any other metal like	Shall not exceed 5 times the drinking water standards
		(c) Organics:	

		Phenol and phenolic Compounds as C ₆ H ₅ OH	1.0
		(d) Inorganics: Arenics (as AS)	0.2

1. Subs. by G.S.R. 176(E) dated 2nd April 1996 (w.e.f 3-4-1996).

		Cyanide (as CN)	0.2
		Nitrate (as NO ₃)	50.0
		Phosphate (as P)	5.0

Notes. -

- Limits should be complied with at the end of the treatment plant before any dilution.
- Bio-assay test should be carried out with available species of fish in receiving water.
- State Boards may prescribe limits of total dissolved solids (TDS) sulphates and chlorides depending on the use of recipient water body.
- State Board may prescribe COD limit correlated with BOD limits,
- Pesticides are known to have metabolites and isomers. If they are found in significant concentration, standards may be prescribed for those in the list by Central or State Board.
- Industries are required to analyse pesticides in waste water by advanced analytical method such as GLC/HPLC.
- All the parameters will be compulsory for formulators, for others, the 7th will be optional.

41.	Tannery (after primary treatment) Disposal: Channel/Conduit Carrying waste waters to secondary treatment plants Type of tanneries -Chromo tanneries/combined chrome and vegetable tanneries	Effluents	
		pH	6.0-8.5
		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 (CEIT) comprising secondary treatment. Those who have not contributed will be governed by earlier Notification No. S.O. 64(E), dated January 18, 1988:

42.	Paint industry (Waste-water discharge)	Effluents	
		PH	6.0-8.5
		Suspended	100
		Solids	50
		BOD5 20 0 C	
		Phenolics as C6 H5 OH	1.0
		Oil and Grease	10.0
		Bio-assay test	90 per cent survival in 96 hours
		Lead as pb	0.1
		Chromium as Cr	
		Hexavalent	2.0
		Total	2.0
		Copper as Cu	2.0
		Nickel as Ni	2.0
		Zinc as Zn	5.0
		Total heavy metals	7.0
43.	Inorganic chemical	Effluents	

	Industry (Waste-water discharge) Part 1 (metal compounds of Chromium, Manganese, Nickel,	PH	6.0-8.5
		Chromium as Cr	0.1
		Hexavalent	2.0
		Total	
	Lead and Mercury	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	0.01
		Cyanide as CN	0.2
		Oil and Grease	10.0
		Suspended solids	30.0

In addition to the above, total heavy metals are to be limited to 7 mg/l.

44.	Bullion Refining (Waste-water discharge)	Effluents	
		pH	6.5-8.5
		Cyanide as CN	0.2
		Sulphide as S	0.2
		Nitrate as N	10.0
		Free Cl ₂ and Cl	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 and Dye Intermediate		
		Industry	
		(Waste-water discharge)	
		Effluents	
		pH	6.0-8.5
		Colour, Hazen Unit	400.0
		Suspended solids	100.0
		BOD ₅ 20 °C	100.0

	Oil and Grease	10.0
	Phenolies as C ₆ H ₅ OH	1.0
	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	0.1
	Hexavalent	2.0
	Total	
	Bio-assay test	90 % survival in 96 hours

Sl. No.	Category	Standards, Db (A)
(1)	(2)	(3)

46.	Noise limits for automobiles (free field at one metre in dB (A) at the manufacturing stage) to be achieved by the year 1992	
	(a) Motorcycles, scooters and three wheelers	80
	(b) Passenger cars	82
	(c) Passenger or commercial vehicles up to 4 MT	85
	(d) Passenger or commercial vehicles above 4 MT and up to 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-conditioners of 1 ton to 1.5 ton	68
	(b) Air-coolers	60
	(c) Refrigerators	46
	(d) Diesel generators for domestic purposes	85-90
	(e) Compactors (rollers) front loaders, concrete mixers, cranes (movable) vibrators and saws.	75]

Sl. No.	Industry	Parameter	Standards
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(1)	(2)	(3)	(4)
1[48.	GLASS INDUSTRY	Emissions	
	A. Soda lime and Borosilicate and other special glass (other than lead) (a) Furnace; Capacity		

1. Ins. by G.S.R. 93 (E) dated 21st February 1991 (w.e.f. 27-02-1991).

	(i) Up to a product draw capacity of 60 Mt/Day	Particulate matter	20kg/hr
	(ii) Product draw capacity more than 60 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. and H is stack height in metres. 5.0 mg/NM ³ Use of low nox burners in new plants.
		Total fluorides	
	(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 dust-free using water spraying.		
	(iii) Batch preparation section should be covered.		
B.	Lead glass		
	(a) Furnace:		
	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 following standards:	Particulate matter Lead	50 mg/NM ³ 20 mg/ NM ³
	(ii) Minimum stack height should be 30 meter 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.

	Glass Industry (For all categories)	Effluents: pH	 6.5-8.5
		Total suspended solids	100 mg/l
		Oil and Grease	10 mg/l
49.	Lim Kiln	Stack Height	
	Capacity:-	Stack Height	
	Up-to 5T/Day		A hood should be provided with a stack of 30 metre 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 metres.
	More than 5T/day and upto 40T/Day.	Particulate matter	500mg/NM ³
	Above 49T/Day	Particulate matter	150 mg/NM ³
50.	*Slaughter House, Meat and Sea Food Industry:_		
A.	Slaughter House	BOD ₅ at 20 °C	100
	(a) Above 70 TLWK	Suspended solids	100
		Oil and Grease	10
	(b) 70 TLWK and below	BOD ₅ at 20 °C	500
B.	Meat Processing	BOD ₅ 20 °C	30
	(a) Frozen Meat	Suspended solids	50
		Oil and Grease	10
	(b) Raw Meat from own Slaughter house	BOD ₅ at 20 °C	30
		Suspended solids	50
		Oil and grease	10
	(c) Raw meat from other source		Disposal via screen and septic tank
C.	Sea Food Industry	BOD ₅ at 20 °C	30
		Suspended solids	50
		Oil and Grease	10

Note: -

(i) TLWL- Total Live Weight Killed. (ii) In case of disposal into municipal sewer where sewage is treated the industries shall install screen and oil and 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.

* The emission standards from Boiler House shall conform to the standards already prescribed under E(P) Act, 1986, vide notification No. GSR 742 (E), dated 30-08-1990: See [1991] 70 Comp. Cas. (St.) 5.

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 tetra pack			
		PH	6.5-8.5	-----
		Suspended solids	100	
		Oil and Grease	10	
		BOD ₅ at 20 °C	30	
	(b) Synthetic (Less than 0.4 MT/Day)		Disposal via Septic tank	
B.	Fruit and vegetables (a) Above 0.4 MT/Day			
		PH	6.5-8.5	-----
		Suspended solids	50	
		Oil and Grease	10	
		BOD ₅ at 20 °C	30	
	(b) 0.1-0.4 MT/ Day (10MT/Yr)		Disposal via septic tank	
C.	Bakery (a) Bread and bread and biscuit			
		PH	6.5-8.5	
		BOD ₅ at 20 °C		
		(i) Continuous process (more than 20T/Day)	200	25
		(ii) Non-continuous process (less than 20 MT/Day)	Disposal via septic tank	
	(b) Biscuit Production (i) 10 T/Day and above			
		PH	6.5-8.5	
		BOD ₅ at 20 °C	300	35
		(ii) Below 10 T Day	Disposal via septic tank	
D.	Confectioneries	Effluents		

THE ENVIRONMENT (PROTECTION)

	(a) 4 T/Day and above	PH	6.5-8.5	
		Suspended solids	50	
		Oil and Grease	10	
		BOD ₅ at 2 °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 the Environment (Protection) Act, 1986, *vide* Notification No. GSR 742 (E), dated 30-08-1990: *See* [1991] 70 Comp. Cas. (St.)5.

Sl. No.	Industry	Parameter	Standards
1	2	3	4
52.	*Jute Processing Industry:	Effluents	Concentration in mf/l except pH and water consumption
		PH	5.5-9.0
		BOD ₅ at 20°C	30
		Suspended solids	100
		Oil and Grease	10
		Water consumption	1.60 Cum/Ton of product produced.

Note. -

- Water consumption for the jute processing industry will be 1.5 Cum/Ton of product from January, 1992.
- At 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 30-8-90.

53.	Large Pulp and Paper/news Print/rayon Grade Plants of Capacity Above 24,000 mt/annum	Effluents	Concentration in mg/l except PH and TOCL
		pH	7.0-8.5
		BOD ₅ at 20 °C	30
		COD	350
		Suspended solids	50
		*TOCL	2.0 kg/Ton of product
		Flow (Total waste water discharge)	
		** (i) Large pulp and paper	200 Cum/Ton of paper produced
		(ii) Large rayon grade/News print	150 Cum/Ton of paper produced

Note. -

*The Standards for Total Organic Chloride (TOCL) will be applicable from January, 1992.

** The standards with respect to total waste water discharge for the large pulp and paper mills to be established from 1992, will meet the standards of 100 Cum/Ton of paper produced.

54.	Small Pulp and Paper, Paper Plants of Capacity Upto 24,000 MT/Annum:		
	Category:	Effluent	
A.	*Agro-based	Total waste-water discharge	200 Cum/Ton paper produced
B.	**Waste-paper based	-Do-	75 Cum/Ton of paper produced

Note. -

* 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/ Ton 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 °C	45
		Oil and Grease	20
		Phenolic compounds (as C ₆ H ₅ OH)	5.0
		Ammonial Nitrogen (As N)	50
		Cyanide (as CN)	20
		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 (Se)	0.05
		Fluoride (as F)	15
		Boron (as B)	2.0
		Radioactive Materials	
		Alpha emitters, Hc/mL	10.7
		Beta emitters, Hc/mL	10.8

Notes. -

1. These standards apply to the small-scale industries, i.e., total discharge up to 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 Boards with the concurrence of CPCB in writing, may prescribe suitable limits.

	Into inland Surface waters	On land For Irrigation	Into Marine Coastal areas
	(a)	(b)	(c)

	Treated Effluent	Quality of common effluent Treatment plant	Concentration in mg/l except pH and Temperature		
		pH	5.5-9.0	5.5-9.0	5.5-9.0
		BOD ₅ at 20 °C	30	100	100
		Oil and Grease	10	10	20
		Temperature	Shall not Exceed 40 °C in any section		45 °C at the point of discharge
		Of the stream within 15 metres downstream from the effluent outlet.			
		Into inland Surface Waters	On land For Irrigation	Into Marine Coastal areas	
		(a)	(b)	(c)	

	Suspended solids	100	200	(a)For process waste waters- 100 (b) For cooling water effluents 10 per cent above total suspended matter of ineffluent cooling water
	Dissolved solids (Inorganic)	2100	2100	-
	Total residual chlorine	1.0	-	1.0
	Ammonical Nitrogen (as N)	50	-	50
	Total Kjeldahi Nitrogen (as N)	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 (as Cr)	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 (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 ₆ H ₅ OH)	1.0	-	5.0

Note. -

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

1[56	Dairy	Effluents	Concentration in mg/1 except	Quantum per product processed
			pH	
		PH	6.5-8.5	-
		*BOD ₅ at 20 °C	100	-
		**Suspended solids	150	-
		Oil and Grease	10	-
		Waste water generation	-	3m ³ /Kl of milk

Note. - *BOD may be made stringent up to 30 mg/1 if the recipient fresh water body is a source for drinking waster supply. BOD shall be up to 350 mg/1 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/1 of BOD and 10 mg/1 of nitrate expressed as "N". The net addition to the groundwater quality should not be more than 3 mg/1 of BOD and 3 mg/1 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 the industry, BOD value is relaxable up to 350 mg/1, provided the waste water is discharged into a town sewer leading to secondary treatment of sewage.

** Suspended solids limit is relaxable upto 450 mg/1, provided wastewater is discharged into a town sewer leading to secondary treatment of the sewage.

57.	Tanneries	Effluents	Concentration in mg/1, except pH	Quantum per raw hide processed
		pH	6.5-90	
		*BOD5 at 20 0C	100	
		Suspended solids	100	-
		Sulphides (as S)	1	-
		Total chromium (as Cr)	2	-
		Oil and Grease	0.1	-
		Waste water generation	-	28m ³ /T

Note. _

*For effluent discharge into inland surface waters BOD limit shall be made stricter to 30 mg/1 by the concerned State Pollution Control Board.

*****58.	Natural rubber	Centrifuging and creaming units		Crape and curmb units	
	Processing industry	For disposal into Inland surface water	For disposal on land for irrigation	For disposal into Inland surface water	For disposal on land for irrigation

1. Added by GSR 475 (E), dated 6th May, 1992.

			(a)	(b)	(a)	(b)
			(Concentration in mg/l, except pH and quantum of waste water generation)		(Concentration mg/l, except pH and quantum of waste water generation)	
		pH	6-8	6-8	6-8	6-8
		Total kjeldhyl nitrogen (as N)	200 (100*)	***	50	***
		Amonical	100(50*)	***	25	***
		Nitrogen (as N)	50	100	30	100
		BOD ₅ at 20 °C	250	***	250	***
		COD	10	20	10	20
		Oil and Grease	2	***	2	***
		Sulphide	2100	NP**	2100	NP**
		TDS	100	200	100	200
		SS	5 lit/kg. Of	8 lit/kg.of	40 lit/kg. of	40 lit/kg.of
		Quantum of Waste water generation	Product processed	Product processed	Product processed	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 at serial No. 26. vide Notification No. S.O. 8(E), dated 3rd January, 1989.

59.	Bagasse- fired boilers	Emissions	(Concentration in mg/1
	(a) Step grate	Particulate matter	250
	(b) Horse shoe/pulsating grate	Particulate matter	250 (12% CO ₂)
	(c) Spreader stoker	Particulate matter	800 (12% CO ₂)

Note. - In the case of horse shoe and spreader stoker 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.

60.	Man-made fibre industry (semi-synthetic)	Effluents	(Concentrate in mg/1 except for pH)
		pH	5.5-9.0
		Suspended solids	100
		BOD ₅ at 20 °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 materials 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 dryers	Particulate matter	*
	(b) Mechanical finishing operation	Particulate matter	*
	(c) Lime/plaster of Paris manufacture		
	Capacity	Stack height	
	Up to 5T/day	-Do-	A. Hood should be provided with a stack of 30 metre 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 Height in meters
	More than 5T/day and up to 40T/day	Particulate matter -Do-	500 mg/NM ³ 150 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), and A(e) is 8%.

*All possible preventive measures should be taken to control pollution is for 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.	9m.
More than 8.5 to 21 mt.	12m.
More than 21 to 42 mt.	15m.
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 126mt.	30 m. or using formula $H-14 (Qg)^{0.3}$ (whichever is more).

Note. - In this notification, H-Physical height of the stack, Qg- Emission of sulphur dioxide in kg/hr., MT-Metric tonnes and m-metres.]

Sl. No.	Industry	Parameter	Standards
(1)	(2)	(3)	(4)

¹ [62.	Viscose-Filament Yarn (sub-sector of man-made fibres semi-synthetic industry)	Effluents	(Concentration in mg/l except for pH)
		PH	5.5-9.0
		Suspended solids	100
		BDD, at 20 °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)	100
		Suspended solids	150
		Waste water discharge	8 m ³ /tonne of maize processed

Notes. -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 30 mg/1 if the recipient fresh water body is a source for drinking water Supply.
- (ii) BOD shall be allowed upto 350 mg/1 for applying on land, provided the land 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/1 of BOD and 10 mg/1 of nitrate expressed as "N". The net addition to ground water quality should not be more than 3 mg/1 of BOD and 10 mg/1 of nitrate expressed as "N".
- (iii) BOD shall be allowed upto 350 mg/1 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/1 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.

1. Added by G.S.R. 80(E), dated 31st December, 1993 (w.e.f. 31.12.1993).

2. Entry 63 to 78 inserted by G.S.R. 176(E), dated 2nd April, 1996 (w.e.f. 3.4.1996).

64.	Beehive hard coke oven		
	(i). New Unit	Emission:	150mg/Nm ³
		Particular matter (Corrected to 6% Co ²)	
		Hydrocarbons	25 ppm
	(ii). Existing Units	Particular matter (Corrected to 6% CO ²)	350 mg/Nm ³

Notes: 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)	Minimum stack height of 20 metres shall be provide by each unit.

(iii)	Emissions from coke ovens shall be canalized through a tunnel and finally emitted through a stack. Damper adjustment techniques shall be used to have optimum beautification and also to control the emission of unbrunt carbon particles and combustible flue gases.
(iv)	Wet scrubbing system or waste heat utilisation for power generation or byproduct recovery systems should be installed preferably to achieve the pre scribed 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.
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65	Briquette Industry (Coal)	Emission:	
	(a)	Unit having capacity less than 10 tonnes.	Particular matter (Corrected to 6% CO ²)
			350 mg/Nm ³
	(b)	Units having capacity 10 tonnes or more	Particular matter (Corrected to 6% CO ²)
			150 mg/Nm ³

Notes. -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 meters shall be pro vided.
(ii)	All ovens shall be modified to single chimney multioven systems.
	Emissions from ovens shall be channelised through inbuilt draft stack. Optimum heat utilisation technique shall be used.
	In case of units having capacity 10 tonnes and above, wet scrubbing system shall be provided to control air pollution.

66	Soft Coke Industry		
		Particular matter (Corrected to 6% CO ²)	350 mg/Nm ³

Note: - Wet scrubbing system along with by product recovery system be provided.

	Guidelines for Emission Control to Improve Work Zone Environment (applicable for industries at serial number 64, 65 and 66).		
	(a)	Water used for quenching and wet scrubbing shall be recirculated and reused through catch-pits	

	(b)	Leakages in the oven shall be sealed by bentonite or by cable paste and by proper maintenance to avoid fugitive emission.
	(c)	Unloading of local 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 unload.
	(b)	Pulversiation of coal shall be carried out in an enclosed place and water-sprinkling arrangement shall be provided at coal heaps, crushing area and no land around the crushing unit.
	(c)	Work area surrounding the plant shall be asphalted or concerned.
	(d)	Green belt shall be developed along the boundary of the industry.
	(e)	Open burning of coal to manufacture soft coke shall be stopped.

67	Edible oil & Vanaspati Industry	Effluents:	
		Temperature	Not more than 5 degree Centigrade above ambient temperature of the recipient water body.
		pH	6.5 - 6.8
		Suspended solids	150 mg/l
		Oil and Grease	20 mg/l
		BOD (3 days at 27 ⁰ C)	100 mg/l
		COD	200 mg/l
		Waste water 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 solvent extraction & refinery/vanaspati).	4.0 cum/tonne of refined oil /vanaspati oils.
	(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 process and cooling.			
(ii)	BOM shall be made stringed upto 30 mg/l if the receipt fresh water body is source of drinking water supply.			
	(ii)	The standards for boiler emissions shall be applicable as prescribed under Schedule I of these rules.		
68.	Effluents:			
	(a)	Compulsory parameters	PH	6.8-8.5
			BOD (3 days at 27 ⁰ C)	100 mg/l
			Oil & Grease	10 mg/l
			Bioassay	Minimum 90% survival after 96 hours with fish at 100% effluent).
	(b)	Additional parameters		Mg/l
			Nitrate (as N)	10
			Arsenic	0.2
			Hexavalent Chromium	0.1
			Total Chromium	1.0
			Lead	0.1
			Cyanide as CN	0.2
			Zinc	0.5
			Mercury	0.001
			Copper	2.0
			Nickel	2.0
			Phenolics as C ₆ H ₅ OH	5.0
			Sulphate	2.0

Notes:

(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 Chemicals Rules, 1989 in part I, the State Board in such cases may direct the industries to install tertiary treatment system stipulating 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-aliphatic, prasticizers, aromatics (calcohols, phenols, esters, acids and salts, aldehydes and ketonne), substituted aromatics, aliphatic (alcohols, esters, acids, aldehydes, ketones, amines and amides) and detergents.

69.	Flour Mills	Effluents:	
		pH	6.8-8.5
		BOD (3days at 27 ⁰ C)	100 mg/l
		Total Suspended solids	100 mg/l
		Oil and Grease	10 mg/l
		Waste water discharge.	2 cubic meter per tonne of wheat processed.

Notes:

(i)	BOD shall be made 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 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.

70.	Boilers small	Steam generation Capacity (ton/hors)	Particular emission matter (mg/ Nm ³)
		Less than 2	1200 *
		2 to less than 10	800 *
		10 to less than 15	600 *
		15 and above	150 **
Note: -			

	* 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.		
Notes. -			
(i)	12% of CO, correction shall be the reference value for particulate matter emission standards for all categories of boilers.		
	These limits shall supercede the earlier limits notified under Schedule I at serial number 34 of Environment (Protection) Act, 1986 <i>vide</i> . notification GSR 742 (E), dated 30th August, 1990.		
(iii)	<p>Stack Height for small Boilers.</p> <p>For the small boilers using coal or liquid fuels, the required stack height with the boiler shall be calculated by using the formula</p> $H = 14Q^{0.3}$ <p>Where H-Total stack height in meters from the ground level.</p> <p>$Q = \text{SO}_2$ emission rate in kg/hr.</p> <p>In no case the stack height shall be less than 11 meters.</p> <p>Where providing all stacks are not feasible using above formula the limit of 400 mg/Nm³ for SO₂, emission shall be met by providing necessary control equipment with a minimum stack height of 11 meters.</p>		
71.	(i)	Compulsory Parameters	Mg/l except pH
		pH	6.5 – 8.5
		BOD (3days at 27 ⁰ 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	M/gl
		(a) Heavy metal	
		Copper	1.0
		Manganese	1.0
		Zinc	1.0
		Tin	0.01
		Any other like	0.1
		Nickel	Shall not exceed 5 times the drinking water standards (BIS) Individually.

		(b)	Organics	1.0
			Phenol & Phenolic Compounds as C ₆ H ₅ OH	
		(c)	Inorganics	
			Arsenic as AS	0.2
			Cyanide as CN	0.2
			Nitrate as NO ₃	50
			Phosphate as P	5.0
		(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	Pyrethrum extract
		Dichlorovos	Malathion	Quinalphos
		ETDC Mixer	Methyl Bromide	Monocrotophos
		Ethylene Dibromide	Nicotine sulphate	Carbaryl
		Ethion	Oxydemeton Methyl	Endosulfan
		Fenitrothion	Methyl parathion	Fenvalerate
		Lime-sulphur	Phosphamidon	Phorate
		Temephos		

(ii)	Fungicides		
	Aureofungin	Organomercurias (MEMC & PMA)	
	Barjum Polysulphide	Suphur (Colloidal, Wettable & Dust)	

	Cuprous oxide Ferbam Mancozeb Manab Nickel Chloride	Streptocycline Thiram Zineb Carbendazim Tridemorph	
(iii)	Rodenticides: Comafuryl Warfrain 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		
Notes: -			
(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 parameters (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 presistently more than 250 mg/l such industrial units are required to identify the chemicals causing the same. In case, these 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 recognised 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 meter 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 neutralized 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.	
	(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 and Forests, Government of India, after obtaining authorization from the State Pollution Control Board under the Hazardous Wastes (Handling and Management Rules, 1989.	
	(viii)	The facility shall be protected from flood and storm to prevent embankments from commission or any other damage, which may render any portion inoperable.	
	(ix)	Facilities shall have protective enclosure to keep wildlife, domestic animals, unauthorized persons, etc., away.	
72.		Oil Drilling and Gas Extraction Industry	
	A.	Stands for Liquid Effluent	
		1.0 On-Shore facilities	
		(For Marine Disposal)	
		pH	5.5 – 9.0
		Oil and Grease	10 mg/l
		Suspended solids	100 mg/l
		BOD (3 days at 27 ⁰ C)	

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 concern level in sea water below their toxicity limits as given below, within a distance of 50 metre from the discharge point in order to product the marine aquatic life.		
	<table><tr><td>Parameter</td><td>Toxicity limit, mg/l</td></tr></table>	Parameter	Toxicity limit, mg/l
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 or 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 coin ply only with respect to suspended solids and oil and grease at 100 mg/l and 10 mg/l, respectively. For on-shore disposal, the permissible limits are given below:
------	---

S. No.	Parameters	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	100 mg/l
7	Chlorides	600 mg/l
8	Sulphates	1000 mg/l
9	TDS	2100 mg/l
10	% Sodium	60 mg
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	

2.0	Off-shore facilities:
	For offshore discharge of effluents, the oil content of the treated effluent without dilution shall not exceed 40 mg/l for % 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	D.G 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 emission 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.
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 100m 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 round level concentration (GLC) requirement.
2.6	In case of elevated flaring, the minimum stack freight shall be 30m. Height of the stack shall be such that the maximum 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.
C	Guidelines for Disposal of Solid Waste
1.0	Disposal of drill cuttings
1.1	The drill cuttings shall be conveyed through a conveyor system to the disposal pit after proper washing.
1.2	No drill cuttings (of any composition) shall be disposed offshore. For offshore installation, drill cuttings separated from mud shall be transported on on-shore through supply vessels for secured landfill disposal as per Ministry of Environment and Forests guidelines. The site shall be approved by the concerned authority, (State Government /State Pollution Control Board).
1.3	The disposal of drill cuttings (on-shore/off-shore) shall confirm to the guidelines provided by the Ministry of Environment and Forests.
1.4	The secured land-fill pit shall be covered with a thick layer of local top soil provided with proper top slope, after drilling, operation is over.
2.0	Disposal of drilling load

2.1	The unusable portion of the drilling mud (of any composition); after reclamation shall be disposed of only at a secured landfill site approved by the concerned authority (State Government /State Pollution Control Boards). The disposal of mud shall conform to the guidelines provided by the Ministry of Environment and Forests under the Hazardous Wastes (Management and Handling) Rules, 1989.
2.2	No mud (of any composition) shall be disposed off-shore. For off-shore installation, the unusable portion of the mud shall be brought back to the shore for disposal in a secured landfill.
2.3	Only water-based Mud system shall be used. Where oil-based muds are used, the muds, after they become unusable, shall be properly treated/incinerated, in a centralized treatment facility. In case of off-shore installation, these may be brought to the shore and treated.
3.0	Production stage solid waste disposal.
3.1	The dried sludge from wastewater treatment plant and other solid wastes at production stage shall be disposed in a secured land-fill.
3.2	In case oil content in the sludge is high, it shall be properly treated/incinerated and ash shall be disposed of in a secured land-fill

73. Pharmaceuticals industry

(Bulk Drugs)

(i) Compulsory (mg/l except pH)

Parameters

pH 6-5-8.5

Oil & Grease 10

BOD (3 days at 27°C) 100

Total suspended solids 100

Bioassay test 90% survival after 96

Hours in 100% effluent
as per IS:6582-1971

test shall be carried out

(ii) Additional parameters mg/l

Mercury 0.01

Arsenic 0-2

Chromium 0.1

(Hexavalent)

Lead	0.1
Cyanide	0.1
Phenolics (C ₆ H ₅ OH)	1.0
Sulphides (as S)	2-0
Phosphate (as P)	5.0

Notes-

- (i) The limit of BOD (3 days at 27C) shall be 30 mg/i if effluent is discharged directly to a fresh water body-
- (ii) The additional parameters are applicable to bulk drug-manufacturing units depending upon the process and product-
- (iii) No limit for COD is prescribed, but it shall be monitored. If the COD of the treated effluent is 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 the Hazardous Chemicals Rules, 1989 (Schedule 1), the State Boards in such cases shall direct the industries to install tertiary treatment system within the stipulated time limit. This may be done on a case-to-case basis.

74. Emission Standards for brick kilns:		
I. Minimal National Emission Standards for Brick Kilns		
Size	Kiln Capacity	Maximum limit for the Concentration of particulate matter (mg/N cum)
1	2	3
Small	Less than 15,000 bricks per day (less than 15 ft trench width)	1000
Medium	15,000-30,000 bricks per day (15-22 ft trench width)	750
Large	More than 30,000 bricks per day (more than 22 ft trench width)	750

Note- The above particulate matter emission limits are achievable by installing fixed chimney high draught kilns and/or settling chamber.

II- Stack Height Regulation:

The following stack heights are recommended for optional dispersion of particular matter

Kiln Capacity	Stack Height
1	2

Less than 15,000 bricks per day (Less than 15 ft trench width)	Minimum stack height of 22m or,
	Induced draught fan operating with minimum draught of 50mm Water Gauge with 12 m stack height.
15,000-30,000 bricks per day (15-22 ft trench width)	Minimum stack height of 27m with gravitational settling chamber or
	Induced draught fan operating with minimum draught of 50mm Water Gauge with 15 m stack height.
More than 30,000 bricks per day More than 22 ft. trench width)	Minimum stack height of 30m with gravitational settling chamber or,
	Induced draught fan operating with minimum draught of 50mm Water Gauge with 17m stack height.
III. Existing moving chimney Bull's trench kilns shall be dispensed with by December 31, 1997 and no new moving chimney kilns shall be allowed to come up.	
IV. Considering the immediate need to protect the top soil and to find ways for safe disposal/ utilisation of flyash, it is provided that from the 1 st January, 1997, all brick manufacturing units within a radius of 50 kms from any thermal power plant, shall utilise flyash in optimal proportion for making bricks.	

75. Soda Ash Industry (Solvay Process)

PARAMETER	MINAS (Recipient body specified)		
	<u>Marine</u>	<u>Brackish</u>	<u>Inland surface water</u>
PH	6.5 - 9	6.5 – 9	6.5 – 9
Temperature	45 ⁰ C or less	45 ⁰ C or less	45 ⁰ C or less
Oil or 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	1[50mg/l
Bio-assay	96 Hours	96 Hours	96 Hours
	1[90]% 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:

	Parameters	MINAS
		(Inland surface water)
	pH	6.5 – 8.0
	Ammoniacal nitrogen as N (mg/l)	50
	Nitrate nitrogen, as N (mg/l)	10
	Cyanide	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 within two years. 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. Vide Corrigendum G.S.R. 57 (E), dated 14th February 1997.

76. Emission Standard

For SO₂ from Cupola furnace:

Standard for Sulphur Dioxide omission from Cupola Furnace

	Characteristics	Emission limit
	Sulphur dioxide (SO ₂) emission	300 mg/Nm ³ at 12% CO ₂ correction

To achieve the standard, foundries may install scrubber, followed by a stack of height 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 SO₂ to the ambient air has to be effected through the stack height.

77. Specification of Motor Gasoline for Emission Related Parameters

Sl. No.	Characteristics	Required	Method of Test ref, to P; of IS: 1448
(i)	Reid Vapour Pressure at 38°C, KPa	35 to 70	P: 39
(ii)	Benzene, Percent by volume	5.0 ⁽¹⁾	P: 104
(iii)	Lead content as (pb) g/l, Max	0.15 (low leaded) ⁽²⁾	P: 38
		0.013 (unleaded)	
(iv)	Sulphur, percent by mass, Max	0.10 (unleaded)	P: 34
(v)	Potential Gum, g/m ³ , max	50	ASTM 873: 8
(vi)	Gum (Solvent Washed) g/m ³ Max	40	P: 29
(vii)	Oxygenates Content Ether (MTBE, ETBE) Alcohol, percent by volume, Max	15	
(viii)	Phosphorous	See Foot Note ⁽³⁾	ASTMD 3231
	(1)	3.0 percent by volume maximum in metro cities by 2000 AD.	
	(2)	0.15 by 31st December 1996 (for entire country). 0.013 g/l by 1st April, 1995 (in four-metro-cities) 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	

Note. -

(a) Above specifications applies 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 To P: of IS: 1448
(i)	Density at 15 ⁰ C, Kg/m ³	820 to 880(1)	P: 32
(ii)	Cetane Number, Min	45 .0(2)	P: 9
(iii)	Distillation 85 per cent by volume recovery at recovery at ⁰ C Max	350	P: 18
	95 percent by volume recovery at ⁰ C, Max	370	
(iv)	Sulphur, percent by mass	0.50(3)	P: 33

(1) 820 to 860 by 2000 AD

(2) 49 by 31st December 1998 (except in the refineries-Digboi, Gauhati, and Bongaigaon Refineries & Petrochemicals Ltd.).

(3) (i) 0.50 per cent by mass by 1st April, 1996 in four metros and Taj Trapezium.

(ii) 0.25 per cent by mass by 1st October 1996 in Taj Trapezium.

(iii) 0.25 per cent by mass by 1st April 1999 throughout the country.

Note. -

(a) Above specifications apply to HSD only.

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

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

1[SI No.	Industry	Parameter	Standards	
			New Batteries	Existing Batteries
1.	Coke oven plants	Fugitive visible, Emission		
	(By product recovery type	a. Leakage from door	5(PLD)*	10(PLD)*
		b. Leakage from charging lids	1(PLL)*	1(POLL)*
		c. Leakage from AAP Covers	4(PLO)	4(PLO)
		d. Charging emission (second/charge)	16(with HPLA)*	50 [with HPLA)*
	Stack Emission of Coke Oven			
(a)	SO ₂ (mg. Nm ³)		800	800
(b)	NO _x , (mg/Nm ³)		500	500
(c)	SPM, emission during charging stack (emission) mg/Nm ³		50	50
	(a)	SPM emission during charging (stack emission) mg/Nm ³		
	(b)	SPM emission during charging (stack emission) gm/ton of coke	5	5
	Sulphur in Coke Oven Gas Used (for heating (mg/Nm ³)		800	800
	Emission for quenching operation		50	50
	Particulate matter gm/MT of coke produced			
	Benzo-pyrene (BOP) concentration in work zone air (ug/m ³)			
	-Battery area (top of the battery)		5	5
	-Other units in coke oven plant		2	2
	-Ambient standards (ng/m ³)		10	10

1. Ins by G.S.R. 631 (E), dated of 31 st October 1997 (w.e.f. 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 is, 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 residential 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 taken to reduce coal charging and coke pushing emission. The bleeder of the coke oven shall be flared.
- (iii) In the case of existing coke ovens with wet quenching, the new procedure as in (i) and (ii) shall be adopted and emission standards achieved within four years (by 2001)

Note. -Unit's set up after the publication of this notification shall be treated as new units.

- *HPLA- Aspiration through hi- pressure liquor injection in goose neck.
- *PLD - Percent leaking doors.
- *PLL - Percent leaking lids.
- *PLO - Percent leaking off takes.]

¹[81. Battery manufacturing industry-

1. Ins. by G.S.R. 7, dated 22nd December 1998, published in the Gazette of India, dated 2-1-1999, Pt. II, sec. 3 (1), P. 40.

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

Source		Pollutant	Standards Conc. Based (mg/Nm ³)
	Grid casting	Lead	10
		Particulate Matter	25
	Oxide Manufacturing	Lead	10
		Particulate matter	25
	Paste mixing	Lead	10
		Particulate matter	25
	Assembling	Lead	10
		Particulate matter	25
	PVC section	Particulate matter	150

To comply with the respective standards, all the emissions from the abovementioned 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:

<u>Pollutant</u>	<u>Concentration based standards</u>
-------------------------	---

pH	6.5-8.5
Suspended solids	50 mg/l
Lead	0.1 mg/l

- (ii) Dry, cell-manufacturing industry: emission standards

<u>Pollutant</u>	<u>Standards Concentration based (mg/Nm³)</u>
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Particulate matter	50
Manganese as Mn	5

- To comply with the respective standards, all the emissions from the abovementioned 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.

Effluent standards

<u>Pollutant</u>	<u>Concentration based standards</u>
-------------------------	---

pH	6.5-8.5
Total suspended solids	100mg/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
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Lead as Pb	10 mg/NMp ³
Particulate matter	50 mg/Nm ³
Minimum stack height	30m

82. Environmental standards for gas/naphtha-based Thermal Power Plants

(i) Limit for emission of NO_x

(a) For existing units-150 ppm (v/v) at 15 percent. Excess oxygen.

(b) For new units with effect from 1-6-1999.

Total generation of gas turbine	Limit for Stack NO _x emission [(v/v), at 15 Percent excess oxygen]
(a) 400-MW and above	(i) 50 ppm for the units burning natural gas. (ii) 100 ppm for the units burning naphtha
(b) Less than 400 MW but up to 100 MW	(i) 75 ppm for the units burning natural gas (ii) 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
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(ii) Stack height H in m should be calculated using the formula $H=14 Q^{0.5}$, where

Q is the emission rate of SO₂ in ka/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

83. Standards/guidelines for control of noise pollution from stationary diesel generator (DG) Sets

(A) Noise standards for DG sets (15-500 KVA)

The total sound power level, L_w , of a DG set should be less than, $94+10 \log_{10}$, (KVA), dB (A), at the

manufacturing stage, where, KVA is the nominal power rating of a DG set.

This level should fall by 5 dB (A) every five years, till 2007, i.e., in 2002 and then in 2007.

(B) Mandatory acoustic enclosure/acoustic treatment of room for stationary DG sets (5 KVA and above).

Noise from the DG set should be controlled by providing an acoustic enclosure or by treating the room acoustically.

The acoustic enclosure/acoustic treatment of the room should 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 0.5m from the acoustic enclosure/room, and then averaged.

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

(C) Guidelines for the manufacturers/users of DG sets (5 KVA and above).

01 The manufacturer should 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).

02 The user should 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.

03 The manufacturer should furnish noise power levels of the unsilenced DG sets as per standards prescribed under (A).

04 The total sound power level of a DG set, at the users end, shall be within 2 dB(A) of the total sound power level of the DG set, at the manufacturing stage, as prescribed under (A).

05 installation of a DG set must be strictly in compliance with the recommendations of the DG set manufacturer.

06 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 tile DG set from deteriorating with use.

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 of 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 7⁰C 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 10⁰C.

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 the concerned State authorities/NIO.

(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 aquatic flora and fauna.

85. Environmental standards for coal washeries. -

1. Fugitive emission standards

- The difference in the value of suspended particulate matter, delta (A), measured between 25 and 30 metres from the enclosure of coal crushing, plant in the downward and leeward wind direction shall not exceed 150 microgram per cubic metre. Method of measurement shall be High Volume sampling and Average flow rate, not less than

1.1. m³ per minute, using upwind downwind method of measurement.

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 periodical cleaning of the system, heavy rainfall, *etc.*, it becomes 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.

SI. No.	Parameter	Limits
1	pH	5.5-9.0
2.	Total suspended solids	100 mg/l
3.	Oil and Grease	10 mg/l
4.	B.O.D. (3 days 27 deg 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 the 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 water 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 shrinking arrangement.

Water sprinkling by using fine atomizer nozzles 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. Water consumption in the coal washery shall not exceed 1.5 cubic meters per tonne of coal.

The efficiency of the settling ponds of the waste water treatment system of the coal washery shall not be less than 90 percent.

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.

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

86. Water quality standards for coastal waters marine outfalls.

In a coastal segment marine 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 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, the 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 along with rationale/remarks for various parameters, for different designated best uses, are given in Tables 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)

Sl. No.	Parameters	Standards	Rationale/Remarks
(1)	(2)	(3)	(4)
1.	pH range	6.5 – 8.5	General board range, conducive for propagation of aquatic lives, is given. Value largely dependant upon soil-water integration.
Sl. No.	Parameters	Standards	Rationale/Remarks
(1)	(2)	(3)	(4)
2.	Dissolved oxygen	5.0 mg/l or 60 percent saturation value, whichever is higher	Not less than 3.5 mg/l at any time of the year for protection of aquatics lives.
3.	Colour and odour	No noticeable colour or offensive odour.	Specially caused by chemical compounds like creosols, phenols, naptha, pyridine, benzene, toluene etc., causing visible coloration of salt crystal and tainting of fish flesh.

4.	Floating matters	Nothing obnoxious or detrimental for use purposes.	Surfactants should not exceed an upper limit of 1.0 mg/l and the concentration not to cause any visible foam.
5.	Suspended solids	None from sewage or industrial waste origin.	Settleable inert matters not in such concentration that would impair any usages specially assigned to this class.
6.	Oil & 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.
7.	Heavy metals:		Values depend upon:
	Mercury (as Hg)	0.01 mg/l	(i) Concentration in salt. Fish and shell fish.
	Lead (as Pb)	0.01 mg/l	(ii) Average per capita consumption per day
	Cadmium (as Cd).	0.01 mg/l	(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 (synergetic 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.

TABLE 1.2

PRIMARY WATER QUANTITY CRITERIA FOR CLASS SW-II WATERS
(For Bathing, Contract Water Sports and Commercial Fishing)

Sl. No.	Parameter	Standards	Rationale/Remarks
1.	pH range	6.5-8.5	Range does not cause skin or eye irritation and is also conducive for propagating aquatic lives.

2.	Dissolved oxygen	4.0 mg/l or 50 per cent saturation value, which ever 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.
Sl. No.	Parameter	Standards	Rationale/Remarks
4.	Floating matters	Nothing obnoxious or detrimental for use purpose.	None in 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 percent of samples in the year and in 3 consecutive samples in monsoon months.
7.	Biochemical oxygen demand (BOD) (3 days at 27°C)	3 ml/l	Restricted for lathing (aesthetic quality of water'). Also prescribed by IS: 2296-1974.

TABLE 1.3**PRIMARY WATER QUALITY CRITERIA FOR CIASS****SW-III WATER****(For Industrial Cooling, Recreation (non-contact) and Aesthetics)**

Sl. No.	Parameter	Standards	Rationale/Remarks
1.	pH range	6.5-8.5	The range is conducive for propagation of aquatic species and restoring natural.
2.	Dissolved oxygen	3.0 mg/l or 40 per cent saturation value, which ever is higher.	To protect aquatic lives.
Sl. No.	Parameter	Standards	Rationale/Remarks

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 of dissolved Fe and Mn less or equal to 0.5 mg mg/l to avoid scaling effect.
8.	Dissolved manganese (as Man)	0.5 mg/l or less	
* Standards included exclusively for Industrial Cooling purpose, Other parameters same.			

TABLE 1.4

**PRIMARY WATER QUALITY CRITERIA FOR
CLASS SW-IV WATERS**

(For Harbour Waters)

Sl. No.	Parameter	Standards	Rationale/Remarks
1.	pH range	6.5-9.5	The minimum 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 through 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 organism, 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 percent of samples in the year and in 3 consecutive samples in monsoon months.
6.	Biochemical oxygen demand (3 days at 27 ⁰ C)	5 ml/l	To maintain water relatively free from pollution caused by sewage and other decomposable wastes.

TABLE 1.5

**PRIMARY WATER QUALITY CRITERIA FOR
CLASS SW-V WATERS**

(For Navigation and Controlled Waste Disposal)

Sl. No.	Parameter	Standards	Rationale/Remarks
1.	pH range	6.5-9.0	As specified by the 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 is such concentration that would impair any usages specifically assigned to this class.	As in (1) 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 (1) 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.

87. Emission regulations for rayon industry:

(a) Existing plants

Estimation of uncontrolled emission quantity (EQ) of CS₂

For VSF,

EQ= 125 kg of CS₂/t of fibre

For VFY,

EQ= 225 kg of CS₂/t of fibre

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

Where Q-CS₂ 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 CS₂, 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 stack (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.

(b) Ambient air quality monitoring:

The industry shall install three air quality-monitoring stations for CS₂, and H₂S measurements in consultation with State Pollution Control Board (SPCB) to ensure attainment of WHO recommended ambient air quality norms (CS₂ = 100 mg/m³ and H₂S=150 mg/m³ 24 = hr, average).

(c) For new plants/expansion projects being commissioned on or after June 1, 1999.

Permissible emission limits are:

CS₂ = 21 kg/t of fibre

H₂S = 6.3 kg/t of fibre

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

SCHEDULE II

2[SCHEDULE III]

1. Schedule II relating to Rule 3, inserted *vide* G.S.R. 919 (E), dated 12th September, 1988, now omitted by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12.1993).

2. Ins. by G.S.R. 1063 (E) dated 26th December 1989 (w.e.f. 26-12-1989).

(See Rule 3)

Ambient Air Quality Standards in Respect of Noise

Area Code	Category of Area	Limits in dB (A)	Leg-
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note-1. Day time is reckoned in between 6 a.m. and 9 p.m.

Note-2 Nigh time is reckoned in between 9 p.m. and 6 a.m.

Note-3 Silence zone is defined as areas upto 100 metres 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.

Note-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.)

1[SCHEDULE IV]

1. Ins. by G.S.R. 54 (E) dated 5th February 1990 (w.e.f. 05.02.1990).

(See Rule 3)

Standards for Emission of Smoke, Vapour, etc. from Motor Vehicles

(1) Every motor vehicle shall be manufactured and maintained in such condition and shall be so driven that smoke, visible vapour, grit, sparks, ashes, cinders or only 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 co-efficient m-1	Bosch Units	Harridge Units
Full load at a speed of 60% to 70% of maxi- mum engine rated speed declared	3.1	5.2	75
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 opacity 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 emissions under the Indian driving cycle: -

Mass of Carbon Monoxide (CO). Maximum. Grams per KWH	Mass of Hydro Carbons (HC) Maxim. Grams per KWH	Mass of Nitrogen Oxides (NO) 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 be 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 nominal 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 rank 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 in-charge of the vehicle to submit the vehicle for undergoing a test to measure the standard of black smoke or the standard of any other pollutants.
- (b) The driver or any person in-charge 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.

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
$R \leq 150$	12	8
	$12 \frac{18(R-150)}{100}$	$8 + \frac{4(R-150)}{100}$
$150 < R \leq 350$	200	200
$R > 350$	30	12

Light Duty Vehicles:

Reference Mass, rw (Kg)	CO (g/km)	HC (g/km)
1	2	3
$rw \leq 1020$	14.3	2.0
$1020 < rw \leq 1250$	16.5	2.1
$1250 < rw \leq 1470$	18.8	2.1
$1470 < rw \leq 1700$	20.7	2.3
$1700 < rw \leq 1930$	22.9	2.5
$1930 < rw \leq 2150$	24.9	2.7
$rw > 2150$	27.1	2.9

2. Conformity of Production Tests:

Reference Mass, rw (Kg)	CO (g/km)	HC (g/km)
1	2	3
$R \leq 150$	15	8
	$15 + \frac{25(R-150)}{100}$	$10 + \frac{5(R-150)}{100}$
$150 < R \leq 350$	200	200

R > 350	40	15
r w ≤ 1020	17.3	2.7
1020 ≤ r w ≤ 1250	19.7	2.7
1250 ≤ r w ≤ 1470	22.5	2.8
1470 ≤ r w ≤ 1700	24.9	3.0
1700 ≤ r w ≤ 1930	27.6	3.3
1930 ≤ r w ≤ 2150	29.9	3.5
r w ≤ 2150	32.6	3.7

For any of the pollutants referred to above of the three results obtained may exceed the limit specified for the vehicle by not more than 10 percent.

Explanation. -Mass emission standards refer to the gm. of pollutants emitted per km. run of the vehicle, as determined by a chassis dynamometer test using the Indian Driving Cycle.

ANNEXURE

(See paragraph -3)

Breakdown of the Operating Cycle used for the Tests.

Sl. No.	No. of Operation	Acceleration (m/ac2)	Speed (Km/h)	Duration of each Operation(s)	Cumulative Time (s)
1	2	3	4	5	6

01.	Idling	-	-	16	16
02.	Acceleration	0.65	0-14	6	22
03.	Acceleration	0.56	14-22	4	26
04.	Deceleration	-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	34-34	2	78
16.	Acceleration	0.32	34-42	7	85
17.	Deceleration	-0.46	42-47	9	94
18.	Deceleration	-0.52	27-14	7	101
19.	Deceleration	-0.56	14-00	7	108

ANNEWRE -III**(See paragraph 3)****Reference Fuel for type and Production Conformity Tests**

S. No.	Characteristic		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		Not limited but to be reported		P: 16(1967)
4.	Distillation:				P:18 (1967)
	(a)	Initial boiling point	Not limited but to be reported		
	(b)	Recovery upto 200°C percent by Volume Min,	10	10	
	(c)	Recovery upto 125°C 50 per cent by volume	50	50	
	(d)	Recovery upto 130°C 50 percent by volume, Min	90	90	
Sl. No.	Characteristic		Requirements		Method of test (ref. of P: or IS: 1448*)
			87 Octane	93 Octane	
1	2		3	4	5
4.	(e)	Final boiling point Max.	215°C	215°C	
	(f)	Residue percent by volume, Max.	2	2	

*Methods of test for petroleum and its products.

5.	Octane number (Research method) Max.	87	94	P: 27 (1960)
6.	Oxidation stability in minutes, Min.	360	360	P: 28 (1966)
7.	Residue on evaporation mg/100 ml, Max.	4.0	4.0	P: 29 (1960)
				Air-jet 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	0.70	0.70	P: 39 (1967)

ANNEXURE IV

(See paragraph 4)

Limit Values of Exhaust Gas Opacity applicable for Diesel Driven Vehicles The engine tests at steady speed

Nominal Flow G(l/s)	Absorption Co-efficient K(m-1)	Nominal Flow G(l/s)	Absorption Co-efficient
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

¹SCHEDULE ²[V]

(See Rule 12)

Sl. No.	Place at which the discharge of any environment pollutant in excess of prescribed standards occurs or is apprehended to occur	Authorities or agencies to be intimated	Appointed under
1.	Factories as defined under the Factories 1948-		

	(a) Owned by the Central Government and engaged in carrying out the purposes of the Atomic Energy Act, 1962.	(i) Atomic Energy Regulatory Board (AERB).	The Atomic Energy Act, 1962
		(ii) The Ministry of Environment and Forests	
	(b) Factories other than those mentioned in para. (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	³ (i) Controller-	The Mines and
	Minerals Mines and (Regulation and Development) Act, 1957	General of Mines]	Minerals (Regulation and Development) Act, 1957

		3[(ii) Regional Controller of Mines having local jurisdictions	-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 and Forests	-Do-
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 Plantations having local jurisdiction	-Do-
		(iii) The Ministry of Environment and Forests	
5.	Motor Vehicle as defined under the Motor Vehicles Act, 1939	(i) State Transport Authority	The Motor Vehicles Act, 1939

		(ii) Regional Transport Authority having Regional jurisdictions	-Do-
		(iii) The Ministry of Environment and 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 and Forests	-Do-

1[SCHEDULE VI]

(See 'Rule 3-A)

**General Standards for discharge of environmental
Pollutants Part-A Effluents**

Sl. No.	Parameters	STANDARDS			
		Inland surface Water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3 (a)	3 (b)	3 (c)	3 (d)
1.	Colour and odour	See 6 of	See 6 of	See 6 of Annexure-I	See 6 of Annexure-I

THE ENVIRONMENT (PROTECTION)

2.	Suspended solids mg/l, Max.	100	600	200	(a) For process waste water-100. For cooling water effluent 10 percent above total suspended matter of influent.
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.	² [***]				
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 ⁰ C above the receiving water temperature	Shall not exceed 5 ⁰ C above the receiving water temperature		
7.	Oil and grease mg/1 Max.	10	20	10	20
8.	Total residual chlorine mg/1 Max.	1.0			1.0
9.	Ammonical nitrogen (as N), mg/1 Max.	50	50		50
10.	Total Kjeldhal nitrogen ³ [N];	100			100
11.	Free ammonia ³ [NH ₃] mg/1, Max.				
12.	Biochemical oxygen demand (5 days at 20 ⁰ C) ³ [mg/1, Max.]	30	350	100	100

1. Ins. by G.S.R. 422 (E), dated 19th May, 1993 (w.e.f. 19.05.1993).
2. Omitted by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12. 1993).
3. Subs. by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12. 1993).

13.	Chemical Oxygen demand, mg/1, Max.	250			250
14.	Arsenic (as As). ¹ [mg/1], Max.	0.2	0.2	0.2	0.2

THE ENVIRONMENT (PROTECTION)

15.	Mercury (As Hg), mg/1, Max.	0.01	0.01		0.01
16.	Lead (as Pb) mg/1, Max	0.1	1.0		2.0
17.	Cadmium (as Cd) mg/1, Max.	2.0	1.0		2.0
18.	Hexavalent chromium (as Cr+ 6), mg/1, Max.	0.1	2.0		1.0
19.	Total chromium (as Cr) mg/1, Max.	2.0	2.0		2.0
20.	Copper (as Cu) mg/1, Max.	3.0	3.0		3.0
21.	Zinc (as Zn) mg/1, Max.	5.0	15		15
22.	Selenium (as Se) mg/1, Max.	0.05	0.05		0.05
23.	Nickel (as Ni) Mg/1, Max. 2[* * *]	3.0	3.0		5.0
27.	Cyanide (as CN) mg/1, Max. 2[* * *]	0.2	2.0	0.2	0.2
29.	1[Fluoride] (as F) mg/1, Max. 2[* * *]	2.0	15		15
30.	Dissolved phosphates (as P), mg/1, Max. 2[* * *]	5.0			
32.	Sulphide (as S) mg/1, Max.	2.0			5.0
33.	Phenolic compounds 1[as C ₆ H ₅ OH] mg/1, Max.	1.0	5.0		5.0

1. Subs. by G.S.R. 80(E), dated 31st December, 1993 (w.e.f. 31.12.1993).

2. Omitted by G.S.R. 80(E), dated 31st December, 1993 (w.e.f. 31.12.1993).

34.	Radioactive materials: (a) Alpha emitters 1[Micro curie/ml] Max.	10 ⁻⁷	10 ⁻⁷	1[0-8]	10 ⁻⁷
	(b) Beta emitters 1[Micro curie/ml] Max.	10 ⁻⁶	10 ⁻⁶	10 ⁻⁷	1[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 Man)	2 mg/1	2 mg/1		2 mg/1
37.	Iron (as Fe)	3mg/1	3mg/1		3mg/1
38.	Vanadium (as V)	0.2 mg/1	0.2 mg/1		0.2 mg/1
39.	Nitrate Nitrogen	10 mg/1			20 mh/1
40.	Pesticides: (microgm per lit, maximum)				
	(i) Benzene hexa-chloride	10	_____	10	10
	(ii) Carbaryl	10	_____	10	10
	(iii) DDT	10	_____	10	10
	(iv) Endosulfan	10	_____	10	10
	(v) Diamethoate	450	_____	450	450
	(vi) Penitrothion	10	_____	10	10
	(vii) Malathion	10	_____	10	10
	(viii) Phorate	10	_____	10	10
	(ix) Methyl Parathion	10	_____	10	10

(x)Phenthoate	10	_____	10	10
(xi)Pyrethrums	10	_____	10	10
(xii) Copper Oxychloride	9600	_____	9600	9600
(xiii)Copper Sulphate	50	_____	50	50
(xiv) Ziram	1000	_____	1000	1000
(xv) Sulphur	30	_____	30	30
(xvi) Parsouat	2300	_____	2300	2300
(xvii) Proponil	7300	_____	7300	7300
(xviii) Nitrogen	780	_____	780	780

1. Subs. by G.S.R. 80(E), dated 31st December, 1993 (w.e.f. 31.12.1993).

PART B

Waste Water Generation Standards

Sl. No.	Industry	Quantum
1.	Integrated Iron & Steel	16 ¹ [m ³ /tonne] of finished steel
2.	Sugar	0.4 ¹ [m ³ /tonne] of cane crushed

3.	Pulp & Paper Industries	
	(a) Larger pulp & paper	
	(i) Pulp& paper	175 ¹ [m ³ /tonne] of paper produced
	¹ [(ii) Viscose Staple Fibre	150 m ³ /tonne of product
	(iii) Viscose Filament Yarn	500m ³ /tonne of Product]
	(b) Small pulp & paper:	
	(i) Agro-residue based	150 ¹ [m ³ /tonnelof paper produced
	(ii) Waste paper based	50 ¹ [m ³ /tonne] of paper produced
4.	Fermentation Industries	
	(a) Maltry	3.5 ¹ [m ³ /tonnel of grain produced
	(b) Brewery	0.25 M ³ /KL of beer produced
	(c) Dis6liery	12 M ³ /KL of alcohol produced
5.	Caustic Soda	
	(a) Membrane cell process	¹ [m/tonne] of caustic soda produced excluding cooling tower blow down

	(b) Mercury cell process	4 ¹ [m ³ /tonne] of caustic soda produced (mercury hearing), 10% blow down permitted for cooling tower
6.	Textile Industries: Man-made Fibre	
	(i) Nylon & Polyster	120 ¹ [ml/tonne] of Fibre produced
	(ii) Viscose rayon	150 ¹ [m ³ /tonne] of product 28
7.	Tanneries	28 ¹ [m ³ /tonne] of raw hide
8.	Starch, Glucose and related products	8 ¹ [m ³ /tonne] of maize crushed
9.	Dairy	3M ³ /KL of Milk
10.	Natural rubber processing industry	4 ¹ [m ³ /tonne] of rubber
11.	Fertiliser	
	(a) Straight nitrogenous fertiliser	5 ¹ [m ³ /tonne] of urea or equivalent produced
	(b) Straight phosphatic fertiliser (SSP & TSP) including manufacture of any acid	0.5 ¹ [m ³ /tonne] of SSP/TSP
	(c) Complex fertiliser	Standards of nitrogenous and phosphatic fertiliser are applicable depending on the primary product.

1. Subs. by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12.1993).**PART C****Load Based Standards****1. Oil Refinery Industry:**

Parameter	Quantum in ¹ [Kg]/1000 tonnes of crude processed
Oil & grease	10.00
Phenol	0.70
BOD	10.50
Suspended solids	14.00
Sulphide	0.35
2. Large Pulp & Paper, News Print/Rayon grade plants of capacity above 24000 ¹ [tonne]/Annum	
Parameter	Quantum
Total Organic Chloride (TOCI)	2 ¹ [Kg/tonne] of product.

PART D**General Emission Standards****I. Concentration Based Standards:**

Sl. No.	Parameter	Standard Concentration not to exceed (in mg/Nm ³)

1.	¹ [Particulate Matter (PM)]	150
2.	¹ [Total Fluoride]	¹ [25]
3.	Asbestos	¹ [4Fibres/ccanddustshould not be more then 2 mg/Nm ³]
4.	Mercury	0.2
5.	Chlorine	15
6.	Hydrochloric acid vapour and mist ² [***]	35
8.	Sulphuric acid mist	50
9.	Carbon monoxide ² [***]	¹ [1% max (v/v)]
11.	Lead ² [***]	¹ [10 mg(Nm ³)]

1. Subs. by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12.1993).

2. Omitted by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12.1993).

II. Equipment Based Standards:

¹[For dispersal of sulphur dioxide, a minimum stack height limit is accordingly prescribed as below:]

Sl. No.	Parameter	Standard
1.	Sulphur dioxide	Stack-height limit in ¹ [metre]

	(i) Power generation capacity: -500 MW and more -200/210 MW and above to less than 500 MW -less than 200/210 MW	275 220 $H = 14 (Q)^{0.3}$
	(ii) Steam generation capacity -Less than 2 ¹ [tonne/hr] -2 to 5 ¹ [tonne/hr] -5 to 10 ¹ [tonne/hr] -10 to 15 ¹ [tonne/hr] -15 to 20 ¹ [tonne/hr] -20 to 25 ¹ [tonne/hr] -25 to 30 ¹ [tonne/hr] -More than 30 T/hr	Coal consumption per day ² [***]

Note- H-Physical height of the stack in ¹[Metre]

Q-Emission rate of SO₂ in kg/hr. ²[***]

III. Load/Mass-based Standards:

Sl. No.	Industry	Parameter	Standard
1.	¹ [Fertiliser] (Urea) Commissioned prior to 1-1-1982 Commissioned after 1-1-1982	¹ [Particulate Matter PM]) ¹ [particulate Matter PM])	2 ¹ [kg/tonne] of product 0.5 ¹ [kg/tonne] of product

2.	Copper, Lead and ¹ [Zinc Smelter Converter]	Sulphur dioxide	4 ¹ [kg/tonne] of concentrated ¹ [(100%) and acid produced]
3.	Nitric Acid	Oxides of Nitrogen	3 ¹ [kg/tonne] of weak acid (before concentration) produced
4.	Sulphuric Acid	Sulphur dioxide	4 ¹ [kg/tonne] of concentrated (100%) acid produced
5.	Coke Oven	Carbon monoxide	3 ¹ [kg/tonne] of coke produced
6.	Oil Refineries		

1. Subs. by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12.1993).

2. Omitted by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12.1993).

(a) ¹ [For the oil refineries the following standards shall be applicable:]

Process	Parameter	Standard
-Distillation ¹ [(Atmospheric plus Vaccum)]	Sulphur dioxide	0.25 ¹ [kg/tonne] of feed in this process
-Catalytic cracker	-Do-	2.5 ¹ [kg/tonne] of feed in this process
-Sulphur Recovery Unit	-Do-	120 ¹ [kg/tonne] of Sulphur in the feed
² [***]		
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		
¹ [PBSW = Pre Backed Side Work]		
¹ [PBCW = Pre Backed Centre Work]		
8. Glass Industry		
(a) Furnace Capacity		
(i) Up to the product draw-do- capacity of 60 MT/Day	Particulate matter	2 kg/hr
(ii) Product draw capacity more than 60 MT/Day	-Do- Drawn	0.8 Kg/MT of product

PART E

Noise Standards

A. Noise limits for Automobiles ¹[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 up to 4 MT	85
(d) Passenger or Commercial vehicles above 4 MT and up to 12 MT	89
(e) Passenger or Commercial vehicles exceeding 12 MT	91

B. Domestic appliances and construction equipments at the manufacturing stage to be achieved by 31st December, 1993

(a) Window Air Conditioners of I ton to 1.5 ton	68
(b) Air ¹ [coolers]	60
(c) Refrigerators	46
(d) Diesel generator for domestic purposes	85-90
(e) Compactors (rollers), Front loaders, Concrete mixers, Cranes (movable), Vibrators and Saws.	75

1. Subs. by G.S.R. 80(E), dated 31st December, 1993 (w.e.f. 31.12.1993).
2. Omitted by G.S.R. 80(E), dated 31st December, 1993 (w.e.f. 31.12.1993).

ANNEXURE I

(For the purposes of Parts A, B and C)

The State Boards shall follow the following guidelines in enforcing the standards specified under Schedule VI: -

1. The waste waters and gases are to be treated with the best available technology ¹[(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 minimise the discharge of wastes into the environment.
3. The industries are to be encouraged for recovery of biogas, energy and reusable materials.
4. While permitting the discharge of effluents and omissions 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 water is not affected. Where such quality is likely to be affected, 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 this Schedule ¹[shall also apply to all other ¹[effluents] discharged such as] 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 chloric acid plant.

²[Omitted]

10. All effluents discharged including from the industries such as cotton textile, composite woollen mills, synthetic rubber, small pulp and paper, natural rubber, petrochemicals, tanneries, paint, dyes, slaughter houses, food & fruit processing and dairy ¹[industries] into surface waters shall conform to the BOD limits specified above, namely, 30 mg/l. For discharge of 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.

³[***]

12. In case of fertilizer industry the limits in respect of chromium and ¹[fluoride] shall be complied with at the outlet of chromium and ¹[fluoride] removal units respectively.

13. In case of pesticides:

(a) The limits should be complied with at the end of 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.

1. Subs. by G.S.R. 80(E), dated 31st December, 1993 (w.e.f 31.12.1993).

2. Clause 9 was omitted by G.S.R. 176(E), dated 2nd April, 1996 (w.e.f 3.4.1996).

3. Omitted by G.S.R. 80(E), dated 31st December, 1993 (w.e.f 31.12.1993).

(c) In case metabolites and isomers of the Pesticides in the given list are found in significant concentrations, standards should be prescribed for these also in the same concentration as the individual pesticides.

(d) Industries are required to analyse pesticides in waste water by advanced analytical methods such as GLC/HPLC.

¹[14. The chemical oxygen demand (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 Wastes (Management and Handling) Rules, 1989 the State Boards 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 effluents into the public sewer shall be applicable only if such sewer lead to a secondary treatment including biological treatment system, otherwise these discharge into sewers shall be treated as discharge into inland surface waters.]

ANNEXURE II

(For the purpose of Part D)

1. 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 $400 \text{ mg/}^2[\text{Nm}^3]$ and $250 \text{ Mg/}^2[\text{Nm}^3]$ for the plants up to 200 t/d and more than 200 t/d capacities respectively.
- (b) In respect of calcination process (e.g. aluminium plants), Kilns and Step Grate Bagasse-fired Boilers. Particulate Matter (PM) emissions shall be within $250 \text{ mg/}^2[\text{Nm}^3]$.
- (c) In case of thermal power plants commissioned prior to 1-1-1982 and having generation capacity less than 62.5 MW, the PM emission shall be within $350 \text{ mg/}^2[\text{Nm}^3]$.
- (d) In case of Lime Kilns of capacity more than 5t/day and up to 40t/day, the PM emission shall be within $500 \text{ Mg/}^2[\text{Nm}^3]$.
- (e) In case of horse shoe/Pulsating Grate and Spreader Stroker Bagasse-fired-Boilers, the PM emission shall be within 500 (12% CD,) and 800 (12% CO,) $\text{mg/}^2[\text{Nm}^3]$ respectively. In respect of these boilers, if more than attached to a single stack, the emission standard 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 $2 \text{ mg/}^2[\text{Nm}^3]$.
- (g) In case of the urea plants commissioned after 1- 1 -1982, coke ovens and lead glass units, the PM emission shall be within $50 \text{ Mg/}^2[\text{Nm}^3]$.
- (h) In case of small boilers of capacity less than 2 tons/hr and between 2 to 5 tons/hr the PM emissions shall be within 1600 and 1200 $\text{Mg/}^2[\text{Nm}^3]$.
- (i) In case of integrated Iron and Steel Plants, PM emission up to $400 \text{ Mg/}^2[\text{Nm}^3]$ shall be allowed during oxygen lancing.
- (j) In case of stone crushing units the suspended PM contribution value at a distance of 40 metres from a controlled, isolated as well as from a unit located in the cluster should be less than $600^2[\text{micrograms/Nm}^3]$.

3[***]

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;

- 1. Ins. by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f 31.12. 1993).**
- 2. Subs. by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12.1993).**
- 3. Omitted by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f. 31.12.1993).**

- (iv) Regular cleaning and Wetting of the ground within the premises;
- (v) Growing of a green belt along the periphery,

(k) In case of Ceramic industry, form the other sources of pollution, such as basic raw material and processing operations, heat recovery dryers, mechanical finishing operation, all possible preventive measures should be taken to control PM emissions as far as practicable.

2. The total fluoride emissions in respect of Glass and Phosphatic Fertilizers shall not exceed 5 mg/NM³ and 25 mg/NM³ respectively.

3. ¹[In case of copper, lead and zinc smelting, the off-gases may, as far as possible, be utilized for manufacturing sulphuric acid.]

²[4. In case of cupolas (Foundries) having capacity (melting rate) less than 3 tonne/hour, the particulate matter emission shall be within 450 mg/Nm³. In these cases it is essential that stack is constructed over the cupola 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 are Furnaces and Induction Furnaces, provision has to be made for collecting the fumes before discharging the emissions through the stack.]

- 1. Subs. by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f 31.12.1993).**
- 2. Added by G.S.R. 80 (E), dated 31st December, 1993 (w.e.f 31.12.1993).**

3. Ins. by G.S.R. 176(E), dated 2nd April, 1996 (w.e.f 3.4.1996).**⁴[SCHEDULE VII]****[See Rule (3B)]****National Ambient Air Quality Standards (NAAQS)****4. Ins. by G.S.R. 176(E), dated 2nd April, 1996 (w.e.f 3.4.1996).**

Pollutant	Time weighted Average	Concentration in Ambient Air			
		Industrial Area	Residential Rural and other area	Sensitive Area	Method of measurement
1	2	3	4	5	6
Sulphur Dioxide (SO) ₂	Annual Average*	80 ug/m ³	60 ug/m ³	15 ug/m ³	-Improved West and Gaeke method
	24 hours**	120 ug/m ³	80 ug/m ³	30 ug/m ³	- Ultraviolet Fluorescence
Oxides of nitrogen as No ²	Annual Average*	80 ug/m ³	60 ug/m ³	15 ug/m ³	- Jacob & Hochheiser modefied (Na-Arsenite) Method
	24 hours**	120 ug/m ³	80 ug/m ³	30 ug/m ³	-Gas Phase Chemiluminescence
Suspended pariculate Matter (SPM)	Annual Average*	360 ug/m ³	140 ug/m ³	70 ug/m ³	- High Volume Sampling
	24 hours**	500 ug/m ³	200 ug/m ³	100 ug/m ³	-[Average flow rate not less than 1.1 m ³ /minute]

Respirable particulate Matter (size less than 10 μm) (RPM)	Annual Average*	120 $\mu\text{g}/\text{m}^3$	60 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$	-Respirable particulate matter sampler.
	24 hours**	150 $\mu\text{g}/\text{m}^3$	100 $\mu\text{g}/\text{m}^3$	75 $\mu\text{g}/\text{m}^3$	
Lead (Pb)	Annual Average*	1.0 $\mu\text{g}/\text{m}^3$	0.75 $\mu\text{g}/\text{m}^3$	0.50 $\mu\text{g}/\text{m}^3$	-AAS method after sampling using
	24 hours**	1.5 $\mu\text{g}/\text{m}^3$	1.00 $\mu\text{g}/\text{m}^3$	0.75 $\mu\text{g}/\text{m}^3$	EMP 2000 or equivalent-filter paper.
Carbon Monoxide	8 hours**	5.0 $\mu\text{g}/\text{m}^3$	2.0 $\mu\text{g}/\text{m}^3$	1.0 $\mu\text{g}/\text{m}^3$	-Non dispersive, infrared spectroscopy.
	1 hours	10.0 $\mu\text{g}/\text{m}^3$	4.0 $\mu\text{g}/\text{m}^3$	2.0 $\mu\text{g}/\text{m}^3$	

* Annual Arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.

** 24 hourly/8 hourly values shall be met 98% of the time in a year, 2% of the time, it may exceed but not on two consecutive days.

Note. -

1. National Ambient Air Quality Standard: The levels of a air quality necessary with an adequate margin of safety, to protect the public health, vegetation and property.
2. Whenever and wherever two consecutive values exceeds die limit specified above for the respective category, it shall be considered adequate, reason to institute regular/continuous monitoring and furter investigations.].

APPENDIX A

FORM I

(See Rule 7)

Notice of Intention to have Sample Analysed

To.....

Take notice that is intended to have analysed the sample of*which has been taken today, the.....day of.....19.....from..... (Name and designation of the person who takes the sample).....

*Specify the place from where the sample is taken.

(Seal)

Date.....

FORM II

(See Rule 8)

Memorandum to Government Analyst

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 samples taken.

Name and designation of person who sends the sample.

(SEAL)

Date.....

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.....

*.....a sample ofor analysis.

The-sample was in a condition fit for analysis as reported below.

I further certify that I have analysed the afore-mentioned sample on.....and declare that the result of the analysis to be as follows:

**.....
.....

The condition of seals, fastening of samples on receipt was as follows:

Signed this..... day of19.....

Address.....

Signature
(Government Analyst)

To
.....

* Here write the names of the officer/authority from whom the sample was obtained.

**Here write full details of analysis and method of analysis

FORM IV

(See Rule 11)

Form of Notice

By registered post-acknowledgement due

From

Shri.....

.....

To.....

.....

Notice under Section 19(b) of the 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 Environment (Protection) Act, 1986, of my/our intention to file a complaint in the Court against.....(3) for violation of sectionof the Environment (Protection) Act, 1986.

In support of my/our notice, I am/we are enclosing the following documents (3) as evidence of proof of violation of the Environment (Protection) Act, 1986.

Place.....

Date

Signature
(s)

Explanation:

(1) In case the notice is given in the name of a company, documentary evidence authorising the person to sign the notice on behalf of the company shall be enclosed to this notice.

Company for this purpose means a company defined in the 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/operating unit, indicate the name/location/nature of activity, etc.

(3) Documentary evidence shall include photographs/technical reports/health reports of the area, etc., for enabling enquiry into the alleged violation/ offence.

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- (STC Code).
- (iii) Production capacity-Units-
- (iv) Year of establishment.
- (v) Date of the last environmental statement submitted.

PART - B**Water and Raw Material Consumption**(1) 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)	(1)	(2)
(2)		
(3)		
(2) Raw material consumption		
*Name of raw materials	Name of products	Consumption of raw material per unit
		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.

1. Subs. by G.S.R. 386(E), dated 22nd April, 1993 (w.e.f.22.04.1993), previously inserted by G.S.R. 329(E) dated 13th March, 1992 (w.e.f. 13.03.1992).

PART - C

Pollution discharged to environment/unit of output.

(Parameter as specified in the consent issued)

(1) Pollution	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
(a) Water			
(b) Air			

PART - D

Hazardous Wastes

(as specified under Hazardous Wastes (Management and

Handling) Rules, 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
(a) From process		
(b) From pollution control facilities.		

PART - E
Solid Wastes

	Total Quantity	
	During the previous financial year	During the current financial year
(a) From process		
(b) From pollution control facility		
(c) (1) Quantity recycled or re-utilised within the unit		
(2) Sold		
(3) Disposed		

PART-F

Please specify the characterisation (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

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 abatement of pollution, prevention of pollution.

PART - I

Any other particulars for improving the quality of the environment.]