INDEX

The Environment (Protection) Rules, 1986

[1]SCHEDULE – I **
(See rule 3)

S. No.	Industry	Parameter	Standards	
1.	2.	3.	4.	
1.	**Caustic Soda Industry**		Concentration not to exceed, milligram 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	5.0 to 9.0	
		*Final effluent is the combined effluent from (a) cell house, (b) brine plant, (c) chlorine handling (d) hydrogen handling (e) hydrochloric acid plant.		
2.	**Man-made fibers (Synthetic)**		Concentration not to exceed milligram per liter (except for pH)	
		Suspended solids	100	
		Bio-Chemical oxygen demand [BOD – 3days at 27°C]	30	
		pH	5.5 to 9.0	
3.	**Oil refinery industry**			(Quantum Kg/1000t crude Processed)
		Oil and grease	10	7
		Phenol	1	0.7
		Sulphide	0.5	0.35
		Bio-Chemical oxygen demand, BOD (3days at 27°C)	15	10.5
		Suspended solids	20	14
		pH	6 to 8.5	

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

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

➢ Standards notified as Sl. No. 60 may also be referred.

1.	2.	3.	4.
4.	**Sugar Industry**		Concentration not exceed, milligram per litter
		Bio-chemical oxygen demand, 5 days 20°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, milligram per liter (except pH and temperature)
	Condenser cooling waters (once through cooling system)	pH	6.5 – 8.5
		Temperature	Not more than 5°C higher than the intake water temperature
		Free available chlorine	0.5
	Boiler blowdowns	Suspended solids	100
		Oil and grease	20
		Copper (total)	1.0
		Iron (total)	1.0
	Cooling tower blowdown	Free available chlorine	0.5
		Zinc	1.0
		Chromium (total)	0.2
		Phosphate	5.0
		Other corrosion inhibiting material	Limit to be established on case by case basis by Central Board in case of Union territories and State Board in case of States.
	Ash pond effluent	pH	6.5 – 8.5
		Suspended solids	100
		Oil and grease	20

1.	2.	3.	4.
6.	**Cotton textile industries (composite and processing)**		Concentration not to exceed, milligram per liter (except for pH and bioassay)
	Common :	pH	5.5. to 9.0
		Suspended solids	100
		Bio-chemical oxygen demand, 5 days 20^{o}C	150
		Oil and grease	10
		Bio-assay test	90% survival of fish of after 96 hours.
	Special :	Total chromium (as Cr)	2
		Sulphide (as S)	2
		Phenolic compounds (as C_4H_2OH)	5

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

Where the quality requirement of the recipient system so warrants, the limit of BOD should be lowered upto 30 according to the requirement by the State Boards for the 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 State and the Central Board for the Union territories if the disposal of the effluent is to be made on land.

7.	**Composite woollen mills**		Concentration not to exceed, milligram per liter (except for pH and bioassay)
	Common :	Suspended solids	100
		PH	5.5 to 9.0
		Bio-chemical oxygen demand, 5 day 20oC.	100
		Oil and grease	10
		Bio-assay	90% survival of fish after 96 hours.
	Special	Total chromium (as Cr)	2
		Sulphide (as S)	2
		Phenlolic Compounds (as C_6H_5OH)	5

1.	2.	3.	4.

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

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

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

➢ [1]**8**	**Dye and Dye Intermediate Industry**	Concentration not to exceed milligrams per liter (except for pH, temperature and bio-assay)
	Suspended Solids	100
	pH	6 to 8.5
	Temperature	Shall not exceed 5°C above the ambient temperature of the receiving body.
	Mercury (as Hg)	0.01
	Hexavalent Chromium (as Cr)	0.1
	Total Chromium (as Cr)	2.0
	Copper (as Cu)	3.0
	Zinc (as Zn)	5.0
	Nickel (as Ni)	3.0
	Cadmium (as Cd)	2.0
	Chloride (as Cl)	1000
	Sulphate (as SO_4)	1000
	Phenolic Compounds (as C_6H_5OH)	1.0
	Oil ad Grease	10
	Bio-assay Test (with 1:8 dilution of effluents)	90% survival of Test animals after 96 hours.

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

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1. Sl. No. 8, 9 and 10 and entries relating thereto inserted vide S.O.393(E) dated 16.4.1987 published in the Gazette No. 185 dated. 16.4.1987.

➢ Standards notified at Sl. No. 45 may also be referred.

1.	2.	3.	4.
9.	**Electroplating Industries**		Concentration not to exceed milligrams per liter (except for pH and temperature)
		pH	0.6 to 9.0
		Temperature	Shall not exceed 5°C above the ambient temperature of the receiving body.
		Oil and Grease	10
		Suspended Solids	100
		Cyanide (as CN)	0.2
		Ammonical Nitrogen (as N)	50
		Total Residual Chlorides (as Cl)	1.0
		Cadmium (as Cd)	2.0
		Nickel (as Ni)	3.0
		Zinc (as Zn)	5.0
		Hexavalent Chromium (as Cr)	0.1
		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 Total dust Plant Capacity**		Not to exceed milligrams per normal cubic meter
	200 tonnes per day	(All Sections) Total Dust	400
	Greater than 200 tonnes per day	All Section	250

The Central and State Pollution Control Boards may fix stringent standards, not exceeding 250 milligrams per normal cubic meter for smaller plants and 150 milligrams per normal cubic meter 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 emissions 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 emissions values for conformity to standards.

1.	2.	3.	4.
➢ [1]11	**Stone Crushing unit**	Suspended particulate matter	The suspended particulate matter measured between 3 meters and 10 meters form any process equipment of a stone crushing unit shall not exceed 600 micrograms per cubic meter.
[2]12	**Coke ovens**	Bio-chemical oxygen demand, 5 days 20°C	Concentration in the effluents when discharged into inland surface waters not be exceed milligram per liter (except for pH).
		pH	5.5 – 9/0
		Biochemical Oxygen Demand (27°C for 3 days)	30
		Suspended Solids	100
		Phenolic Compounds (as C_6H_5OH)	5
		Cyanides (as CN)	0.2
		Oil and Grease	10
		Ammonical Nitrogen (as N)	50
13.	**Synthetic Rubber**		Concentration in the effluents when discharged into inland surface waters not be exceed milligram per liter (except for colour and pH)
		Colour	Absent
		pH	5.5 – 9.0
		Biochemical Oxygen Demand [3][BOD (3 days at 27°C)]	50
		Chemical Oxygen Demand	250
		Oil and Grease	10.0

1. S.No. 11 and entries relating thereto inserted vide S.O.443(E) dated 18.4.1987 published in the Gazette No. 206 dated 18.1.1988.
2. S.Nos. 12 to 24 and entries relating thereto inserted vide S.O.64(E) published in the Gazette No. 42 dated 18.1.1988.
3. Substituted by Rule 2 of the Environment (Protection)(Amendment) Rules, 1996 notified vide G.S.R.176(E) dated 2.4.1996.

➢ Standards notified at Sl. No. 37 may also be referred.

1.	2.	3.	4.
14.	**Small Pulp and Paper Industry**		Concentration not to exceed mg/l (except for pH and sodium absorption ratio)
	* Discharge into inland surface water	pH	5.5 – 9.0
		Suspended Solids	100
	Disposal on land	BOD	30
		pH	5.5 – 9.0
		Suspended Solids	100
		BOD	100
		Sodium Absorption Ratio	26
[1]**15**	**Fermentation Industry (Distilleries, Maltries and Breweries)**		Concentration in the effluents not to exceed milligram per liter (except for pH and colour and odour).
		PH	5.5 – 9.0
		Colour & Odour	All efforts should be made to remove colour and unpleasant odour as far as practicable.
		Suspended Solids	100
		[2][BOD (3 days at 27oC)]	30
		[3][- disposal into inland surface wasters or river/stream	100
		-- disposal on land or for irrigation]	
		** [(2)… …(7)]	

1. Entries relating to S.No. 15 corrected in terms of S.O.12(E), dated 8.1.1990 published in the Gazette No. 10 dated 8.1.1990.
2. Substituted by Rule 2 of the Environment (Protection)(Amendment) Rules, 1996 notified vide GSR 176(E) dated 2.4.1996
3. Substituted by Rule 3(a) of the Environment (Protection)(Amendment) Rules, 1996 notified vide GSR 176(E) dated 2.4.1996.

Note : (1) * Waster water generation shall not exceed 250 meter cube per tonne of paper produced.

(2) ** [(2)……(7)]

1.	2.	3.	4.			
16.	**Leather Tanneries**		Concentration in the effluent not to exceed milligram per liter (except for pH and percent sodium).			
			Inland Surface Waters	Public Sewers	Land for irrigation	Marine Coastal areas
			(a)	(b)	(c)	(d)
		Suspended Solids	100	00	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	200	---
		Hexavalent Chromium (Cr+6)	0.1	0.2	0.1	1.0
		Total Chromium (as Cr)	2.0	2.0	2.0	2.0
		Sulphides (as S)	2.0	5.0	---	5.0
		Sodium percent	---	60	60	---
		Boron (as B)	2.0	2.0	2.0	---
		Oil & Grease	10	20	10	20
17.	**Fertilizer Industry**			Concentration in the effluents not to exceed milligram per liter (except for pH)		
		Effluents		Plants Commissioned January 1, 1982 onwards	Plants Commissioned prior to January 1, 1982	
		– *Straight Nitrogenous Fertilizers, Excluding the Calcium Ammonium Nitrate and Ammonium Nitrate Fertilizers*				
				(a)	(b)	
		pH		6.5 to 8.0	6.5 to 8.0	

1. Omitted in Rule 3(b) of the Environment (Protection)(Amendment) Rule, 1996 notified vide GSR 176(E) dated 2.4.1996.

2. Substituted by Rule 2 of the Environment (Protection)(Amendment) Rules, 1996 notified vide GSR 176(E) dated 2.4.1996.

1.	2.	3.	4.	
		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
		-- *Straight Nitrogenous Fertilizers, Excluding the 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 to 8.0	6.5 to 8.0
		Ammonical Nitrogen	50	75
		Total Kjeldahl Nitrogen		150
		Free Ammonical Nitrogen	4	4
		Nitrate Nitrogen	20	20
		Cyanide as CN	0.2	2.0
		Vanadium as V	0.2	2.0
		Arsenic as As	0.2	2.0
		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 compiled with at the outlet of Chromate removal unit.

1.	2.	3.	4.	
		-- *Complex Fertilizers, excluding 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 to 8.0	6.5 to 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	2.0
		Vanadium as V	0.2	2.0
		Arsenic as As	0.2	2.0
		Phosphate as P	5	5
		Suspended Solids	100	100
		Oil and Grease	10	10
		* Fluoride as F	10	10
		** Hexavalent Chromium as Cr	0.1	0.1
		** Total Chromium as Cr	2.0	2.0
		-- *Complex Fertilizers, including Calcium Ammonium Nitrate, Ammonium Nitrate & Ammonium Nitrophosphate Fertilizers*	Plants Commissioned January 1, 1982 onwards	Plants Commissioned prior to January 1, 1982
			(a)	(b)
		pH	6.5 to 8.0	6.5 to 8.0

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

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

1.	2.	3.	4.
		Ammonical Nitrogen	50	75
		Free Ammonical Nitrogen	100	100
		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
		Phosphate as P	5	5
		Oil and Grease	10	10
		Suspended Solids	100	100
		* Fluoride as F	10	10
		** Hexavalent Chromium as Cr	0.1	0.1
		** Total Chromium as Cr	2.0	2.0
		-- *Straight Phosphate Fertilizers*		
		pH	7.0 to 9.0	
		Phosphate as P	5	
		Oil and Grease	10	
		Suspended Solids	100	
		* Fluoride as F	10	
		** Hexavalent Chromium as Cr	0.1	
		** Total Chromium as Cr	2.0	
	<u>Emissions</u>			
	Phosphatic Fertilizers (Fluorides and particulate matter emission)	Phosphoric acid manufacturing unit Granulation mixing and grinding or rock phosphate	25 milligram per normal cubic meter as total Fluoride 150 milligram per normal cubic meter of particulate matter.	
	Urea (Particulate matter emission)	Pricing Tower Commissioned prior to January 1, 1982	150 milligram per normal cubic meter or 2 kilogram per tone of product.	
		Commissioned after 1-1-1982	50 milligram per normal cubic meter or 0.5 kilogram per tone of product.	

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

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

1.	2.	3.	4.
18.	**Aluminium**	Particulate Matter Emissions	
		-- Calcium	255 milligram per normal cubic meter of particulate.
		-- Smelting	150 milligram per normal cubic meter of particulate matter.
19.	**Calcium Carbide**	Particulate Matter Emissions	
		-- Kiln	250 milligram per normal cubic meter.
		-- Arc Furnace	150 milligram per normal cubic meter.
20.	**Carbon Black**	Particulate Matter Emission	150 milligram per normal cubic meter.
21.	**Copper, Lead and Zinc Smelting**	Particulate Matter Emission in concentrator	150 milligram per normal cubic meter.
		Emission of Oxides of Sulphur in Smelter & Convertor	Off-gases must be utilised for sulphuric acid manufacture. The limits of sulphur dioxide emission from stock shall not exceed 4 kilogram per tone of concentrated (One hundred percent) acid produced.
22.	**Nitric Acid (emission oxides of nitrogen)**	Emission of Oxides of Nitrogen	3 Kilogram of oxides of nitrogen per tone of weak acid (before concentration)produced.
23.	**Sulphuric Acid (Emission of sulphur dioxide and acid mist)**	Sulphur Dioxid Emissions	4 kilogram per tone of concentrated (one hundred per cent) acid to produced
		Acid mist	50 milligram per normal cubic meter.
24.	**Iron & Steel (Integrated)**	Particulate Matter Emission	
		-- Sintering Plant	150 milligram per normal cubic meter.
		-- Steel making	

1.	2.	3.	4.
		-- during normal operations	150 milligram per normal cubic meter.
		-- during oxygen lancing	400 milligram per normal cubic meter.
		-- Rolling Mill	150 milligram per normal cubic meter.
		-- Carbon monoxide from coke oven	3 kilogram per tone of coke produced.
[1]25.	**Thermal Power Plants**	* Particulate Matter Emission	
		-- generation capacity 210 MW or more	150 milligram per normal cubic meter.
		-- generation capacity less than 210 MW	350 milligram per normal cubic meter.
26.	**Natural Rubber Industry**		Concentration in the effluents not to exceed milligram per liter (except for pH) 44^{o}C.
	-- Discharge into inland surface waters	Colour & Odour	Absent
		pH	6.0 – 9.0
		BOD	50
		COD	250
		Oil and Grease	10
		Sulphides	2
		Total Kejeldahl 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

1. S.No. 25 and 26 and entries relating thereto inserted vide S.O. 8(E) dated 3-1-1989 published in the Gazette No. 7 dated 3-1-1989.

   Correction in rule 2 against S.No. 26 made vide corrigendum No. S.O. 190(E) dated 15-3-1989 published in the Gazette No. 126 dated 15-3-1989.

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

1.	2.	3.	4.
	-- Disposal on land for irrigation	Colour and Odour	Absent
		pH	6.0 – 8.0
		BOD	100
		COD	250
		Oil and Grease	10
		Suspended Solids	200
		Dissolved Solids	2100
[1]**27.**	**All types of Asbestos manufacturing units (including all processes involving the use of Asbestos)**	Emissions	
		-- Pure Asbestos material	4 Fibre */cc
		-- Total dust	2 mg/m^3 (normal)
28.	**Calor Alkali (Caustic Soda)**	Emissions	Concentrations in mg/m^3 (normal)
	(a) Mercury Cell	Mercury (from hydrogen gas holder stack)	0.2
	(b) All processes	Chlorine (from hypo tower)	15.0
	(c) All processes	Hydro chloric acid vapours and mist (from hydro chloric acid plant)	35.0
29.	**Large pulp and paper**	Emissions	Concentrations in mg/m^3 (normal)
		Particulate matter	250**
		H_2S	10
30.	**Integrated Iron and Steel Plants**	1. Emissions	
	(a) Coke Oven	Particulate matter	50
	(b) Refractory material plant	Particulate Matter	150

1. S.No. 27 to 31 and entries relating thereto inserted vide GSR 913(E) dated 24-10-1989 published in the Gazette No. 554 dated 24-10-1989

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

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

1.	2.	3.	4.
		2. Effluents	Concentration in mg/l except for pH.
	(a) Coke oven		
	By product plant	pH	6.0 – 8.0
		Suspended Solids	100
		Phenol	1.0
		Cyanide	0.2
		BOD (5 days at $20^{o}C$)	30
		COD	250
		Ammonical nitrogen	50
		Oil and Grease	10
	(b) Other plants such as sintering plant, blast furnace, steel melting and rolling mill :		
		pH	6.0 – 9.0
		Suspended Solids	100
		Oil and Grease	10
31.	**Re-heading (Reverberatory) Furnaces : Capacity:All Sizes**	Emissions	Concentration in mg/m^3 (normal).
	Sensitive Area	Particulate matter	150
	Other Area	Particulate matter	450
[1]32.	**Foundries**	Emissions	
	(a) Cupola Capacity (Melting rate):		
	Less than 3 Mt/hr	Particulate matter	450
	3 Mt/hr and above	Particulate matter	150

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

1. S.No. 32 to 47 and entries relating thereto inserted vide GSR 742(E) dated 30-8-1990 published in the Gazette No. 365 dated 30-8-1990.

1.	2.	3.	4.
	(b) Arc Furnaces		
	Capacity: All sizes	Particulate Matter	150
	(c) 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 HIGHT/LIMIT IN METERS*	
		Power generation capacity :	
		-- 500 MW and above	275
		-- 200 MW/210 MW and above to less then 500 MW	220
		-- Less than 200 MW/210 MW	H-14(Q)$^{0.3}$ where Q is emission rate of SO_2 in *kg/hr. and *H Stack height in meters.
		Stream generation capacity : -- Less than 2 ton/hr.	½ times the neighbouring building height or 9 meters (whichever is more).
		-- More than 2 to 5ton/hr.	12
		-- More than 5 to 10 ton/hr.	15
		-- More than 10 ton/hr.	18
		-- More than 15 to 20 ton/hr.	*21
		-- More than 20 to 25 ton/hr.	24
		-- More than 25 to 30 ton/hr.	27
		-- More than 30 ton/hr.	30 or using formula H-14(Q)$^{0.3}$ (whichever is more) Q is emission rate of SO_2 in kg/hr and *H-Stack height in meters.

* Correction have been made as per Corrigendum Notification No. SO 8(E), dated 31.12.1990.

1.	2.	3.	4.
34.	**Small Boilers**	Emissions*	
	Capacity of Boiler	Particulate Matter	
	-- Lessthan 2 ton/hr.		1600
	-- 2 to 5 ton/hr.		1200
	-- More than 15 ton/hr.		150
35.	**Oil Refineries**	Emissions*	
	(Sulphur Dioxide)	-- 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.
36.	**Aluminium Plants :**	Emissions	
	(a) Aluminia Plant:		
	(i) Raw Material Handling	Primary and Secondary Crusher Particulate Matter	150
	(ii) Precipitation Area Calcinations	Particulate Matter	250
		Carbon Monoxide	1% max.
		Stack Height	$H=14(Q)^{0.3}$ where Q is emission rate of SO_2 in kg/hr and H-Stack height in meters.
	(b) Smelter Plant	Particulate matter	
	(i) Green Anode Shop	Particulate Matter	150
	(ii) Anode Bake Oven	Particulate Matter	150
		Total Fluoride (F)	0.3 kg/MT of Aluminium
	(iii) Potroom	Particulate Matter	150
		Total Fluroide (F)	
		VSS : Vertical Stud Soderberg	4.7 kg/MT of Aluminium produced.

* All emissions normalized to 12 percent carbon dioxide.

** Feed indicates the feed for that part of the process under consideration only.

1.	2.	3.	4.
		HSS: Horizontal Stud Soderberg	6.0 kg/MT of Aluminium produced.
		PBSW: Pre backed Side Worked	2.5 kg/ton of Aluminium produced.
		PBCW: Pre backed Center Worked	1.0 kg/ton of Aluminium produced.
		Stack Height	$H=14(Q)^{0.3}$ where Q is emission rate of SO_2 in kg/hr and H-Stack height in meters.
***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 for the equipment. (b) Construction of wind breaking walls. (c) Construction of the metalled roads within the premises. (d) Regular cleaning and wetting of the ground within the premises. (e) Growing of a green belt along the periphery. **(ii) Quantitative standard for the SPM:** **[measured between three meters and ten meters from any processes equipment of a stone crushing unit shall not exceed 600 micrograms per cubic meter] from a controlled isolated as well as from a unit located in a cluster should be less than 600 mg/Nm_3 [1][xxx…]

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

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

1. The sentence "The measurements are to be conducted at least twice a month for all the 12 months in a year" deleted as per CORRIGENDUM notification SO 8(E), dated 31.12.1990.

1.	2.	3.	4.
38.	**Petrochemicals (Basic & intermediates)**	Effluents	
		pH	6.5 – 8.5
		*BOD [1][3 days at 27°C]	50
		** Phenol	5
		Sulphide (as S)	2
		COD	
		Cyanide (as CN)	250
		*** Fluoride (as F)	15
		Total Suspended Solids	[2][100]
		Hexavalent Chromium [2](as Cr)	0.1
		**** Total Chromium [2](as Cr)	2.0

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

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

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

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

39.	**Pharmaceutical Manufacturing and Formulation Industry**	Effluents	
		1. pH	5.5 – 9.0
		2. Oil and Grease	10
		3. Total Suspended Solids	100
		4. BOD [2][3 days at 27°C]	30
		5. Bio-assay text	90% Survival of fish after 96 hrs. in 100% effluent
		6. Mercury	0.01
		7. Arsenic Chromium	0.20
		8. Chromium (Hexavalent)	0.10
		9. Lead	0.10
		10.Cyanide	0.10
		11.Phenolics (as C_6H_5OH)	1.00
		12.Sulphides (as S)	2.00
		13.Phosphates (as P)	5.00

1. Substituted by Rule 2 of the Environment (Protection)(Amendment) Rules, 1996 notified vide GSR 176(E), dated 2.4.1996

2. Corrected as per CORRIGENDUM Notification SO 8(E), dated 31.12.1990

1.	2.	3.	4.

Note :

1. Parameters listed as 1 to 13 are compulsory for Formulators. However, the remaining parameters (6 to 13) will be optional for others.
2. State Board may prescribed limit for chemical oxygen demand (COD) correlated with BOD limit.
3. State Board may prescribed 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 Formulating Industry**	Effluent	
		1. Temperature	Shall not exceed 5°C above the receiving water temp.
		2. pH	6.5 – 8.5
		3. Oil & Grease	10
		4. BOD (5 days at 20°C)	30
		5. Total Suspended Solids	100
		6. Bio-assay test	90% survival of fish after 96 hours in 100% effluent.
		7. **(a) Specific Pesticides:**	
		Benzene Hexachloride	10
		Carbonyl	10
		DDT	10
		Endosulfan	10
		Diamethoate	450
		Fenitrothion	10
		Malathion	10
		Phorate	10
		Methyl Parathion	10
		Phenathoate	10
		Pyrethrums	10
		Copper Oxychloride	9600
		Copper Sulphate	50
		Ziram	1000
		Sulphur	30
		Paraquat	2300
		Proponil	7300
		Nitrogen	780

1.	2.	3.	4.
		(b) Heavy Metals:	
		Copper	1.00
		Manganese	1.00
		Zinc	1.00
		Mercury	0.01
		Tin	0.01
		Any other metal like Nickel etc.	Shall not exceed 5 times the drinking water standards of BIS.
		(C) Organics	
		Phenol and phenolic compounds as C_6H_5OH	1.0
		(d) Inorganics	
		Arsenic (as As)	0.2
		Cyanide (as CN)	0.2
		Nitrate (as NO_3)	50.0
		Phosphate (as P)	5.0

Note:

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

41.	**Tannery**	Effluent	
	(After primary treatment)		
	Disposal :Channel/Conduit		
	Carrying waste waters to Secondary treatment plants		
	Type of Tanneries		
	-- Chrome tanneries/combined chrome & vegetable tanneries	pH	6.5 – 9.0
		SS	Not to exceed 600
		Chromium concentration after treatment in the chrome waste water stream	45
	-- Vegetable Tanneries	pH	6.5 – 9.0
		SS	Not to exceed 600

Note : The above standards will apply to those tannery units which have made full contribution to a Common Effluent Treatment Plant (CETP) Comprising secondary treatment. Those who have not contributed will be governed by earlier Notification No. SO*61(E), dated January 18, 1988.

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

1.	2.	3.	4.
42.	**Paint Industry** Waste Water Industry	Effluents	
		pH	6.0 – 8.5
		Suspended Solids	100
		BOD_5 20°C	50
		Phenolics as C_6H_5OH	1.0
		Oil and Grease	10.0
		Bio-assay test	90% survival in 96 hours
		Lead as Pb	0.1
		Chromium as Cr Hexavalent	0.1
		Total	2.0
		Copper as Cu	2.0
		Nickle as Ni	2.0
		Zinc as Zn	5.0
		Total heavy metals	7.0
43.	**Inorganic Chemical Industry (Waste Water Discharge)**	Effluents	
	Part-I (metal compounds of Chromium, Manganese, Nickel, Copper, Zinc, Cadmium, Lead and Mercury)	pH	6.0 – 8.5
		Chromium as Cr Hexavalent	0.1
		Total	2.0
		Manganese as Mn	2.0
		Nickel as Ni	2.0
		Copper as Cu	2.0
		Zinc as Zn	5.0
		Cadmium as Cd	0.2
		Lead as Pb	0.1
		Mercury as Hg	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 7mg/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 as Cl	1.0
		Zinc as Zn	5.0

1.	2.	3.	4.
		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 (3 days at $27^{o}C$)	100.0
		Oil and Grease	10.0
		Phenolics as C_6H_5OH	1.00
		Cadmium as Cd	0.2
		Copper as Cu	2.0
		Manganese as Mn	2.0
		Lead as Pb	0.1
		Mercury as Hg	0.01
		Nickel as Ni	2.0
		Zinc as Zn	5.0
		Chromium as Cr^{6+}	0.1
		Total Chromium	2.0
		Bio-assay test	90% survival in 96 hours.

S.No.	Category	Standards dB(A)
1.	**2.**	**3.**
46.	Noise Limits for Automobiles (Free Field) at one meter in dB(A) at the Manufacturing Stage to be Achieved by the year 1992.	
	(a) Motorcycle, Scooters and Three Wheelers	80
	(b) Passenger Cars	82
	(c) Passenger or Commercial Vehicles upto 4 MT	85
	(d) Passenger of Commercial Vehicles above 4 MT and upto 12 MT	89
	(e) Passenger or Commercial Vehicles exceeding 12 MT	91
47.	Domestic Appliances and Construction Equipments at the Manufacturing Stage to be Achieved by the year, 1993.	
	(a) Window Air Conditioners of 1 to ton 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

* Standards notified at Sl.No. 8 may also be referred.

1.	2.	3.	4.
[1]48	**Glass Industry**	Emissions	
	A. Sodalime & Borosilicate and other Special Glass (other than Lead)		
	(a) Furnace : Capacity		
	(i) Upto a product draw capacity of 60MT/Day	Particulate Matter	2.0 kg/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 meters.
	(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) Furnaces		
	All capacities	Particulate Matter	50 mg/NM^3
		Lead	20 mg/NM^3
	(b) Implementation of the following measures for fugitive emission control from other sections:-		
	(i) Batch mixing, proportioning section and transfer points should be covered and it should be connected to control equipments to meet the following standards:		
		Particulate Matter	50 mg/NM^3
		Lead	20 mg/NM^3
	(ii) Minimum Stack height should be 30 meters 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 Industries (for all categories)	Effluent:	
		pH	6.5 – 8.5
		Total Suspended Solids	100 mg/l
		Oil and Grease	10 mg/l

1. S.No. 48 to 55 and entries relating thereto inserted vide GSR 93(E) dated 21.2.1991 published in the Gazette No. 79 dated 27.2.1991

1.	2.	3.	4.
49.	**Lime Kiln** Capacity :-	Stack Height	
	Upto 5T/Day	--do--	A Hood should be provided with a stack of 30 meter height from ground level (including kiln height).
	Above 5T/Day	--do--	$H=14(Q)^{0.3}$ Where Q is emission rate of SO_2 in kg/hr and H=Stack height in meters.
	More than 5T/day and upto 40T/day	Particulate Matter	500 mg/NM^3
	Above 40T/day	--do--	150 mg/NM^3
50.	***Slaughter House, Meat and Sea Food Industry** Category	Effluents	Concentration in mg/l
	A. Slaughter House		
	(a) Above 70 TLWK	BOD (5 at 20°C) Suspended Solids Oil and Grease	100 100 10
	(b) 70 TLWK and above	BOD (5 at 20°C)	500
	B. Meat Processing		
	(a) Frozen Meat	BOD (5 at 20°C) Suspended Solids Oil and Grease	30 50 10
	(b) Raw Meat from own Slaughter House	BOD (5 at 20°C) Suspended Solids Oil and Grease	30 50 10
	(c) Raw Meat from other sources		Disposal via Screen and Septic Tank
	C. Sea Food Industry	BOD (5 at 20°C) Suspended Solids Oil and Grease	30 50 10

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

* 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 30.8.1990

1.	2.	3.	4.	
51.	*** Food and Fruit Processing Industry**	Effluents	Concentration not to exceed mg/l except pH	Quantum gm/MT of product
	Category			
	A. Soft Drinks			
	(a) Fruit based/Synthetic (More than 0.4 MT/Day) bottles and tetrapack.	pH Suspended Solids Oil and Grease BOD (5 at 20°C)	6.5 – 8.5 100 10 30	---
	(b) Synthetic (Less than 0.4 MT/Day)		Disposal via Septic Tank	---
	B. Fruit and Vegetables			
	(a) Above 0.4 MT/Day	pH Suspended Solids Oil and Grease BOD (5 at 20°C)	6.5 – 8.5 50 10 30	---
	(b) 0.1-0.4 MT/Day (10MT/yr.)		Disposal via Septic Tank	---
	C. Bakery			
	(a) Bread and Bread & Biscuit			
	(i) Continuous process (more than 20T/Day)	pH BOD (5 at 20°C)	6.5 – 8.5 200	--- 25
	(ii) Non-continuous process (less than 20MT/Day)		Disposal via Septic Tank	
	(b) Biscuit Production			
	(i) 10 T/Day & above	pH BOD (5 at 20°C)	6.5 – 8.5 300	 35
	(ii) Below 10T/Day		Disposal via Septic Tank.	
	D. Confectioneries	Effluents		
	(a) 4 T/Day and above	pH Suspended Solids Oil and Grease BOD (5 at 20°C)	6.5 – 8.5 50 10 30	
	(b) Below 4T/Day		Disposal via Septic Tank	

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

* The emission from the boiler house shall conform to the standards already prescribed under E(P) Act, 1986, vide Notification No. GSR 742(E), dated 30.8.1990.

1.	2.	3.	4.
52.	*** Jute Processing Industry**	Effluents	Concentration in mg/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:	1. Water Consumption for the Jute processing industry will be 1.5 cum/Ton of product form January, 1992.		
	2. At the present no limit for colour is given for liquid effluent. However, as far as possible colour should be removed.		
53.	**Large Pulp & Paper News Print/Rayon Grad Plants of Capacity above 24000 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 & Paper	200 Cum/Ton of Paper produced.
		(ii) Large Rayon Grade Newsprint	150 Cum/Ton of Paper produced.
54.	**Small Pulp and Paper** (Paper Plant of capacity upto 24000 MT/Annum) Category :	Effluent	
	A. ☺ Agrobased	Total Waste water discharge	200 cum/Ton of paper produced.
	B. $ Waste Paper based	--do--	75 cum/Ton of paper produced.

* Stack emissions from boiler house shall conform to the standards already prescribed under Environment (Protection) Act, 1986, vide Notification No. GSR 742(E), dated 30.8.1990.

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

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

☺ The agrobased mills to be established from January, 1992 will meet the standards of 150 cum/Ton of paper produced

$ The Waster-Paper mills to be established from January, 1992 will meet the standards of 50 cum/Ton of paper produced.

1.	2.	3.	4.
55.	**Common Effluent Treatment Plants**	Effluents	
	A. Primary Treatment	(Inlet effluent quality for CETP)	Concentration in mg/l
		pH	5.5 – 9.0
		Temperature ^{o}C	45
		Oil & Grease	20
		Phenolic Chompunds (as C_6H_5OH)	5.0
		Ammonical Nitrogen (as N)	50
		Cyanide (as CN)	2.0
		Chromium Hexavalent (as Cr+6)	2.0
		Chromium (total as Cr)	2.0
		Copper (as Cu)	3.0
		Lead (as Pb)	1.0
		Nickel (as Ni)	3.0
		Zinc (as Zn)	15
		Arsenic (as As)	0.2
		Mercury (as Hg)	0.01
		Cadmium (as Cd)	1.0
		Selenium (as Se)	0.05
		Fluoride (as F)	15
		Boron (as B)	2.0
		Radioactive Materials	
		Alpha emitters, Hc/ml	10-7
		Beta emitters, He/ml	10-8

Note :

1. These standards apply to the small scale industries, i.e. total discharge upto 25 Kl/Day.
2. For each CETP and its constituent units, the State Board will prescribe standards as per the local needs and conditions; these can be more stringent than those prescribed above. However, in case of clusters of units, the State Board with the concurrence of CPCB in writing, may prescribe suitable limits.

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

	Into inland surface waters	On land for irrigation	Into Marine Coastal areas
	(a)	(b)	(c)
pH	5.5 – 9.0	5.5 – 9.0	5.5 – 9.0
BOD (5 at 20^{o}C)	30	100	100
Oil and grease	10	10	20

1.	2.	3.		4.
	Temperature	Shall not exceed 40°C in any section of the stream within 15 meters downstream form the effluent outlet	---	45°C at the point of discharge
	Suspended Solids	100	200	(a) For process waste-waters – 100 (b) For cooling water effluents 10% above total suspended matter of effluent cooling water.
	Dissolved Solids (Inorganic)	2100	2100	---
	Total residual chlorine	1.0	---	1.0
	Ammonical nitrogen (as N)	50	---	50
	Total Kjeldahl 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 (as Ni)	3.0	---	5.0
	Boron (as B)	2.0	2.0	---
	Percent Sodium	---	60	---
	Cyanide (as Cn)	0.2	0.2	0.2
	Chloride (as Cl)	1000	600	---
	Fluoride (as F)	2.0	---	15
	Sulphate (as SO_4)	1000	1000	---
	Sulphide (as S)	2.8	---	5.0
	Pesticides	Absent	Absent	Absent
	Phenolic compounds (as C_6H_5OH)	1.0	---	5.0

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

1.	2.	3.		4.
[1]56.	**Dairy**	Effluents	Concentration in mg/l	Quantum per product processed
		pH	6.0 – 8.5	---
		[@]BOD (5 at 20°C)	100	---
		[#]Suspended Solids	150	---
		Oil and Grease	10	---
		Waste Water generation	---	$3m^3$/kl of milk
57.	**Tanneries**	Effluents	Concentration in mg/l except pH	Quantum per raw hide processed
		pH	6.0 – 9.0	---
		[$]BOD (5 at 20°C)	100	---
		Suspended Solids	100	---
		Sulphides (as S)	1	---
		Total Chromium (as Cr)	2	---
		Oil and Grease	10	---
		Waste Water Generation	---	$28m^3$/T

		Centrifuging and creaming units		Crape and crumb units	
***58.**	**Natural Rubber processing Ind.**	For disposal into inland surface water	For disposal on land for irrigation	For disposal into inland surface water	For disposal on land for irrigation
		(a)	(b)	(a)	(b)
		(Concentration in mg/l, except pH & quantum of waste water generation)		(Concentration in mg/l except pH & quantum of waste water generation)	
	pH	6 – 8	6 – 8	6 – 8	6 – 8
	Total Kjeldahl nitrogen (as N)	200 (100**)	***	50	***
	Ammonical Nitrogen (as N)	100 (50**)	***	25	***
	BOD (5 at 20°C)	20°C	100	30	100
	COD	250	***	250	***
	Oil and Grease	10	20	10	20
	Sulphide (as S)	2	***	2	***
	TDS	2100	NP[©]	2100	NP[©]
	SS	100	200	100	200
	Quantum of waste water generation	5 lt/Kg of product processed	8 lt/kg of product processed	40 lt/kg of product processed	40 lt/kg of product processed.

1 Sl. No. 56 to 61 and entries relating thereto inserted vide GSR 475(E) dated 5.5.1992 published in the Gazette No. 202 dated 5.5.1992.

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

1.	2.	3.	4.
#	Suspended solids limit is relaxable upto 450 mg/l, provided the wastewater is discharged into town sewer leading to secondary treatment of the sewage.		
$	For effluent discharge into inland surface waters BOD limit shall be made stricter to 30 mg/l by the concerned State Pollution Control Board.		
*	These standards supersede the standards notified at serial no. 26 vide notification No. SO 8(E), dated 3.6.1989		
**	To be achieved in three years		
***	Not specified		
****	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.		
59.	**Bagasse-fired Boilers**	Emissions	Concentration in mg/l
	(a) Step grate	Particulate matter	250
	(b) Horse shoe/pulsating grate	Particulate matter	500 (12% CO_2)
	(c) Spreader Stroker	Particulate matter	800 (12% CO_2)
	Note : - In the case of horse shoe and spreader stroker boiler, 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/l 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	**

1.	2.	3.	4.
	B. Raw Material handling, Processing and operations		
	(a) Dry raw materials handling and processing operations.	Particulate matter	150
	(b) Basic raw material and processing operations	Particulate matter	*
	(c) Other sources of air pollution generation	Particulate matter	*
	C. Automatic Spray Unity		
	(a) Dryers		
	(i) Fuel fired dryers	Particulate matter	150
	(ii) For heat recovery dryers	Particulate matter	*
	(b) Mechanical finishing operation	Particulate matter	*
	(c) Lime/Plasters of Paris manufacture Capacity:		
	(i) Upto 5T/Day	Stack Height	Hood should be provided with at stack of 30 meter height from ground level (including Kiln height)
	(ii) Above 5T/day	Stack Height	$H=14(Q)^{0.3}$ Where Q is emission rate of SO_2 in kg/hr and H=Stack in meters.
	(iii) More than 5T/day	Particulate matter	500 mg/Nm^3
	(iv) And upto 40T/day	Particulate matter	150 mg/Nm^3

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

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

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

Coal Consumed per day	Stack Height
Less than 8.5 Metric Tone	9 meters
More than 8.5 to 21 Metric Tone	12 meters
More than 21 to 42 Metric Tone	15 meters
More than 42 to 64 Metric Tone	18 meters
More than 64 to 104 Metric Tone	21 meters
More than 104 to 105 Metric Tone	24 meters
More than 105 to 126 Metric Tone	27 meters
More than 126 Metric Tone	30 meters or using formula [$H=14(Qg)^{0.3}$](Which ever is more)

Note : In this notification **H**-Physical height of the Stack, **Qg** – Emission of sulphurdioxide in kg/hr.

1.	2.	3.	4.
[1]62	**Viscose Filament Yarn**	Effluents	Concentration in mg/l except for pH
	(Sub-sector of manmade fibre semi-synthetic Industry)	pH	5.5 – 9.0
		Suspended solids	100
		BOD (3 days at 27°C)	30
		Zinc (as Zn)	5
[2]63	**Starch Industry (Maize Products)**	Effluents	Concentration not to exceed mg/l (except pH and waste water discharge)
		pH	6.5 – 8.5
		BOD (3 days at 27°C)	
		Suspended Solids	150
		Waste water discharge	8 m^3/tone of maize product

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

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

(ii) BOD shall be allowed upto 350 mg/l for applying on land provided the land is designed and operated as a secondary treatment system with the requisite monitoring facilities. The drainage water 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 10 mg/l of nitrate expressed as "N".

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

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

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

1. Sl. No. 62 and entries relating there to inserted by Rule 2(b) of the Environment (Protection) Third Amendment Rules, 1993 by GSR No. 801(E), dated 31.12.1993.

2. Sl. No. 63 to 78 and entries relating thereto inserted by Rule 3(a) of the Environment (Protection) (Amendment) Rules, 1996, by Notification No. GSR 176(E), dated 2.4.1996.

1.	2.	3.	4.
64	**Beehive hard coke oven**	Emission	
	(i) New Unit	Particulate matter (corrected to 6% CO_2)	150 mg/Nm^3
		Hydrocarbons	25 ppm
	(ii) Existing Unit	Particulate matter (corrected to 6% CO_2)	350 mg/Nm^3

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

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

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

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

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

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

65.	**Briquette Industry (Coal)**	Emissions:	
	(i) Units having capacity less than 10 tones	Particulate matter (corrected to 6% CO_2)	350 mg/Nm^3
	(ii) Units having capacity 10 tones or more	Particulate matter (corrected to 6% CO_2)	150 mg/Nm^3

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

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

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

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

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

66.	**Soft Coke Industry**	Particulate matter (corrected to 6% CO_2)	350 mg/Nm^3

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

1.	2.	3.	4.

Guidelines for Emission Control to Improve Work Zone Environment (applicable for industries at serial numbers, 64, 65 and 66):

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

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

Guidelines for Coal Handling and Crushing Plant (applicable to industries at serial numbers 64, 65 and 66):

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

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

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

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

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

67. Edible Oil & Vanaspati Industry

Effluents:

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

Note :

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

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

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

1.	2.	3.	4.
68.	**Organic Chemicals Manufacturing industry**	Effluents	
	(a) Compulsory parameters	pH	6.5 – 8.5
		BOD (3 days at 27^{o}C)	100 mg/l
		Oil and grease	10 mg/l
		Bioassay test	minimum 90% survival after 96 hours with 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	0.01
		Copper	2.0
		Nickel	2.0
		Phenolies as (C_6H_5OH)	5.0
		Sulphide	2.0

Note :

(i) No limit for COD is prescribed but it shall be monitored. If the COD in a treated effluent is persistently greater than 250 mg/l, such industrial units are required to identify chemicals causing the same. In case these are found to be toxic as defined in Hazardous Chemicals Rules, 1989 in Part-I of Schedule-I, the State Boards in such cases may direct the industries to install tertiary treatment system stipulated time lime. 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 haloaliphatics, plasticizers, aromatics (alcohols, phenols, esters, acids and salts, aldehydes and ketone), substituted aromatics, aliphatic (alcohols, esters, acids, aldehydes, ketones, amines, and amides) and detergents.

1.	2.	3.	4.
69.	**Flour Mills**	Effluents	
		pH	6.5 – 8.5
		BOD (3 days at 27°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.

Note :

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

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

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

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

70.	**Boilers (Small)**	Stream generation capacity (ton/hour)	Particulate matters emissions (mg/Nm^3)
		Less than 2	1200*
		2 to less than 10	800*
		10 to less than 15	600*
		15 and above	150**

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

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

Note :

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

(ii) These limits shall supercede the earlier limits notified under Schedule-I at serial number 34 of Environment (Protection) Act, 1986 vide notification No. GSR 742(E) dated 30th August 1990.

(iii) Stack Height for small Boilers : For the small boilers using coal or liquid fuels, the required stack height with the boiler shall be calculated by using the formula $H=14(Q)^{0.3}$, Where H- Total stack height in meters from the ground level and $Q=SO_2$ emission rate in kg/hr.
In no case the stack height shall be less than 11 meters.
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.

1.	2.	3.	4.
71.	**Pesticides Industry**	(i) Compulsory Parameters	mg/l except pH
		pH	6.5 – 8.5
		BOD (3 days at $27^{o}C$)	100
		Oil and 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	
		(a) *Heavy Metal*	
		Copper	1.0
		Manganese	1.0
		Zinc	1.0
		Mercury	0.01
		Tin	0.1
		Any other like Nickel	Shall not exceed 5 times the drinking water standards (BIS) individually.
		(b) *Organics*	
		Phenol & Phenolic compounds as (C_6H_5OH)	1.0
		(c) *Inorganics*	
		Arsenic as As	0.2
		Cyanide as CN	0.2
		Nitrate as NO_3	50
		Phospate as P	5.0
		(d) *Specific pesticide*	(microgram/liter)
		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

1.	2.	3.	4.
	Other Pesticides :		
	(i) Insecticides :		
	Aluminium Phosphide	Lindane	Phrethrum extract
	Dichloroves	Malathlon	Qunalphos
	EDTC Mixer	Methyl-Bromide	Monocrotophos
	Ethylene Dibromide	Nicotine Sulphate	Carbaryl
	Ethion	Oxydemeton Methyl	Endosulfan
	Fenitrothoron	Methyl Parathion	Fenvalerate
	Lime-Sulphur	Phosphamidon	Phorate
	Temephos		
	(ii) Fungicides:		
	Aureofungin	Organomercurials (MEMC & PMA)	
	Barium Polysulphide	Sulphur (Collodal), Wettable & Dust	
	Cuprous Oxide	Streptocyceline	
	Ferbam	Thiram	
	Mancozeb	Zenib	
	Manab	Carbendazim	
	Nickel Chloride	Tridemoraph	
	(iii) Rodenticides:		
	Comafuryl		
	Warfarin		
	Zinc Phosphide		
	(iv) Nematicides :		
	Metham N-Sodium		
	(v) Weedicides :		
	Fluchloralin		
	Isoproturon		
	Butachlor		
	Anllphos		
	(vi) Plant Growth Regulants :		
	Chloromequat Chloride		
	Nemphalene Acetic Acid		
	(vii) Any other pesticide not specified above.		

Note :

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

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

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

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

1.	2.	3.	4.

Guidelines on solar evaporation system or waste water from pesticides industry.

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

(ii) Solar evaporation pans shall be lead 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 output 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 form 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 & Forests, Government of India, after obtaining authorization from the State Pollution Control Board under the Hazardous Waste (Handling and Management) Rules, 1989.

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

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

72. Oil Drilling and Gas Extraction Industry

A. Standards for Liquid Effluent	pH	5.5 – 9.0
1.0 On-Shore facilities (For Marine Disposal)	Oil & Grease	10 mg/l
	Suspended Solids	100 mg/l
	BOD (3 days at 27^{o}C)	30 mg/l

Note :

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

1.	2.	3.	4.
	Parameter	**Toxicity limit, mg/l**	
	Chromium as Cr	0.1	
	Copper as Cu	0.05	
	Cyanide as CN	0.005	
	Fluoride as F	1.5	
	Lead as Pb	0.05	
	Mercury as Hg	0.01	
	Nickel as Ni	0.1	
	Zinc as Zn	0.1	

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

S.No.	Parameter	On-shore discharge standards (Not to exceed)
1.	2.	3.
1.	pH	5.5 – 9.0
2.	Temperature	40oC
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/l
11.	Oil and Grease	10 mg/l
12.	Phenolics	1.2 mg/l
13.	Cyanides	0.2 mg/l
14.	Fluorides	1.5 mg/l
15.	Sulphides	2.0 mg/l
16.	Chromium (Cr+6)	0.1 mg/l
17.	Chromium (Total)	1.0 mg/l
18.	Copper	0.2 mg/l
19.	Lead	0.1 mg/l
20.	Mercury	0.01 mg/l
21.	Nickel	3.0 mg/l

1.	2.	3.	4.

2.0 Off-shore facilities :

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

B. Guidelines for Discharge of Gaseous Emissions :

1.0 DG Sets.

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

2.0 Elevated/ground flares

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

2.2 All flaring shall be done by elevated flares except where there is any effect on crop production in adjoining ar4eas due to the flaring. In such cases, one may adopt ground flaring.

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

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

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

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

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

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 off-shore. For off-shore installation, drill cuttings separated from mud, shall be transported on-shore through supply vessels for secured land-fill disposal as per Ministry of Environment & 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 conform to the guidelines provided by the Ministry of Environment & 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.

1.	2.	3.	4.

2.0 Disposal of drilling mud.

2.1 The unusable portion of the drilling mud(of any composition); after reclamation shall be disposed of only at a secured land-fill site approved by the concerned authority (State Government/State Pollution Control Board). The disposal of mud shall conform to the guidelines provided by the Ministry of Environment & Forests under the Hazardous (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 land-fill.

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 waste water 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 Parameters	mg/l except pH
pH	6.5 – 8.5
Oil and Grease	10
BOD (3 days at $27^{o}C$)	100
Total suspended solids	100
Bioassay test	90% survival after 96 hours in 100% effluent test shall be carried out as per IS:6582-1971.
(ii) Additional Parameters	mg/l
Mercury	0.01
Arsenic	0.2
Chromium (Hexavalent)	0.1
Lead	0.1
Cyanide	0.1
Phenolics (C_6H_5OH)	1.0
Sulphides (as S)	2.0
Phosphate (as P)	5.0

1.	2.	3.	4.

Note :

(i) The limit of BOD (3 days at 27^{o}C) shall be 30 mg/l if effluent is discharged directly to a fresh water body.

(ii) The additional parameters are applicable to bulk drug manufacturing 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-I), the State Boards in such cases shall direct the industries to install tertiary treatment system with in 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/Nm^3)
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 setting chamber.

II. Stack Height Regulation:

Kiln Capacity	Stack height
1.	2.
Less than 15,000 brick per day (less than 15 ft trench width)	Minimum stack height of 22 m or, Induced draught fan operating with minimum draught of 50mm water Gauge with 12 m stack height.
15,000-30,000 brick per day (15-22 ft trench width)	Minimum stack height 27m in with gravitational settling chamber Or Induced draught fan operating with minimum draught of 50mm water Gauge with 15m stack height.

1.	2.	3.	4.
	More than 30,000 brick 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 17 m 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/utilization of fly ash, it is provided that from the 1st January, 1997 all brick manufacturing units within a radius of 50 kms from any thermal power plant, shall utilize flyash in optimal proportion for making bricks.*

75. Soda Ash Industry (Solvay Process)

PARAMETER	MINAS (Recipient body specified)		
	Marine	Brackish	Inland Surface
pH	6.5 – 9.0	6.5 – 9.0	6.5 – 9.0
Temperature	45°C or less	45°C or less	45°C or less
Oil and Grease	2 mg/l	20 mg/l	10 mg/l
Suspended Solids (SS)	500 mg/l	200 mg/l	100 mg/l
Amonical nitrogen	5 mg/l	50 mg/l	30 mg/l
Bio-assay	96 hours 30% survival	96 hours 90% survival	96 hours 90% survival

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

Standards for Dual Process Soda Ash Plants :

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

Note : The Standards are to be implemented by the Industry in a time targeted schedule with 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.	2.	3.	4.
76.	**Emission Standard of SO_2 from Cupola furnace:** Standard for Sulphur Dioxide emission from Cupola Furnace:	Characteristics	Emission limit
		Sulphur dioxide (SO_2) emission	300 mg/Nm^3 at 12% CO_2 corrections

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

Note : In case due to some technical reasons, installation of scrubber is not possible, then value of SO2 to the ambient air has to be effected through the stack height.

77. Specification of Motor Gasoline for Emission Related Parameters :

S.No.	Characteristics	Requirement	Method of test ref. To P: of IS:1448
(i)	Reid Vapour Pressure at 38°C, Kpa	35 to 70	P : 39
(ii)	Benzeno, Percent by volume, Max	5.0(1)	P : 104
(iii)	Lead Content (as Pb) g/l, Max	0.15 (low leaded(2) 0.013 (unleaded)	P : 38
(iv)	Sulphur, percent by mass, Max	0.10 (unleaded) 0.20 (leaded)	P : 34
(v)	Potential Gum, g/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)	Phosphorus	See Foot Note(3)	ASTMD 3231

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

(2) 0.15 g/l by 31st December, 1996 (for entries country).
0.13 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 applied to leaded as well as unleaded petrol except lead content.

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

1.	2.	3.	4.
78.	**Specification of Diesel Fuel for Emission Related Parameters :**		

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

(1) 820 to 860 by 2000 AD

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

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

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

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

Note : (a) Above specifications apply to HSD only.

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

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

[1]79. Coke oven plant (by product recovery type**)**

Industry	***Parameter***	***Standard***	
		New Batteries	***Existing Batteries***
	Fugitive Visible Emissions		
	(a) Leakage form door	5 (PLD)*	10 (PLD)*
	(b) Leakage from charging lids	1 (PLL)*	1 (PLL)*
	(c) Leakage from AP Covers	4 (PLO)*	4 (PLO)*
	(d) Charging emission (second/charge)	16 (with HPLA)*	50 (with HPLA)*

1. Sl. No. 79 and entries relating thereto inserted by the Environment (Protection) Amendment Rules 1997 vide GSR 631(E), dated 31.10.1997.

* PLD – Percent leaking doors

* PLL – Percent leaking lids

* PLO – Percent leaking offtakes.

* HPLA – Aspiration through high pressure liquor injection in goose neck.

1.	2.	3.	4.
	Industry	***Parameter***	***Standard***
			New Batteries / ***Existing Batteries***
	Stack Emission of Coke Oven		
	(a) SO_2 (mg/Nm^3)	800	800
	(b) Nox,(mg/Nm^3)	500	500
	(c) SPM_1 (mg/Nm^3)	50	50
	(d) SPM emission during charging (stack emission) mg/Nm^3	25	25
	(e) SPM emission during coke pushing stack emission) gm/ton of coke.	5	5
	(f) Sulphur in Coke Oven gas used for heating (mg/Nm^3) Emission for quenching operation	800	800
	(g) Particulate matter gm/MT of coke produced Benzo-Pyerine (BOP concentration in work zone air (ug/m^3)	50	50
	(h) Battery area (top of the battery)	5	5
	(i) Other units in coke oven plant	2	2
	(j) Ambient Standards (ng/m^3)	10	10

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

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

1.	2.	3.	4.

(ii) Effective polluting control measure (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 or reduce coal charging and coke pushing emissions. The bleeder of the coke oven shall be flared.

(ii) In the case of existing coke ovens with wet quenching, the new procedures as in (i) and (ii) shall be adopted and emission standards achieved within four years (by 2001).

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

[1]80 Specification of Two Stroke Engine Oil

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

The above specification shall be effective from the Ist day of April, 1999.

[2]81 Battery manufacturing industry

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

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

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

1.	2.	3.	4.
	Liquid Effluent Discharge Standards	Pollutants	Concentration based standards
		pH	6.5 – 8.5
		Suspended solids	50 mg/l
		Lead	0.1 mg/l
	(ii) Dry Cell Manufacturing Industry : Emission Standards		
		Particulate matter	50
		Manganese as Mn	5
	- To comply with the respective standards, all the emissions from above mentioned sources shall be routed through stack connected with hood and fan. In addition to above, installation of control equipment viz. Bag filter/ventury scrubber, is also recommended. - The minimum stack height shall be 30 m.		
	Effluent Standards	pH	6.5 – 8.5
		Tot. suspended solids	100 mg/l
		Manganese as Mn	2 mg/l
		Mercury as Hg	0.02 mg/l
		Zinc as Zn	5 mg/l
	(iii) Secondary Lead Smelters	Lead as Pb	10 mg/Nm^3
		Particulate matter	50 mg/Nm^3
		Minimum stack height	30 m

82. Environmental Standards for Gas/Naptha-based Thermal Power Plants

(i) Limit for emissions of NOx.

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

(c) For new nits with effect from 1.6.1999

Total generation of gas turbine	Limit for Stack NOx emission [(v/v) at 15% excess oxygen]
(a) 400 MW and above	(i) 50 ppm for the units burning natural gas (ii) 100 ppm for the units burning naphtha.
(b) Less than 400 MW but upto 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.

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, Lw, of a DG set should be less than 94+10 log10 (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 2001, 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 form the DG set should be controlled by providing an acoustic enclosure on 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, which ever 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, preferable, 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 average.

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, with in the ambient noise requirements by proper siting and control measures.
03. The manufacturer should furnish noise power levels of the unlicensed DG sets as per standards prescribed under (A)
04. The total sound power level of a DG set, at the user's 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 D set must be strictly in compliance with the recommendations of the DG set manufacturer.
06. A proper routing and preventive maintenance procedure for the DG set should be set and followed in consultation with the DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use.

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

(B) New projects in coastal areas using sea water

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

(C) Existing thermal power plants.

Rise in temperature of condenser cooling water from inlet to the outlet of condenser shall not be more than $10^{o}C$.

(D) Guidelines for discharge point :

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

85. Environmental Standards for coal washeries

1. Fugitive emission standards.

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

2. Effluent discharge standards

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

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

S.No.	Parameter	Limits
1.	pH	5.5 – 9.0
2.	Total Suspended Solids	100 mg/l
3.	Oil and Grease	10 mg/l
4.	BOD (3 days at 27^{o}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 Environment (Protection) Rules, 1986 shall be followed at the boundary line of the coal washery.

4. Code of practice for Coal Washery.

- ✓ Water or Water mixed chemical shall be sprayed at all strategic coal transfer points such as conveyors, loading/unloading points etc. As far as practically possible conveyors, transfer points etc. shall be provided with enclosures.
- ✓ The crushers/pulverisers of the coal washeries shall be provided with enclosures, fitted with suitable air pollution control measures and finally emitted through a stack of minimum height of 30 m. conforming particulate matter emission standard of 150 mg/Nm3 or provided with adequate water sprinkling arrangement.
- ✓ Water sprinkling by using fine atomizer nozzeles arrangement shall be provided on the coal heaps and on around the crushers/pulverisers.
- ✓ Area, in and around the coal washery shall be pucca either asphalted or concreted.
- ✓ Water consumption in the coal washery shall not exceed 1.5 cubic meter per tone of coal.
- ✓ The efficiency of the setting ponds of the waste water treatment system of the coal washery shall not be less than 90%.
- ✓ Green belt shall be developed along the road side, coal handling plants, residential complex, office building and all around the boundary line of the coal washery.
- ✓ Storage bunkers, hoppers, rubber decks in chutes and centrifugal chutes shall be provided with proper rubber linings.
- ✓ Vehicles movement in the coal washery area shall be regulated effectively to avoid traffic congestion. High pressure horn shall be prohibited. Smoke emission from heavy duty vehicle operating in the coal washeries should conform the standards prescribed under Motor Vehicle Rules, 1989.

86. Water quality standards for coastal waters marine outfalls.

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

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

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

TABLE 1.1

PRIMARY WATER QUALITY CRETERIA FOR CLASS SW-I WATERS

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

S.No.	**Parameter**	**Standards**	**Rationale/Remarks**
1.	**2.**	**3.**	**4.**
1.	pH range	6.5 – 8.5	General broad range, conductive for propagation of acquatic lives is given. Value largely dependant upon soil-water interation.
2.	Dissolved Oxygen	5.0 mg/l or 60 per cent saturation value whichever is higher	Not less than 3.5 mg/l at any time of the year for protection of aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour	Special caused by chemical compound like creosols, phenols, naptha pyridine benzene, toluene etc. causing visible colouration of salt crystal and fainting fish flesh.

4.	Floating Matters	Nothing obnoxious or detrimental for use purpose	Surfactants should not exceed an upper limit of 1.0 mg/l and the concentratic not to cause any visible foram.
5.	Suspended Solids	None from sewage or industrial waste origin	Settleable inner matter not in such concentration that would impari any usages specially assigned to this class.
6.	Oil and Grease (including Petroleum Products)	0.1 mg/l	Concentration should not exceed 0.1 mg/l as because it has effect on fish eggs and larvae.
[1]7.	Heavy Metals :		Values depend on:
	Mercury (as Hg)	0.001 mg/l	(i) Concentration in salt, fish and shell fish.
	Lead (as Pb)	0.001 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-I is desirable to be safe and relatively free from hazardous chemicals like pesticides, heavy metals and radionuclide concentrations. Their combined (synergistic or antagonistic) effects on health and aquatic lives are not yet clearly known. These chemicals undergo bio-accumulation, magnification and transfer to human and other animals through food chain. In areas where fisheries, salt pans are the governing considerations, and presence of such chemicals apprehended/reported, bioassay test should be performed following appropriate methods for the purpose of setting case specific limits.

TABLE 1.2

PRIMARY WATER QUALITY CRETERIA FOR CLASS SW-II WATERS

(For Bathing, Contact Water Sports and Commercial Fishing)

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

TABLE 1.3

PRIMARY WATER QUALITY CRETERIA FOR CLASS SW-III WATERS

(For Industrial Cooling Recreation (non-contact) and Aesthetics)

S.No.	Parameter	Standards	Rationale/Remarks
1.	**2.**	**3.**	**4.**
1.	pH range	6.5 – 8.5	The range is conducive for propagation of aquatic species and restoring natural system.
2.	Dissolved Oxygen	3.0 mg/l or 40% saturation value whichever is higher	To protect aquatic lives
3.	Colour and Odour	No noticeable colour or offensive odour	None in such concentra-tion that would impair usages specially 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% of samples in the year and in 3 consecutive samples in monsoon months.
6.	Turbidity	30 NTU	Reasonably clear water for Recreation Aesthetic appreciation and Industrial cooling purposes.
*7.	Dissolved Iron (as Fe)	0.5 mg/l or less	It is desirable to have the collective concentration dissolved Fe and Mn less or equal to 0.5 mg/l to avoid scaling effect.
*8	Dissolved Manganese (as Mn)	0.5 mg/l or less	

Standards included exclusively for Industrial Cooling purpose Other parameters same.

TABLE 1.4

PRIMARY WATER QUALITY CRETERIA FOR CLASS SW-IV WATERS

(For Harbour Waters)

S.No.	Parameter	Standards	Rationale/Remarks
1.	**2.**	**3.**	**4.**
1.	pH range	6.5 – 9.0	To minimize corrosive and scaling effect.
2.	Dissolved Oxygen	3.0 mg/l or 40% 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 organisms which may clog or coat operative parts of marine vessels/equipment.
5.	Fecal coliform	500/100 ml (MPN)	Not exceeding 1000/100 ml in 20% of samples in the year and in 3 consecutive samples in monsoon months.
6.	Biochemical Oxygen Demand (3 days at $27^{o}C$)	5 mg/l	To maintain water relatively free from pollution caused by sewage and other decomposable wastes.

TABLE 1.5

PRIMARY WATER QUALITY CRETERIA FOR CLASS SW-V WATERS
(For Navigation and Controlled Waste Disposal)

S.No.	Parameter	Standards	Rationale/Remarks
1.	**2.**	**3.**	**4.**
1.	pH range	6.5 – 9.0	As specified by New England Interstate Water Pollution Control Commission.
2.	Dissolved Oxygen	3.0 mg/l or 40% saturation value whichever is higher	To protect aquatic lives
3.	Colour and Odour	None in such concentration that would impair any usages specifically assigned to this class	As in (i) above
4.	Sludge deposits, Solids refuse floating solids, oil grease and scum	None except for such small amount that may result from discharge of appropriately treated sewage and or industrial waste effluents.	As in (i) above.
5.	Fecal coliform	500/100 ml (MPN)	Not exceeding 1000/100 ml in 20% 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 Quality (EQ) of CS_2 :

For VSF

EQ = 125 kg of CS_2/t of fibre

For VFY,

EQ = 225 kg of SC_2/t of fibre.

Stack Height (H) requirement, m **Remarks**

Where Q – CS_2 emission rate, kg/hr

VS – Stack exit velocity, m/sec.

D – diameter of stack, m
U – annual average wind speed at top of stack, m/sec.

Multiple Stacks

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

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

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

B. Ambient Air Quality Monitoring

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

C. For new plants/expansion projects being commissioned on or after 1.6.1999. Permissible emissions limits are :

CS_2 = 21 kg/t of fibre
H_2S = 6.3 kg/t of fibre

Note : A and B above also apply to new plants/expansion projects).

[1]88. Emission Standards for new generator sets (upto 19 kilowatt) run on petrol and kerosene with implementation schedule.

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

A. From June 1, 2000

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

1. Sl.No. 88 and 89 and entries relating thereto inserted by the Environment (Protection) Amendment Rules, 1999 vide GSR No. 682(E), dated 5.10.1999.

B. From June 1, 2001

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

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

Following organization shall test and certify the generator sets:

(i) Automotive Research Association of India, Pune.

(ii) Indian Institute of Petroleum, Dehradun

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

(iv) Vehicle Research Development Establishment, Ahmednagar.

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

89. Noise standards for fire-crackers

A. (i) The manufacture, sale or of fire-crackers generating noise level exceeding 125 dB(A1) of 145 dB(C) at 4 meters distance from the point of bursting shall be prohibited.

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

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

(i) The measurement shall be made on hard concrete surface of minimum 5 meter diameter or equivalent.

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

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

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

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

Footnote : The Principal Rules were published in the Gazette of India vide Notification No. S.O. 844(E), dated the 19th November, 1986 and subsequently amended vide :

(1) S.O. 82(E), dated 16th February, 1987
(2) S.O. 393(E), dated 16th April, 1987
(3) S.O. 443(E), dated 18th April, 1987
(4) S.O. 64(E), dated 18th January, 1988
(5) G.S.R. 919(E), dated 24th October, 1989
(6) S.O. 8(E), dated 3rd January, 1989
(7) G.S.R. 913(E), dated 24th October, 1989
(8) S.O. 914(E), dated 24th October, 1989
(9) G.S.R. 931(E), dated 27th October, 1989
(10) S,.S.R. 103(E), dated 25th December, 1989
(11) S.O. 12(E), dated 8th January, 1999
(12) G.S.R. 54(E), dated 5th February, 1990
(13) S.O. 136(E), dated 9th February, 1990
(14) G.S.R. 742(E), dated 13th August, 1990
(15) S.O. 23(E), dated 16th January, 1991
(16) S.O. 80(E), dated 8th February, 1991
(17) S.O. 114(E), dated 19th February, 1991
(18) G.S.R 85(E), dated 20th February, 1991
(19) G.S.R. 93(E), dated 21st February, 1991
(20) S.O. 190(E), dated 18th March, 1991
(21) S.O. 416(E), dated 20th June, 1991
(22) S.O. 479(E), dated 25th July, 1991
(23) S.O. 23(E), dated 9th January, 1992.

APPENDIX – A

FORM – 1

(See rule 7)

Notice of intention to have sample analysed

To

……

……

Take notice that it is intended to have analysed the sample of …… which has been taken today, the …… day of ……..20…… from ……..
……(
Name and designation of the person who takes the sample)

_____

* Specify the place where the sample is taken.

(SEAL)

DATE

FORM – II

(See rule 8)

MEMORANDUM TO GOVERNMENT ANALYST

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 sample has been marked by me with the following mark :

Details of the portion of sample taken

Name and designation of person who sends sample

Date …….. (SEAL)

FORM – 1II

(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 …….. 20…….. from ……. ……[1] ……. a sample of ……. for analysis.

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

I further certify that I have analysed the aforementioned sample on …… and declare the result of the analysis to be as follows:

[2] …….

……

The Condition of seals, fastening of sample on receipt was as follows :

……

……

Signed this …….. day of ……. 20 ……

Signature

(Government Analyst)

Address ……..

…….

…….

1. Here write the name of the officer/authority from whom sample was obtained.
2. Here write full details of analysis and refer to method of analysis.

FORM – IV

(See Rule 11)

FORM OF NOTICE

By registered post
Acknowledgement due

From [(1)]

Shri …….

……

……

To

……

……

……

Notice under section 19(b) of the Environment (Protection) Act, 1986

Whereas an office under the Environment (Protection) Act, 1986 has been committed/is being committed by ……

I/We hereby give notice of 60 days under section 19(b) of the Environment (Protection) Act, 1986 of my/our intention to file a complaint in the court against ……. ……..[(2)] for violation of section of the Environment (Protection) Act, 1986.

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

Signature(s)

Place ……
Dated ……..

Explanation :

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

Company for this purpose means a company defined in explanation to sub rule (6) of rule 4.

(2) Here give the name and address of the alleged offender. In case of a manufacturing/processing/operation unit, indicate the name/location/nature of activity etc.

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

[1][FORM – V]

(See Rule 14)

Environmental Statement for the financial year ending the 31st March ……..

PART-A

(i) Name and address of the owner/occupier of the Industry operation or process.

(ii) Industry category Primary – (STC Code) Secondary – (SIC Code)

(iii) Production capacity – Units _____

(iv) Year of establishment

(v) Date of 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)	(2)
(1)		
(2)		
(3)		

(2) Raw material consumption

* Name of raw material	Name of Product	Consumption of raw material per unit of output.	
		During the previous Financial year	During the current financial year.

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw material used.

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

Pollutants	**Quantity of pollutants discharge (mass/day)**	**Concentration of pollutants in discharges (mass/volume**	**Percentage of variation from prescribed standards with reasons.**
(a) Water **(b) Air**			

PART-D

HAZARDOUS WASTE

(As specified under Hazardous Wastes/Management and Handling Rules, 1989)

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

PART-E

SOLIDS WASTE

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

PART – F

Please specify the characterizations (in terms of composition of quantum) of hazardous as well as solids 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 including abatement of pollution, prevention of pollution.

PART – I

Any other particulars for improving the quality of the environment.

[1][SCHEDULE II]

(See Rule 3)

General Standards for discharge of effluents.

S.No.	Parameter	Standards			
		Inland Surface water	Public Sewer	Land for irrigation	Marine coastal areas
		(a)	(b)	(c)	(d)
1.	Colour and odour	See Note 1	---	See Note 1	See Note 1
2.	Suspended solids, mg/l, max	100	600	200	(a) For process waste water – 100 (b) For cooling water effluent – 10% above total suspended matter of influent cooling water.
3.	Particle size of suspended solids	Shall pass 850 micron IS Sieve			(a) Floatable solids, Max 3mm (b) Settleable solids Max 850 microns
4.	Dissolved solids (inorganic), mg/a, max.	2100	2100	2100	---
5.	pH value	5.5 – 9.0	5.5 – 9.0	5.5 – 9.0	5.5 – 9.0
6.	Temperature ^{o}C, Max	Shall not exceed 40 in any section of the stream within 15 meters down stream from the effluent outlet	45 at the point of discharge	---	45 at the point of discharge

1. Schedule II inserted vide GSR 919(E) dated 12.9.1988, published in the Gazette No. 488 dated 12.9.1988.

		(a)	(b)	(c)	(d)
7.	Oil and grease, mg/l, max	10	20	10	20
8.	Total residual chlorine, mg/l ,max	1.0	---	---	1.0
9.	Ammonical nitrogen (as N), mg/l, Max	50	50	---	50
10.	Total Kejeldahl nitrogen (as N), mg/l, max	100	---	---	100
11.	Free Ammonia (As NH_3), mg/l, Max.	5.0	---	---	5.0
12.	Biochemical oxygen demand (5 days at 20^{o}C) Max.	30	350	100	100
13.	Chemical Oxygen demand, mg/l, Max.	250	---	---	250
14.	Arsenic (as As), mg/l, Max.	0.2	0.2	0.2	0.2
15.	Mercury (As Hg), mg/l, Max.	0.01	0.01	---	0.01
16.	Lead (as Pb), mg/l, max.	0.1	1.0	---	1.0
17.	Cadmium (as Cd), mg/l, Max.	2.0	1.0	---	2.0
18.	Hexavalent chromium (as Cr+6), mg/l, max	0.1	2.0	---	1.0
19.	Total chromium (as Cr), mg/l, max	2.0	2.0	---	2.0
20.	Copper (as Cu), mg/l max.	3.0	3.0	---	3.0
21.	Zinc (as Zn), mg/l, Max.	5.0	15	---	15
22.	Selenium (as Se), mg/l, max	0.05	0.05	---	0.05
23.	Nickel (as Ni), mg/l, max.	3.0	3.0	---	5.0
24.	Boron (as B), mg/l, max.	2.0	2.0	2.0	---
25.	Percent Sodium, max	---	60	60	---
26.	Residula Sodium carbonate, mg/l, max.	---	---	5.0	---
27.	Cyanide (as CN), mg/l, max.	0.2	2.0	0.2	0.2
28.	Chloride (as Cl), mg/l, max.	1000	1000	600	---
29.	Fluoride (as F), mg/l,max.	2.0	15	---	15
30.	Dissolved Phosphates (as P), mg/l, max.	5.0	---	---	---
31.	Sulphate (as SO_4), mg/l, max.	1000	1000	1000	---
32.	Sulphide (as S) mg/l, max.	2.0	---	---	5.0
33.	Pesticides	Absent	Absent	Absent	Absent
34.	Phenolic Compounds (as C_6H_5OH), mg/l, max.	1.0	5.0	---	5.0
35.	Radioactive materials				
	(a)Alpha emitters MC/ml., Max.	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	(b)Beta emitters uc/ml. Max.	10^{-6}	10^{-6}	10^{-7}	10^{-6}

Note :

1. All efforts should be made to remove colour and unpleasant odour as far as possible.
2. The standards mentioned in the notification shall apply to all the effluents discharged such as industrial mining and mineral processing activities municipal sewage etc.
3. Omitted by Rule 2 of the Environment (Protection) Fourth Amendment Rules, 1992 vide Notification No. GSR 797(E) dated 01.01.1992, Gazette No. 396, dated 01.10.1992.

[1]SCHEDULE – III

(See Rule 3)

AMBIENT AIR QUALITY STANDARDS IN RESPECT OF NOISE

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

Note :

1. Day time is reckoned in between 6:00 a.m. and 9:00 p.m.
2. Night time is reckoned in between 9:00 pm and 6:00 am
3. Silence Zone is defined as areas upto 100 meters around such premises as hospitals, educational institutions and courts. The Silence zones are to be declared by the Competent Authority.

   Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these zones.

4. Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.

---

1. Schedule III inserted GSR 1063(E), dated 26.12.1989, published in the Gazette No. 643 dated 26.12.1989.

[1]SCHEDULE – IV

(See Rule 3)

Standards for emission of smoke, vapour etc. form motor vehicles :

(1) Every motor vehicles shall be manufactured and maintained in such condition and shall be so driven that smoke, visible vapour, grit, sparks, ashes, cinders or oily substance do not emit therefrom.

(2) On and from the Ist 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 percent by volume;

(b) Idling CO emission limit for all two and three wheeled petrol driven vehicles shall not exceed 4.5 percent by volume;

(c) Smoke density for all diesel driven vehicles shall be as follows :-

Method of Text		Maximum smoke density		
		Light absorption coefficient m-1	Bosh units	Harridge units
(a)	Full load at a speed of 60% to 70% of maximum enginerated speed declared by the manufacturer	3.1	5.2	75
(b)	Free acceleration	2.3	---	65

(3) On and from the 1st day of April, 1991, all petrol driven vehicles shall be so manufactured that they comply with the mass emission standards as specified at Annexure 'I'. The breakdown of the operating cycle used for the test shall be as specified at Annexure 'II' and the reference fuel for all such tests shall be as specified in Annexure 'III' to this Schedule.

(4) On and from the 1st day of April, 1991, all diesel driven vehicles shall be so manufactured that they comply with the mass emission standards based on exhaust gas capacity as specified at Annexure 'IV' to this Schedule.

(5) On and from the 1st day of April, 1992, all diesel driven vehicles shall be so manufactured that they comply with the following levels of emission under the Indian driving cycle :-

Mass of Carbon Monoxide (CO) Maximum Grams per KWH	Mass of Hydroxy Carbons (HC) Maximum Grams per KHW	Mass of Nitrogen Oxides (NC) Maximum Grams per KWH.
14	3.5	18

(6) Each motor vehicle manufactured on and after the dates specified in paragraphs (2), (3), (4) and (5) shall be certified by the manufacturers to 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 normal use, despite the vibration to which it may be subjected, to comply with the provisions of the said paragraphs.

(7) Test for smoke emission level and carbon monoxide level for motor vehicles :-

(a) Any officer not below the ranks of a sub-inspector of police or an inspector of motor vehicles, who has reason to believe that a motor vehicle is by virtue of smoke emitted form it or other pollutants like carbon monoxide emitted from it, is likely to cause environmental pollution, endangering the health or safety of any other user of the road or the public, may direct the driver or any person incharge of the vehicle to submit the vehicle for undergoing a test to measure the standard of black smoke or the standard of any of the other pollutants.

(b) The driver or any person incharge of the vehicle shall upon demand by any officer referred to in sub-paragraph (a), submit the vehicle for testing for the purpose of measuring the standards 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 EMIS SION 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
$150 < R \leq 350$	$12 + \frac{18 (R - 150)}{200}$	$8 + \frac{4 (R-150)}{200}$
$R > 350$	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
$1020 \leq rw \leq 1250$	16.5	2.1
$1250 \leq rw \leq 1470$	18.8	2.1
$1470 \leq rw \leq 1700$	20.7	2.3
$1700 \leq rw \leq 1930$	22.9	2.5
$1930 \leq rw \leq 2150$	24.9	2.7
$Rw > 2150$	27.1	2.9

2. Conformity of Production Tests :

Two and Three Wheeler Vehicles

Reference Mass, R (Kg)	CO (g/km)	HC (g/Km)
(1)	(2)	(3)
$R \leq 150$	15	10
$150 < R \leq 350$	$15 + \frac{25 (R - 150)}{200}$	$10 + \frac{5 (R-150)}{200}$
$R > 350$	40	15

Light Duty Vehicles :

Reference Mass, rw (Kg)	CO (g/km)	HC (g/Km)
(1)	(2)	(3)
$rw \leq 1020$	17.3	2.7
$1020 \leq rw \leq 1250$	19.7	2.7
$1250 \leq rw \leq 1470$	22.5	2.8
$1470 \leq rw \leq 1700$	24.9	3.0
$1700 \leq rw \leq 1930$	27.6	3.3
$1930 \leq rw \leq 2150$	29.9	3.5
$Rw > 2150$	32.6	3.7

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

Explanation : Mass emission standards refers to the gm of Pollutants emitted per Km. run of the vehicle as determined by a chessis dynamometer test using the Indian Driving Cycle.

ANNEXURE – II

(See paragraph 3)

BREAKDOWN OF THE OPERATING CYCLE, USED FOR THE TESTS

No. of Operation	Acceleration (m/acc^2)	Speed (km/h)	Duration of each Operation(s)	Cumulative time(s)
(1)	(2)	(3)	(4)	(5)
1. Idling	---	---	16	16
2. Acceleration	0.65	0 – 14	6	22
3. Acceleration	0.56	14 – 22	4	26
4. Declaration	-0.63	22 – 13	4	30
5. Steady speed	---	13	2	32
6. Acceleration	0.56	13 – 23	5	37
7. Acceleration	0.44	23 – 31	5	42
8. Deceleration	- 0.56	31 – 25	3	45
9. Steady speed	---	25	4	49
10. Deceleration	-0.56	25 – 21	2	51
11 Acceleration	0.45	21 – 34	8	59
12. Acceleration	0.32	34 – 42	7	66
13. Deceleration	0.46	42 – 37	3	69
14. Steady speed	---	37	7	76
15. Deceleration	-0.42	37 – 34	2	78
16. Acceleration	0.32	34 – 42	7	85
17. Deceleration	-0.46	42 – 27	9	94
18. Deceleration	-0.52	27 – 14	7	101
19. Deceleration	-0.56	14 – 00	7	108

ANNEXURE – III

(See paragraph 3)

REFERENCE FUEL FOR TYPE AND PRODUCTION CONFORMITY TESTS

S.No.	Characteristics	Requirements		Method of test (ref of P: or IS : 1448*)
		87 Octane	93 Octane	
(1)	(2)	(3)	(4)	(5)
1.	Colour, visual	Orange	Red	---
2.	Copper-strip corrosion for 3 hours at 50°C.	Not worse than No. 1		P : 15 (1968)
3.	Density at 15°C	Not limited but to be reported		P : 16 (1967)
4.	Distillation :			P : 18 (1967)
	(a) Initial boiling point *methods for test for petroleum and its products	Not But to be	limited reported	
	(b) Recovery upto 20°C percent by volume min.	10	10	
	(c) Recovery upto 125°C 50 percent by volume	50	50	
	(d) Recovery upto 130°C percent by volume	90	90	
	(e) Final boiling point, Max	215oC	215°C	
	(f) Residue percent by volume Max.	2	2 94	
5.	Octane number (Research method) Max.	87	94	P : 27 (1960)
6.	Oxidation stability in minutes, Min.	360	360	P : 28 (2966)
7.	Residue on evaporation mg/100 ml. Max.	4.0	4.0	P : 29 (1960) (Air jat solvent washed)
8.	Sulphur, total percent by weight Max.	0.25	0.20	P : 34 (1966)
9.	Lead content (as Pb), g/l Max.	0.56	0.80	P : 37 (1967) or P : 38 (1967)
10.	Reid vapour pressure at 38°C kg/cm^3 Max.	0.70	0.70	P : 39 (1967)

[1]ANNEXURE – IV

(See paragraph 4)

LIMIT VALUES OF EXHAUST GAS CAPACITY APPLICABLE FOR DIESEL DRIVEN VEHICLES THE ENGINE TESTS AT STEADY SPEED

Nominal Flow G(l/s)	Absorption Coefficient (Km-l)	Nominal Flow G(l/s)	Absorption Coefficient (K9-1)
42	2.00	120	1.20
45	1.91	125	1.17
50	1.82	130	1.15
55	1.75	135	1.31
60	1.68	140	1.11
65	1.61	145	1.09
70	1.56	150	1.07
75	1.50	155	1.05
80	1.46	160	1.04
85	1.41	165	1.02
90	1.38	170	1.01
95	1.34	175	1.00
100	1.31	180	0.99
105	1.27	185	0.97
110	1.25	190	0.96
115	1.22	195	0.95
		>200	0.93

1. Annexure IV inserted vide GSR 54(E) dated 5.2.1990 published in the Gazette No. 45 dated 5.2.1990

[1]SCHEDULE – V

(See Rule 12)

S.No.	Place at which the discharge of any environmental pollutant in excess of prescribed standards occurs or is apprehended to occur	Authorize or agencies to be intimated	Appointed under
(1)	(2)	(3)	(4)
1.	Factories as defined under the Factories Act, 1948 :		
	(a) Owned by Central Government and engaged in carrying out the purpose of the Atomic Energy Act, 1962;	(i) The Atomic Energy Regulatory Board (AERB) (ii) The Ministry of Environment and Forests	The Atomic Energy Act, 1962.
	(b) Factories other than those mentioned in paragraph (a)	(i) The Chief Inspector of Factories (ii) The Inspector of Factories having local jurisdiction (iii)The Ministry of Environment and Forests.	The Factories Act, 1948 --do--
2.	Mine as defined under the Mines and Minerals (Regulation and Development) Act, 1957.	(i) The Controller General, India Bureau of Mines	The Mines and Minerals (Regulation & Development Act), 1957.

1. Schedule-II relating to rule 12 renumbered as Schedule V vide GSR 422(E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.

Entries relating to S.No. 2 corrected in terms of SO 64(E) published in Gazette No. 42 dated 18.01.1988 and corrigendum No. GSR 434(E) dated 07.04.1988 published in the Gazette No. 181 dated 07.04.1988

Principal Rules published vide SO No. 844(E) dated the 19th November, 1986 Amending Rules published vide SO No. 82(E) dated the 16th February, 1987; SO 393(E) dated the 16th April, 1987; SO 443(E) dated the 28th April, 1987; SO 64(E) dated the 18th January, 1988; GSR 919(E) dated the 12th September, 1988; SO 8(E) dated the 3rd January, 1989; GSR 913(E) dated the 24th October, 1989; SO 914(E) dated the 24th October, 1989; GSR 1063(E) dated the 26th December, 1989; SO 12(E) dated the 8th January, 1990 and GSR 54(E) dated 5th February, 1990.

(Footnote : at the end of Notification No. GSR 742(E) dated the 30th August, 1990 published in the Gazette No. 365 dated August 30, 1990)

(1)	(2)	(3)	(4)
		(ii) Regional Controller of Mines having local jurisdiction	The Mines and Minerals (Regulation & Development) Act, 1957
		(iii) The Ministry of Environment and Forest	---
3.	Port as defined under the Indian Ports Act, 1908	(i) Conservator of Ports	The Indian Ports Act, 1908.
		(ii) Ministry of Environment and Forests.	---
4.	Plantation as defined under the Plantation Labour Act, 1951	(i) The Chief Insp. Of Plantation	The Plantation Labour Act, 1951
		(ii) The Inspector of Plantation having local jurisdiction	--do--
		(iii) The Ministry of Environment and Development	----
5.	Motor Vehicles as defined under the Motor Vehicles Act, 1939.	(i) State Transport Authority	The Motor Vehicles Act, 1939.
		(ii) Regional Transport Authority having regional 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.	---

[1]SCHEDULE – VI

(See Rule 3A)

General Standards for discharge of environment pollutants Part-A : Effluents

S.No.	Parameter	Standards			
		Inland Surface Water	Public Sewers	Land for Irrigation	Marine Coastal areas
		(a)	(b)	(c)	(d)
1.	Colour and Odour	See 6 of Annexure – I	---	See 6 of Annexure-I	See 6 of Annexure-I
2.	Suspended solids	100	600	200	(a) For process waste water-100. (b) For cooling water effluent 10% above total suspended matter of influent.
3.	Particular size of suspended solids	Shall pass 850 micron IS Sieve	---		(a) Floatable solids, max. 3mm. (b) Settleable solids, max 850 microns.
[2]4.	***	*	---	***	---
5	pH value	5.5 – 9.0	5.5 – 9.0	.0	5.5 – 9.0
6.	Temperature	Shall not exceed 5^{o}C above the receiving water temperature	---	---	Shall not exceed 5^{o}C above the receiving water temperature
7.	Oil and grease mg/l max.	10	20	10	20
8.	Total residual chlorine mg/l Max.	1.0	---	---	1.0

		(a)	(b)	(c)	(d)
9.	Ammonical nitrogen (as N), mg/l max.	50	50	---	50
10.	Total Kejeldahl nitrogen (as NH_3), mg/l, max.	100	---	---	100
11.	Free ammonia (as NH_3), mg/l, max.	5.0	---	---	5.0
12.	Biochemical Oxygen demand (5days at 20^oC), mg/l, max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/l, max.	250	---	---	250
14.	Arsenic (as As), mg/l, max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg), mg/l, max.	0.01	0.01	---	0.01
16.	Lead (as Pb), mg/l, max.	0.1	1.0	---	2.0
17.	Cadmium (as Cd), mg/l, max.	2.0	1.0	---	2.0
18.	Hexavalent chromium (as Cr+6), mg/l, max.	0.1	2.0	---	1.0
19	Total Chromium (as Cr), mg/l, max.	2.0	2.0	---	2.0
20.	Copper (as Cu), mg/l, Max.	3.0	3.0	--	3.0
21.	Zinc (as Zn) mg/l, max.	5.0	15	--	15
22.	Selenium (as Sc), mg/l, max.	0.05	0.05	---	0.05
23.	Nickel (as Ni) mg/l, max.	3.0	3.0	---	5.0
[2]24.	***	*	*	*	*
[2]25	***	*	*	*	*
[2]26	***	*	*	*	*
27	Cyanide (as CN) mg/l, max.	0.2	2.0	0.2	0.2
[2]28	***	*	*	*	*

		(a)	(b)	(c)	(d)
29	Fluoride (as F), mg/l, max	2.0	15	---	15
30	Dissolved phosphates (as P), mg/l, max.	5.0	---	---	---
[2]31.	***	*	*	*	*
32.	Sulphide (as S) mg/l, max	2.0	---	---	5.0
33.	Phenoile compounds (as C_6H5_OH), mg/l, max.	1.0	5.0	---	5.0
34.	Radioactive materials:				
	(a) Alpha emitter micro curie/ml.	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	(b) Beta emitter micro curie/ml.	10^{-6}	10^{-6}	10^{-7}	10^{-6}
35.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
36.	Manganese (as Mn)	2 mg/l	2 mg/l	---	2 mg/l
37.	Iron (as Fe)	3 mg/l	3 mg/l	---	3 mg/l
38.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	---	0.2 mg/l
39.	Nitrate Nitrogen	10 mg/l	---	---	20 mg/l
[2]40.	***	*	*	*	*

2. Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No. GSR 801(E) dated 31.12.1993.

Waste Water Generation Standards Part-B

S.No.	Industry	Quantum
1.	Integrated Iron & Steel	16 m^3/tone of finished steel
2.	Sugar	0.4 m3/tone of cane crushed.
3.	Pulp & Paper Industries	
	(a) Large pulp & paper	
	(i) Pulp & paper	175 m^3/tone of paper produced
	(ii) 1 Viscose Staple Fibre	150 m^3/tone of product
	(iii) Viscose Filament Yarn.	500 m^3/tone of produce

S.No.	Industry	Quantum
	(b) Small pulp & paper:	
	(i) Agro-residue based	150 m^3/tone of paper produced.
	(ii) Waste paper based	50 m^3/tone of paper produced.
4.	Fermentation Industries	
	(a) Maltry	3.5 m^3/tone of grain produced
	(b) Brewery	0.25 m^3/kl of beer produced
	(c) Distillery	12 m^3/kl of alchol produced
5.	Caustic Soda	
	(a) Membrane cell process	1 m^3/tone of caustic soda produced excluding cooling tower blowdown.
	(b) Mercury cell process	4 m3/tone of caustic soda produced (mercury bearing) 10% blowdown permitted for cooling tower.
6.	Textile Industries: Man-made Fiber	
	(i) Nylon & Polyster	120 m^3/tonne for fibre produced.
	(ii) Vixcose rayon	150 m^3/tonne of product
7.	Tanneries	28 m^3/tone of raw hide.
8.	Starch, Glucose and related products	8 m^3/tone of maize crushed.
9.	Diary	3 m^3/kl of milk
10.	Natural rubber processing industry	4 m^3/tone of rubber.
11.	Fertilizer:	
	(a) Straight nitrogenous fertilizer	5 m^3/tone of urea or equivalent produced.
	(b) Straight phosphatic fertilizer (SSP & TSP) excluding manufacture of any acid.	0.5 m^3/tone of SSP/TSP
	(c) Complex fertilizer	Standards of nitrogenous and phosphatic fertilizers are applicable depending on the primary product.

Load based Standards Part-C

1. Oil Refinery Industry:

S.No.	Parameter processed	Quantum in kg/1000 tonnes of crude
1.	Oil and Grease	10.00
2	Phenol	0.70
3	BOD	10.50
4	Suspended solids	14.00
5	Sulphide	0.35

2. Large Pulp & Paper, News Print/Rayon grade plants of capacity above 24000 tone/annum:

S.No.	Parameter processed	Quantum in kg/1000 tonnes of crude
1.	Total Organic Chloride (TOCl)	2 kg/tone of product

General Emission Standards Part-D

1. Concentration Based Standards:

S.No.	Parameter	Standard Concentration not to exceed (in mg/Nm^3)
1.	Particulate matter (PM)	150
2	Total Fluoride	25
3	Asbestos	4 Fibres/cc and dust should not be more than 2 mg/Nm^3
4	Mercury	0.2
5	Chlorine	15
6	Hydrochloric acid vapour and mist	35
[1]7	***	*
8	Sulphuric acid mist	50
9	Carbon monoxide	1% max. (v/v)
[1]10.	***	*
11.	Lead	10 mg/Nm^3
[1]12.	***	*

1. Omitted by Rule 2(g)(iv) of the Environment (Protection) third amendment Rules, 1993 vide GSR 801(E) dated 31.12.1993.

2. Equipment based standards:

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

S.No.	Parameter	Standard	
1.	Sulphur dioxide.	Stack-height limit in meter.	
	(i) Power generation capacity :		
	■ 500 MW and more	275	
	■ 200/210 MW and above to less than 500 MW	220	
	■ Less than 200/210 MW	$H=14(Q)^{0.3}$	
	(ii) Steam generation capacity		
	■ Less than 2 tone/h	Less than 8.5 MT	9
	■ 2 to 5 tone/h	8.5 to 21 MT	12
	■ 5 to 10 tone/h	21 to 42 MT	15
	■ 10 to 15 tone/h	42 to 64 MT	18
	■ 15 to 20 tone/h	64 to 104 MT	21
	■ 20 to 25 tone/h	104 to 105 MT	24
	■ 25 to 30 tone/h	105 to 126 MT	27
	■ More than 30 tone/h	More than 126 MT	30
		Or using the formula $H=14(Q)^{0.3}$	

Note : H – Physical height of the stack in meter; Q – Emission rate of SO_2 in kg/hr,

3. Load/Mass-Based Standards:

S.No.	Industry	Parameter	Standard
1.	Fertilizer (Urea)		
	Commissioned Prior to 1.1.82	Particulate Matter (PM)	2 kg/tone of product
	Commissioned after 1.1.82	Particulate Matter (PM)	0.5 kg/tonne of product
2.	Copper, Lead and Zinc Smelter/convertor	Sulphur dioxide	4 kg/tone of concentrated (100%) acid produced
3.	Nitric Acid	Oxides of Nitrogen	3 kg/tonne of weak acid (before concentration) produced.

1. Substituted by Rule 2(h)(I), ibid

S.No.	Industry	Parameter	Standard
4.	Sulphuric Acid	Sulphur Dioxide	4 kg/tonne of concentrated (100%) acid produced.
5.	Coke Oven	Carbon monoxide	3 kg/tonne of coke produced
6.	Oil Refineries		
	(a) For the oil refineries, the following standards shall be applicable.		

Process	Parameter	Standard
■ Distillation (Atmospheric plus vacuum)	Sulphur Dioxide	0.25 kg/tonne of feed in this process
■ Catalytic Cracker	--do --	2.5 kg/MT of feed in this process
■ Sulphur Recovery Unit	--do--	120 kg/MT of Sulphur in the feed

[1](b) ***

7.	Aluminium Plants:		
	(i) Anode Bake Oven	Total Fluoride	0.3 Kg/MT of Aluminium
	(ii) Pot room		
	(a) Vertical Stud Soderberg (VSS)	--do--	4.7 kg/MT of Aluminium
	(b) Horizontal Stud Soderberg (HSS)	--do--	6 kg/MT of Aluminium
	(c) Pre Backed Side Work (PBSW)	--do--	2.5 kg/MT of Aluminium
	(d) Pre Backed Centre Work (PBCW)	--d0--	1.0 kg/MT of Aluminium
8.	Glass Industry:		
	Furnace Capacity:		
	(i) Up in the product draw Particulate matter capacity of 60 MTD/Day.	Particulate matter	2 kg/hr ca
	(ii) Product draw capacity more than 60 MT/Day.	Particulate Matter	0.8 Kg/MT of Product drawn

1. Omitted by Rule 2(I)(vii) of the Environment (Protection) Third Amendment Rules, 1993 vide GSR 801 (E) dated 31.12.1993.

Noise Standards Part-E *(Standards notified at S.No. 46 may also be referred)*

A. Noise Limits for Automobiles (Free Field Distance at 7.5 metre in dB(A) at the manufacturing Stage.

(a) Motorcycle, Scooters & Three Wheelers	80
(b) Passenger Cars	82
(c) Passenger or Commercial vehicles upto 4 MT	85
(d) Passenger or Commercial vehicles above 4 MT and upto 12 MT	89
(d) 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 1 ton to 1.5 ton	68
(b) Air Coolers	60
(c) Refrigerators	46
(d) Diesel generator of domestic purposes	85 - 90
(e) Compactors (rollers), Front Loaders, Concrete mixers, Cranes (moveable), Vibrators and Saws.	75

ANNEXURE – I
(For the purposes of Parts-A, B and C)

The State Boards shall following guide-lines in enforcing the standards specified under Schedule VI:-

1. The waste waters and gases are to be treated with the best available technology (BAT) in order to achieve the prescribed standards.

2. The industries need to be encouraged for recycling and reuse, of waste materials as far as practicable in order to minimize the discharge of wastes into the environments.

3. The industries are to be encouraged for recovery of biogas, energy and reusable materials.

4. While permitting the discharge of effluent and emission into the environment, State Boards have to take into account the assimilative capacities of the receiving bodies, especially water bodies so that quality of the intended use of the receiving waters is not affected. Where such quality is likely to be effected discharges should not be allowed into water bodies.

5. The Central and State Boards shall put emphasis on the implementation of clean technologies by the industries in order to increase fuel efficiency and reduce the generation of environmental pollutants.

6. All efforts should be made to remove colour and unpleasant odour as far as practicable.

7. The standards mentioned in the Schedule shall also apply to all other effluents discharged such as industrial mining, and mineral processing activities and sewage.

8. The limit given for the total concentration of mercury in the final effluent of caustic soda industry, is for the combined effluent from (a) Cell house, (b) Brine Plant, (c) Chlorine handling, (d) hydrogen handling and (e) hydro choloric acid plant.

9. [1][(a) … (f)]

10. All effluents discharge including from the industries such as cotton textile, composite woolen mill, synthetic rubber, small pulp & paper, natural rubber, petro-chemicals, tanneries, point dyes, slaughter houses, food & fruit processing and diary industries into surface waters shall conform to the BOD limit specified above, namely, 30 mg/l. For discharge an effluent having a BOD more than 30 mg/l, the standards shall conform to those given, above for the other receiving bodies, namely, sewers, coastal waters, and land for irrigation.

11. [2][***….]

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1. Omitted by Rule 4 of the Environment (Protection) Rules, 1996 notified by notification GSR 176(E), dated 2.4.1996.
2. Omitted by Rule 2(k)(vii) of the Environment (Protection) Third Amendment Rules, 1993 vide GSR 801(E), dated 31.12.1993.

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

13. In case of pesticides :

    (a) The limits should be complied with at the end of the treatment plant before dilution.
    (b) Bio-assay test should be carried out with the available species of fish in the receiving water, the COD limits to be specified in the consent conditions should be correlated with the BOD limits.
    (c) In case metabolites and isomers of the Pesticides in the given list are found in significant concentration, standards should be prescribed for these also in the same concentration as the individual pesticides.
    (d) Industries are required to analyze pesticides in waste water by advanced analytical methods such as GLC/HPLC.

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 Rules 1989 the State Board in such cases shall direct the industries to install tertiary treatment stipulating time limit. *(Inserted by Rule 2(k)(ix), ibid*

15. Standards specified in Part A of Schedule – VI for discharge of effluent into the public sewer shall be applicable only if such sewer leads to a secondary treatment including biological treatment system, other wise the discharge into sewers shall be treated as discharge into inland surface waters.

ANNEXURE – II

(For the purpose of Part – D)

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

(a) In case of cement plants, the total dust (from all sections) shall be within 400 mg/Nm^3 and 250 mg/Nm^3 for the plants upto 200 t/d and more than 200 t/d capacities respectively.

(b) In respect of calcination process (e.g. Aluminium Plants) Kilns, and step Grate Bagasse fired-Boilers. Particulate Matter (PM) emissions shall be within 250 mg/Nm^3.

(c) In case of thermal power plants commissioned prior to 1-1-1982 and having generation capacity less than 62.5 MW, the PM emission shall be within 350 mg/Nm^3.

(d) In case of Lime Kilns of capacity more than 5t/day and upto 40t/day, the PM emission shall be within 500 mg/Nm^3.

(e) In case of horse shoe/pulsating Grate and Spreader Stroker Bagasse-fired-Boiler, the PM emission shall be within 500 (12% CO_2) and 800 (12% CO_2) mg/Nm^3 respectively. In respect of these boilers, if more than attached to a single stack, the emission standards shall be fixed , based on added capacity of all the boilers connected with the stack.

(f) In case of asbestos dust, the same shall not exceed 2 mg/Nm^3.

(g) In case of the urea plants commissioned after 1-1-1992, coke ovens and lead glass units, the PM emission shall be within 50 mg/Nm^3.

(h) In case of small boilers of capacity less than 2 tons/hr. and between 2 to 5 tons/hr, the PM emissions shall be within 1000 and 1200 mg/Nm^3.

(i) In case of integrated Iron & Steel Plants, PM emission upto 400 mg/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 meters from a controlled, isolated as well as from a unit located in cluster should be less than 600 micrograms/Nm^3. [1][***] These units must also adopt the following pollution control measures:-

  (i) Dust containment cum suppression system for the equipment;

  (ii) Construction of wind breaking walls;

  (iii) Construction of the metalled roads within the premises;

  (iv) Regular cleaning and wetting of the ground within the premises;

  (v) Growing of a green belt along 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 emission as far as practicable.

The total fluoride emission in respect of Glass and Phosphatic Fertilizers shall not exceed 5 mg/Nm3 and 25 mg/Nm3 respectively.

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

[3]In case of cupolas (Foundries) having capacity (melting rate) less than 3 tonne/hour, the particulate matter emissions shall be within 450 mg/Nm3. In these cases it is essential that stack is constructed over the cupolas beyond the charging door and the emissions are directed through the stack, which should be at least six times the diameter of cupola. In respect of Arc Furnaces and Induction Furnace, provision has to be made for collecting the fumes before discharging the emissions through the stack.

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1. Omitted by Rule 2(I)(iii) of the Environment (Protection) Third Amendment Rules, 1993 vide GSR 801(E), dated 31.12.1993.
2. Substituted by Rule 2(I)(i); ibid
3. Added by Rule 2(I)(ii), ibid.

[1]SCHEDULE – VII

(See Rule 3B)

National Ambient Air Quality Standards (NAAQS)

Pollutant	**Time Weighted Average**	**Concentration of 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 $\mu g/m^3$	60 $\mu g/m^3$	15 $\mu g/m^3$	Improved West and Gacke Method
	24 hours **	120 $\mu g/m^3$	80 $\mu g/m^3$	30 $\mu g/m^3$	Ultraviolet fluorescence
Oxides of Nitrogen as NO_2	Annual Average	80 $\mu g/m^3$	60 $\mu g/m^3$	15 $\mu g/m^3$	Jacab Hochheister modified (Na-Arsentire) method
	24 Hours **	120 $\mu g/m^3$	80 $\mu g/m^3$	30 $\mu g/m^3$	Gas Phase Chemilumine Scence
Suspended Particulate Matter (SPM)	Annual Average *	360 $\mu g/m^3$	140 $\mu g/m^3$	70 $\mu g/m^3$	High Volume sampling (average flow Rate not less than 1.1 m^3/ minute)
	24 Hours **	500 $\mu g/m^3$	20 $\mu g/m^3$	10 $\mu g/m^3$	
Respirable Particulate Matter (Size Less than 10μm) RMP	Annual Average *	120 $\mu g/m^3$	660 $\mu g/m^3$	50 $\mu g/m^3$	Respirable particulate matter sampler
	24 Hours **	150 $\mu g/m^3$	100 $\mu g/m^3$	75 $\mu g/m^3$	

(1)	(2)	(3)	(4)	(5)	(6)
Lead (Pb)	Annual Average *	1.0 $\mu g/m^3$	0.75 $\mu g/m^3$	0.50 $\mu g/m^3$	AAS method after sampling Using EPM 2000 or equivalent filter paper
	24 Hours **	1.5 $\mu g/m^3$	1.0 $\mu g/m^3$	0.75 $\mu g/m^3$	
Carbon Monoxide	8 hours**	5.0 mg/m^3	2.0 mg/m^3	1.0 mg/m^3	Non disbersive infrared Spectroscopy
	1 hour	10.0 mg/m^3	4.0 mg/m^3	2.0 mg/m^3	

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

** 24 hourly/8hourly value 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, the protect the public health, vegetation and property.
2. Whenever and wherever two consecutive values exceeds the limit specified above the respective category, it shall be considered adequate, reason to institute regular/continuous monitoring and further investigations.

End Note :-

The principal rules were published in the Gazette of India vide Number SO 844(E), dated the 19th November, 1986 and subsequently amended vide SO 433(E) dated 18th April, 1987, SO 64(E) dated the 18th January, 1988, SO 8(E) dated the 3rd January, 1989 SO 190(E) dated the 15th March 1989, GSR 913(E) dated the 24th October, 1989, SO 12(E), dated the 8th January, 1990, GSR 742(E) dated 30th August, 1990, SO 23(E), dated the 16th January, 1991, GSR 93(E), dated the 21st February, 1991, GSR 95(E) dated the 12th February, 1992, GSR 329(E) dated the 13th March, 1992, GSR 475(E), dated the 5th May, 1992, GSR 797(E) dated the 1st October, 1992, GSR 386(E), dated the 28th April, 1993, GSR 422(E), dated the 19th May, 1993 and GSR 801(E), dated the 31st December, 1993.