

## Environmental Standards

### General Standards

#### GENERAL STANDARDS\* FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS

##### Part - A : Effluents

S. No.	Parameter	Inland surface water	Public sewers	Land for irrigation	Marine/coastal areas
.	2		3	.	.
.	.	(a)	(b)	(c)	(d)
1	Colour and odour	See 6 of Annexure-11		See 6 of Annexure-11	See 6 of Annexure-11
2	Suspended solids mg/l, max.	100	600	200	(a) For process waste water (b) For cooling water effluent 10 per cent above total suspended matter of influent.
3	Particle size of suspended solids	shall pass 850 micron IS Sieve	-	-	(a) Floatable solids, solids max. 3 mm (b) Settleable solids, max 856 microns
4	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
5	Temperature	shall not exceed 5°C above the receiving water temperature			shall not exceed 5°C above the receiving water temperature
6	Oil and grease, mg/l max,	10	20	10	20
7	Total residual chlorine, mg/l max	1.0	-	-	1.0
8	Ammonical nitrogen (as N),mg/l, max.	50	50	-	50
9	Total kjeldahl nitrogen (as N);mg/l, max. mg/l, max.	100	-	-	100
10	Free ammonia (as NH <sub>3</sub> ), mg/l,max.	5.0	-	-	5.0
11	Biochemical	30	350	100	100

	oxygen demand (3 days at 27°C), mg/l, max.				
12	Chemical oxygen demand, mg/l, max.	250	-	-	250
13	Arsenic(as As).	0.2	0.2	0.2	0.2
14	Mercury (As Hg), mg/l, max.	0.01	0.01	-	0.01
15	Lead (as Pb) mg/l, max	0.1	1.0	-	2.0
16	Cadmium (as Cd) mg/l, max	2.0	1.0	-	2.0
17	Hexavalent chromium (as Cr + 6),mg/l, max.	0.1	2.0	-	1.0
18	Total chromium (as Cr) mg/l, max.	2.0	2.0	-	2.0
19	Copper (as Cu)mg/l, max.	3.0	3.0	-	3.0
20	Zinc (as Zn) mg/l, max.	5.0	15	-	15
21	Selenium (as Se)	0.05	0.05	-	0.05
22	Nickel (as Ni) mg/l, max.	3.0	3.0	-	5.0
23	Cyanide (as CN) mg/l, max.	0.2	2.0	0.2	0.2
24	Fluoride (as F) mg/l, max.	2.0	15	-	15
25	Dissolved phosphates (as P),mg/l, max.	5.0	-	-	-
26	Sulphide (as S) mg/l, max.	2.0	-	-	5.0
27	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)mg/l, max.	1.0	5.0	-	5.0
28	Radioactive materials: (a) Alpha emitters micro curie mg/l, max. (b)Beta emittersmicro	10 <sup>-7</sup>	10 <sup>-7</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>
		10 <sup>-6</sup>	10 <sup>-6</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>

	curie mg/l				
29	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
30	Manganese	2 mg/l	2 mg/l	-	2 mg/l
31	Iron (as Fe)	3mg/l	3mg/l	-	3mg/l
32	Vanadium (as V)	0.2mg/l	0.2mg/l	-	0.2mg/l
33	Nitrate Nitrogen	10 mg/l	-	-	20 mg/l

\* These standards shall be applicable for industries, operations or processes other than those industries, operations or process for which standards have been specified in Schedule of the Environment Protection Rules, 1989.

### Part - B: Wastewater Generation Standards

S. No.	Industry	Quantum
1	Integrated Iron & Steel	16 m <sup>3</sup> /tonne of finished steel
2	Sugar	0.4m <sup>3</sup> /tonne of cane crushed
3	Pulp & Paper Industries (a) Large pulp & paper (i) Pulp & paper (ii) Rayon grade pulp  (b) Small pulp & paper (i) Agro-residue based (ii) Waste paper based	175 m <sup>3</sup> /tonne of paper produced 150 m <sup>3</sup> /tonne of paper produced  150 m <sup>3</sup> /tonne of paper produced 50 m <sup>3</sup> /tonne of paper produced
4	Fermentation Industries (a) Maltry (b) Brewer (c) Distillery	3.5 m <sup>3</sup> /tonne of grain processed 0.25 m <sup>3</sup> /KL of beer produced 12 M <sup>3</sup> /KL of alcohol produced
5	Caustic Soda (a) Membrane cell process  (b) Mercury cell process	1m <sup>3</sup> /tonne of caustic soda produced excluding cooling tower blowdown  4 m <sup>3</sup> /tonne of caustic soad produced (mercury bearing). 10% below down permitted for cooling tower.
6	Textile Industries: Man-made fibre (i) Nylon & Polyster (ii) Voscose Staple Fibre (iii) Viscose Filament Yarn	120 m <sup>3</sup> /tonne of fibre produced 150 m <sup>3</sup> /tonne of product 500 m <sup>3</sup> /tonne of product
7	Tanneries	28 m <sup>3</sup> /tonne of raw hide
8	Starch Glucose and related products	8 m <sup>3</sup> /tonne of maize crushed
9	Dairy	3 m <sup>3</sup> /kl of Milk
10	Natural rubber processing industry Fertiliser (a) Straight nitrogenous fertiliser (b) Straight phosphatic fertiliser (SSP & TSP) excluding manufacture of any acid	4 m <sup>3</sup> /tonne of rubber

	(c) Complex fertiliser	
11	Biochemical oxygen demand (3 days at 27°C), mg/l, max.	
	(a) Straight nitrogenous fertiliser	5 m <sup>3</sup> /tonne of urea orequivalent produced
	(b) Straight phosphatic fertiliser (SSP & TSP) excluding manufacture of any acid	0.5 m <sup>3</sup> /tonne of SSP/TSP
	(c) Complex fertiliser	Standards of nitrogenous and phosphatic fertilisers are applicable depending on the primary product

### Part-C Load based standards

#### 1. Oil Refinery Industry

Parameter	Quantum in Kg/1000 tonnes of crude processed
Oil & grease	10.00
Phenol	0.70
BOD	10.50
Suspended solids	14.00
Sulphide	0.35

#### 2. Large Pulp & Paper, News Print/Rayon grade plants of capacity above 24,000 tonne/annum

Parameter	Quantum
Total Organic Chloride (TOCl)	2 kg/tonne of product

### Part-D Concentration Based Standards

#### 1. General Emission Stanadards

S.No.	Parameter	Concentration not to exceed (in mg/Nm <sup>3</sup> )
1.	Particulate matter (PM)	150
2.	Total fluoride	25
3	Asbestos	4 Fibres/cc and dust should not be more than 2 mg/Nm <sup>3</sup>
4	Mercury	0.2
5.	Chlorine	15
6	Hydrochloric acid vapour and mist	35
7	Sulphuric acid mist	50
8	Carbon monoxide	1%
9	Lead	10

#### II. Equipment based standards

For dispersion of sulphur dioxide; a minimum stack height limit is accordingly prescribed as below :

S.No.	Power generation capacity/ Steam generation capacity	Stack height (metre)
1.	Power generation capacity: -500 MW and more -200/210 MW and above to less than 500 MW -Less than 200/210 MW	275  220 H=(Q) 0.3
2.	Steam generation capacity -Less than 2 tonne/hr -2 to 5 tonne/hr -5 to 10 tonne /hr -10 to 15 tonne/hr -15 to 20 tonne/hr -20 to 25 tonne/hr -25 to 30 tonne/hr -More than 30 tonne/hr	09 12 15 18 21 24 27 30 or as per formula H=14(Q) 0.3 whichever is more

**Note:**

**H=Physical height of the stack in metre**

**Q=Emission rate of SO<sub>2</sub> in kg/hr.**

**III. Load/Mass?Based Standards**

S.No.	Industry	Parameter	Standard
1	Fertilizer (urea) -commissioned prior to 1.1.82 -commissioned after 1.1.82	Particulate Matter	2kg/tonne of product
		Particulate Matter	0.5 kg/tonne of product
2	Copper, lead and zinc semltor	Sulphur dioxide	4 kg/tonne of concentrated (100%) acid produced
3	Nitric acid	Oxides of nitrogen	3 kg/tonne of weak acid (before concentration) produced
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 -Distillation (atmospheric+vacuum) -Catalytic cracker -Sulphur recovery unit	Sulphur dioxide	0.25kg/tonne of feed in this process
		-do -do-	0.25kg/tonne of feed in this process 120 kg/tonne of Sulphur in the feed
7	Aluminium plants: (i) Anode bake oven	Total fluoride	0.3 kg/tonne of aluminium
	(ii) Pot room (a) VSS	-do-	4.7 kg/tonne of aluminium

	(b) HSS (c) PBSW (d) PBCW	-do- -do- -do-	6 kg/tonne of aluminium 2.5 kg/tonne of aluminium 1.0 kg/tonne of aluminium
8	Glass industry (a) Furnace capacity (i) Up to the product draw capacity of 60 tonne/day (ii) Product draw capacity more than 60 tonne/day	Particulate Matter  -do-	2 kg/hr  0.8 kg/tonne of product drawn

**Note: VSS = vertical stud soderberg; HSS = horizontal stud soderberg; PBSW = pre backed side work and PBCW = pre backed centre work**

### **PART-E Noise Standards**

#### **A. Noise limits for automobiles (from at 7.5 metre in dB(A) at the manufacturing stage)**

- |   |    |
|---|----|
| 1. Motorcycle, scooters & three wheelers                            | 80 |
| 2. Passenger cars   | 82 |
| 3. Passenger or commercial vehicles upto 4 tonne                    | 85 |
| 4. Passenger or commercial vehicles above 4 tonne and upto 12 tonne | 89 |
| 5. Passenger or commercial vehicles exceeding 12 tonne              | 91 |

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

- |   |       |
|---|-------|
| 1. Window air conditioners of 1 -1.5 tonne  | 68    |
| 2. Air coolers  | 60    |
| 3. Refrigerators  | 46    |
| 4. Diesel generator for domestic purpose  | 85-90 |
| 5. Compactors (rollers), front loaders, concrete mixers, cranes (movable), vibrators and saws | 75    |

### **ANNEXURE-I**

**(For the purpose of Parts-A, B and C)**

**The state boards shall follow the following guidelines in enforcing the standards specified under Schedule IV.**

1. The wastewater 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 minimise the discharge of wastes into the environment.
3. The industries are to be encouraged for recovery of biogas, energy and reusable materials.
4. While permitting the discharge of effluents and emissions into the environment, State Boards have to taken 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 affected, discharges should not be allowed into water bodies.

5. The central and state boards shall put emphasis on the implementation of clean technologies by the industries in order to increase fuel efficiency and reduce the generation of environmental pollutants.
6. All efforts should be made to remove colour and unpleasant odour as far as practicable.
7. The standards mentioned in this Schedule shall also apply to all other effluents discharged such as mining, and mineral processing activities and sewage.
8. The limit given for the total concentration of mercury in the final effluent of caustic soda industry, is for the combined effluent from (a) cell house; (b) brine plant; (c) chlorine handling; (d) hydrogen handling; and (e) hydrochloric acid plant.
9. All effluents discharged including from the industries such as cotton textile, composite woollen mills, synthetic rubber, small pulp & paper, natural rubber, petrochemicals, tanneries, paint, dyes, slaughter houses, food & fruit processing and dairy industries into surface waters shall conform to the BOD limit specified above, namely, 30 mg/l. For discharge of an effluent having a BOD more than 30 mg/l, the standards shall conform to those given above for other receiving bodies, namely, sewers, coastal waters and land for irrigation.
10. Bio-assay shall be made compulsory for all the industries, where toxic and non biodegradable chemicals are involved.
11. 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.
12. 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 concentrations, standards should be prescribed for these also in the same concentration as the individual pesticides.
  - d. Industries are required to analyse pesticides in wastewater by advanced analytical methods such as GLC/HPLC.
13. 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 boards in such cases shall direct the industries to install tertiary treatment stipulating time limit.
14. Standards specified in Part A of Schedule - VI for discharge of effluents into the public sewer shall be applicable only if such sewer leads to a secondary treatment including biological treatment system otherwise the discharge into sewers shall be treated as discharge into inland surface waters .

## **ANNEXURE-II**

### **(For the purpose of Parts-D)**

1. The States Boards shall follow the following guidelines 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<sup>3</sup> and 250 mg/Nm<sup>3</sup> for the plants upto 200 tpd and more than 200 tpd capacities respectively.
- b. In respect of calcination process (e.g. aluminium plants), kilns and step grate bagasse fired boilers, particulate matter emissions shall be within 250 mg/Nm<sup>3</sup>.
- c. In case of thermal power plants commissioned prior to 1/1/1982 and having generation capacity less than 62.5 MW, the particulate matter emission shall be within 350 mg/Nm<sup>3</sup>.
- d. In case of Lime Kilns of capacity more than 5 tpd and 40 tpd, the particulate matter emission shall be within 500 mg/Nm<sup>3</sup>.
- e. In case of horse shoe/pulsating grate and spreader stroker bagasse fired boilers, the particulate matter emission shall be within 500 (12% CO<sub>2</sub>) and 800 (12% CO<sub>2</sub>) mg/Nm<sup>3</sup> respectively. In respect of these boilers, if more than one is attached to a single stack, the emission standard shall be fixed, based on added capacity of all the boilers connected with the stack.
- f. In case of asbestos dust, the same shall not exceed 2 mg/Nm<sup>3</sup>.
- g. In case of the urea plants commissioned after 1.1.1982, coke ovens and lead glass units, the particulate matter emission shall be within 50 mg/Nm<sup>3</sup>.
- h. In case of small boilers of capacity less than 2 tonne/hr and between 2 to 5 tonnes/hr, the particulate matter emissions shall be within 1600 and 1200 mg/Nm<sup>3</sup>.
- i. In case of integrated iron & steel plants, particulate matter emission upto 400 mg/Nm<sup>3</sup> shall be allowed during oxygen lancing.
- j. In case of stone crushing units, the suspended particulate matter contribution value at a distance of 40 metre from a controlled, isolated as well as from a unit located in a cluster should be less than 600 micrograms/Nm<sup>3</sup>.

These units must also adopt 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.
  - f. In case of ceramic industry, from the other sources of pollution, such as basic raw material and processing operations, heat recovery dryers, mechanical finishing operation all possible prevention measures should be taken to control particulate matter emissions as far as practicable .
2. The total fluoride emissions in respect of glass and phosphatic fertilizers shall not exceed 5 mg/Nm<sup>3</sup> and 25 mg/Nm<sup>3</sup> respectively.
  3. In case of copper, lead and zinc smelting, the off-gases may as far as possible be utilized for manufacturing sulphuric acid.
  4. In case of cupolas (foundries) having capacity (melting rate) less than 3 tonne hour, the particulate matter emissions shall be within 450 mg/Nm<sup>3</sup>. In these cases it is



essential that stack is constructed over the cupolas beyond the charging door and the emissions are directed through the stack, which should be at least six times the diameter of cupola. In respect of arc furnaces and induction furnaces. Provision has to be made collecting the fumes before discharging the emissions through the stack.

Source

[GSR 801 (E), EPA, 1986, dated Dec. 31, 1993]