MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 22nd December, 1998

G.S.R.7. — In exercise of the powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1985 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:-

1. (1) These rules may be called the Environment (Protection) (Second Amendment) Rules, 1998.

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

2. In the Environment (Protection) Rules, 1986 —

(a) in rule 3, for sub-rule (3B), the following sub-rule shall be substituted, namely:-
"3B) The combined effect of emission or discharge of environmental pollutants in an area, from industries, operations, processes, automobiles and domestic sources, shall not be permitted to exceed the relevant concentration in ambient air as specified against each pollutant in columns (3) to (5) of Schedule VII";

(b) in Schedule 1, —

(i) against serial number 74 relating to emission standards for brick kilns, for the existing Para III, the following shall be substituted, namely :-
"III Existing moving chimney bull's trench kilns shall be dispensed with by June 30, 1999 and no new moving chimney kilns shall be allowed to come up";

(ii) after serial number 80 and the entries thereto, the following serial numbers and entries shall be inserted, namely :-

“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 hight shall be 30 m.

Liquid Effluent Discharge Standards Pollutant	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

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

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

The minimum stack height shall be 30 m.

Effluent Standards

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

(iii) Secondary Lead Smelters

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

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

(i) Limit for emission of Nox
(a) For existing units —150 ppm (v/v) at 15% excess oxygen.
(b) For new units with effect from 1-6-1999.

Total generation of gas turbine	Limit for Stack NOx emission [(v/v/), at 15% excess oxygen]
(a) 400 MW and above	(i) 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

(ii) Stack height H in m should be calculated using the formula $H=14\ Q^{2.3}$ where Q is the emission rate SO_2 in kg/hr, subject to a minimum of 30 mts.
(iii) Liquid waste discharge limit

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

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, $94+10 \log_{10}$ (KVA), dB(A), at the manufacturing stage, where, KVA is the nominal power rating of a DG set.

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

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

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

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

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

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

01 The manufacturer should offer to the user a standard acoustic enclosure of 25 dB(A) Insertion Loss and also a suitable exhaust muffler, with Insertion Loss of 25 dB(A).

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

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

04 The total sound power level of a DG set, at the 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 DG set must be strictly in compliance with the recommendations of the DG set manufacturer.

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

84. Temperature Limit for Discharge of Condenser Cooling Water from Thermal Power Plant.

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

B: New projects in coastal areas using sea water.

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

C: Existing thermal power plants.

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

D: Guidelines for discharge point:

The discharge point shall preferably be located at the bottom of the water body at mid-term for proper dispersion of thermal discharge.

In case of discharge of cooling water into sea, proper marine outfall shall be designed to achieve the prescribed standards. The point of discharge may be selected in consultation with concerned State Authorities/NIO.

No cooling water discharge shall be permitted in estuaries or near ecologically sensitive areas such as mangroves, coral reefs/spawning and breeding grounds of aquatic flora and fauna.

85. Environmental Standards for Coal Washeries :

A. Fugitive emission standards

The difference in the value of suspended particulate matter, delta (Δ), measured between 25 to 30 metre from the enclosure of coal crushing plant in the downward and leeward wind direction shall not exceed 150 micogram 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.

B. 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.

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

C. Noise level standards

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

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

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 fo 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/Nm^3 or provided with adequate water sprinkling arrangement.
- Water sprinkling by using fine atomizer nozzeles arrangement shall be provided on the coal heaps and on land 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 tonne of coal.
- The efficiency of the setting ponds of the wastewater 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 an 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 subjected to several types of uses. Depending of the types of uses and activities, water quality criteria have been specified to determine its-suitability for particular purpose. Among the various types of uses there is one use that demands highest level of water quality/purity and that is termed as “designated bet 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-I (See Table 1.1)	Salt pans, Shell fishing, Mariculture and Ecologically Sensitive Zone.
SW-II (See Table 1.2)	Bathing, Contact Water Sports and Commercial fishing.
SW-III (See Table 1.3)	Industrial cooling, Recreation (non-contact) and Aesthetics.
SW-IV (See Table 1.4)	Harbour.
SW-V (See Table 1.5)	Navigation and Controlled Waste Disposal.

The standards along with rationale/remarks for various parameters, for different designated best uses, are give in Table 1.1 to 1.5.

Table 1.1

PRIMARY WATER QUALITY CRITERIA 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 aquatic lives, is given. Value largely depended upon soil-water interaction.
2.	Dissolved Oxygen	5.0 mg/l or 60 percent saturation value, whichever is higher	Not less than 3.5 mg/l at any time of the year for protection of aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour	Specially caused by chemical compounds like creosols, phenols, naptha, phyridine, benzene, toluene etc. causing visible colouration of salt crystal and tainting of fish flesh.
4.	Floating Matters	Nothing obnoxious or detrimental for use purpose.	Surfactants should not exceed and upper limit of 1.0 mg/l and the concentration not to cause any visible foam.
5.	Suspended Solids	None from sewage or industrial waste origin	Settleable inert matters not in such concentration that would impair any usages specially assigned to this class.
6.	Oil and Grease (including Petroleum Products)	0.1 mg/l	Concentration should no exceed 0.1 mg/l as because it has effect on fish eggs and larvae.
7.	Heavy Metals: Mercury (as Hg) Lead (as Pb) Cadmium (as Cd)	0.01mg/l 0.01mg/l 0.01 mg/l	Values depend on: (i) Concentration in salt, fish and shell fish. (ii) Average per capita consumption per day. (iii) Minimum ingestion rate that induces symptoms of resulting diseases.

Note: SW-I is desirable to be safe and relatively free from hazardous chemicals like pesticides, heavy metals and radionuclide concentrations. Their combines (synergestic 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 purpose of setting case-specific limits.

TABLE 1.2

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

S.No.	Parameter	Standards	Rationale/Remarks
1.	pH range	6.5-8.5	Range does not cause skin or eye irritation and is also conducive for propagation 06^{th} aquatic lives.
2.	Dissolved Oxygen	4.0 mg/l or 50 percent saturation value whichever is higher	No less than 3.5 mg/l at anytime for protection of aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour	Specially caused by chemical compounds 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 us purpose.	None in concentration that would impair usages specially assigned to this class.
5.	Turbidity	30 NTU (Nephelo Turbidity Unit)	Measured at 0.9 depth.
6.	Fecal Coliform	100/100 (MPN)	The average calue not exceeding 200/100 ml. in 20 percent of samples in the year and in 3 consecutive samples in monsoon months.
7.	Biochemical Oxygen Demand (BOD) (3 days at 27°C)	3 mg/l	Restricted for bathing (aesthetic quality of water). Also prescribed by IS:2296-1974.

TABLE 1.3

PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-III WATERS

(For Industrial Coling, Recreation (non-contact) and Aesthetics)

S.No.	Parameter	Standards	Rationale/Remarks
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 percent saturation value whichever is higher.	To protect aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour	None in such concentration that would impair usages specifically assigned to this class.
4.	Floating Matters	No visible, obnoxious floating debris, oil slick, scum.	As in (43) above.
5.	Fecal Coliform	500/100 ml (MPN)	No exceeding 1000/100 ml in 20 percent of samples in the year and in 3 consecutive samples in monsoon months.
6.	Turbidity	30 NTU	Reasonably clear water for Recreation, Aesthetic appreciation and Industrial cooling purposes.
*7.	Dissolved Iron (as Fe)	0.5 mg/l or less	It is desirable to have the collective concentration of dissolved Fe and Mn less or equal to 0.5 mg/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 CRITERIA FOR CLASS SW-IV WATERS

(For Harbour Waters)

S.No.	Parameter	Standards	Rationale/Remarks
1.	pH range	6.5-9.0	To minimize corrosive and scaling effect.
2.	Dissolved Oxygen	3.0 mg/l or 40 percent 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 offe	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)	No exceeding 1000/100 ml in 20 percent of samples in the year and in 3 consecutive samples in monsoon months.
6.	Biochemical Oxygen Demand (3 days at 27°C)	5 mg/l	To maintain water relatively free from pollution caused by sewage and other decomposable wastes.

Table 1.5

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

S.No	Parameter	Standards	Rationale / Remarks
1.	PH range	6.0-9.0	As specified by New England Interstate Water Pollution Control Commission
2.	Dissolved Oxygen	3.0 mg/1 or 40 percent saturation value whichever is higher	To protect aquatic lives
3.	Colour and Odour	None in such concentrations that would impair any usages specifically assigned to this class	As in (1) above
4.	Sludge deposits, Solid refuse floating solids, oil, grease & scum	None except for such small amount that may result from discharge of appropriately treated sewage and / or industrial, waste effluents.	As in 91) above
5.	Fecal Collform	500/100 ml (MPN)	Non exceeding 1000/100 ml in 20 percent of samples in the year and in 3 consecutive samples in monsoon months.

87. Emission Regulations for Rayon Industry

a. Existing Plants
Estimation of Uncontrolled Emission Quantity (EQ) of CS_2

For VSF,
EQ – 125 kg of CS_2 / t of fibre
For VFY,
EQ = 225 kg of CS_2 / t of fibre

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

Where Q = CS_2 emission rate, kg/hr
Vs = stack exit velocity m/sec
D= diameter of stack, m
u= annual average wind speed at top of stack, m/sec.

a. Multiple Stacks :

1. If there are more than one stack existing in the plant, the required height of all stacks shall be based on the maximum emission rate in any of the stacks. In other words, all the stacks carrying CS2 emission shall be of same heights (based on the maximum emission rate).
2. Number of stacks shall not be increased from the existing number. However, the number of stacks may be reduced. The existing stacks may be rebuilt and if stacks are to be relocated, condition 3 below applies.
3. Spacing among the stacks (x) at the minimum shall be 3.0H (in m). If distance, x, between two stacks in less than 3.0 H (in m), emission shall be considered as single point source and height of both the sacks 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 = 100ug/m^3 and H_2S = 150ug/m^3, 24-hr average).

c. For new plants / expansion projects being commissioned on or after 1-6-1999.

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)."

[F.No Q-15017/13/95-CPWE]
Dr. G.K. PANDEY, Director

Note: - The principal rules were published in the Gazette of India vide number S.O. 844(E) 19th November, 1986 and subsequently amended vide S.O. 433 (E) dated 18th April, 1987, S.O. 64(E) dated 18th January, 1988, S.O.3 (E) dated 3rd January, 1989, S.O.190(E) dated 15th March, 1989, G.S.R. 913 (E) dated the 24th October, 1989, S.O. 12(E) dated the 8th January, 1990, G.S.R 742 (E) dated the 30th August, 1990, S.O. 23(E) dated the 16th January, 1991, G.S.R, 93 (E) dated the 21st February, 1991 G.SR. 95(E) dated the 12th February, 1992, G.S.R 329(E) dated the 13th March, 1992, G.S.R 475(E) dated the 5th May, 1992, G.S.R 797 (E) dated the 1st October, 1992, G.S.R 386(E) dated the 28th April, 1993, G.S.R 422(E) dated the 19th May, 1993, G.S.R 801 (E) dated the 31st December, 1993, G.S.R 176(E) dated the 3rd April, 1996, G.S.R 631 (E) dated the 31st October, 1997, G.S.R 504 (E) dated the 20th August, 1998.