

- (ii) Existing units Particulate matter 350 mg/nm³
(Corrected to 6% CO₂)
- Note :** For control of emissions and proper dispensation of pollutants the following guidelines shall be followed :
- Units set up after the publication of this notification shall be treated as new units.
 - A minimum stack height of 20 metres shall be provided by each unit.
 - Emissions from coke ovens shall be channelised through a tunnel and finally emitted through a stack. Damper adjustment techniques shall be used to have optimum heat utilisation and also to control the emission of unburnt carbon particles and combustible flue gases.
 - Wet scrubbing system or waste heat utilisation for power generation or byproduct recovery systems should be installed preferably to achieve the prescribed standards.
 - After four years from the date of this notification, all the existing units shall comply with the standards prescribed for the new units.

65. Briquette industry (coal) Emissions :
- Units having capacity less than 10 tonnes Particulate matter (corrected to 6% CO₂) 350 mg/nm³
 - Units having capacity 10 tonnes or more Particulate matter (corrected to 6% CO₂) 150 mg/nm³

Note : For control of emissions/and proper dispersat of pollutants, the following guidelines shall be followed by the industry. —

- A minimum stack height of 20 metres shall be provided.
- All ovens shall be modified to single chimney multioven systems.
- Emissions from ovens shall be channelised through inbuilt draft stack. Optimum heat utilisation technique shall be used.
- In case of units having capacity 10 tonnes and above, wet scrubbing system shall be provided to control air pollution.

66. Soft Coke industry Particulate matter (corrected to 6% CO₂) 350 mg/Nm³
- Note :** Wet scrubbing systems along with byproduct recovery system shall be provided.
- Guidelines for Emission Control to Improve Work Zone Environment (applicable for industries at serial numbers 64, 65 and 66):

- Water used for quenching and wet scrubbing shall be recirculated and reused through catch-pits.
- Leakages in the oven shall be sealed by bentonite or by any suitable paste and by proper maintenance to avoid fugitive emission.

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

- Unloading of coal trucks shall be carried out with proper care avoiding dropping of the materials from height. It is advisable to moist the material by sprinkling water while unloading.
- 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.
- Work area surrounding the plant shall be asphalted or concreted.
- Green belt shall be developed along the boundary of the industry.
- Open burning of coal to manufacture soft coke shall be stopped.

Effluents :

67. Edible oil and Vanaspati industry

| | |
|-------------------------|---|
| Temperature | Not more than 5°C above ambient temperature of the recipient waterbody. |
| pH | 6.5-8.5 |
| Suspended solids | 150 mg/l |
| Oil & Grease | 20 mg/l |
| BOD (3 days at 27°C) | 100 mg/l |
| COD | 200 mg/l |
| Waste water discharge | |
| (i) Solvent extraction | 2.0 cum./tonne of product (oil) |
| (ii) Refinery/Vanaspati | 2.0 cum./tonne of product (refined oil/Vanaspati) |

- (iii) Integrated unit of solvent extraction and refinery /vanaspati 4.0 cum/tonne of refined oil/Vanaspati produced
- (iv) Barometric cooling water/De-odouriser water 15.0 cum/tonne of refined oil/vanaspati

Note:

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

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

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

68. Organic Chemicals manufacturing industry
(a) Compulsory parameters

| | |
|----------------------|--|
| Effluents: | |
| pH | 6.5-8.5 |
| BOD (3 days at 27°C) | 100 mg/l |
| Oil and grease | 10 mg/l |
| Bioassay test | Minimum 90% survival after 96 hours with fish at 100% effluent |

(b) Additional parameters

| | |
|---------------------|------|
| 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 |

| | |
|-----------------------------|-----|
| Phenolics as $C_{6}H_{5}OH$ | 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 predominantly 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 stipulating time limit. This may be done on case-to-case basis.

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

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

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

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 metre per tonne of wheat processed. |

Note:

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

69. Flour mills

- (ii) BOD shall be allowed up to 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 up to 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 up to 450 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.

70. Boilers (Small)

| Steam generation capacity (ton/hour) | Particulate emission matter ($\mu\text{g}/\text{nm}^3$) |
|--------------------------------------|---|
| less than 2 | 1200* |
| 2 to less than 10 | 800* |
| 10 to less than 15 | 600* |
| 15 and above | 150** |

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

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

Note:

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

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

(iii) Stack height for small boilers.

For the small boilers using coal or liquid fuels, the required stack height with the boiler shall be calculated by using the formula

$$H = 14 Q^{0.3}$$

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

Q = SO_2 emission rate in kg/hr.

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/Nm^3 for SO_2 emission shall be met by providing necessary control equipment with a minimum stack height of 11 metres.

71. Pesticide industry

| (i) Compulsory parameters | mg/l except pH |
|---------------------------|--|
| pH | 6.5–8.5 |
| BOD (3 days at 27°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 mg/l

(a) Heavy metal

Copper 1.0

Manganese 1.0

Zinc 1.0

Mercury 0.01

Tin 0.1

Any other like Nickel

shall not exceed 5 times the drinking water standards (BIS) individually

(b) Organics 1.0

Phenol & Phenolic Compounds
as C₆H₅OH

(c) Inorganics

Arsenic as As 0.2

Cyanide as Cn 0.2

Nitrate as NO₃

Phosphate as P 50

5.0

(d) Specific pesticide (microgram/litre)

Benzene hexachloride 10

DDT 10

Dimethoate 450

Copper oxychloride 9600

Ziram 1000

2, 4D 400

Paraquat 23000

Propanil 7300

Nitrogen 780

Other/below mentioned
pesticides individually 100

Other pesticides :

(i) Insecticides :

Aluminium Phosphide

Lindane

Pyrethrum
extract

Dichlorvos

Malathion

Quinalphos

EDTC Mixer

Methyl Bromide

Monocrotophos

Ethylene Dibromide

Nicotine Sulphate

Carbaryl

Ethion

Oxydemeton Methyl

Endosulfan

Fenitrothion

Methyl Parathion

Fenbaterate

Lime-sulphur

Phosphamidon

Phorate

Temephos

(ii) Fungicides :

Aureofungin Organomercurials
(MEMC and PMA)Barium polysulphide Sulphur (Colloidal, Wettable &
Dust)

Cuprous Oxide Streptocycline

Ferbam Thiram

Mancozeb Zineb

Manab Carbendazim

Nickel Chloride Tridemorph

(iii) Rodenticides :

Comafuryl

Warfarin

Zinc Phosphide

(iv) Nematicides :

Metham N-Sodium

(v) Weedicides :

Fluchloralin

Isoproturon

Butachlor

Anilphos

(vi) Plant Growth Regulators :

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 parameters (based on the
raw-materials used and products manufactured)
may be prescribed by the concerned State Board on
a case-to-case basis.

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

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

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

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

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

(iii) The solar evaporation pans shall be designed on the basis of evaporation rate matching to the output of waste-water.

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

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

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

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

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

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

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

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

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

72. Oil Drilling and Gas Extraction industry

A. Standards for liquid effluent

1.0 On-shore facilities

(For marine disposal)

| | |
|----------------------|----------|
| pH | 5.5—9.0 |
| Oil and grease | 10 mg/l |
| Suspended solids | 100 mg/l |
| BOD (3 days at 27°C) | 30 mg/l |

Note:

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

| | |
|----------------|---------------------|
| Parameters | Toxicity limit mg/l |
| Chromium as Cr | 0.1 |
| Copper, as Cu | 0.05 |
| Cyanide, as CN | 0.005 |
| Fluoride, as F | 1.5 |
| Lead, as Pb | 0.05 |

Mercury, as Hg 0.01
 Nickel, as Ni 0.1
 Zinc, as Zn 0.1

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

| Sl. No. | Parameter | On-shore discharge standards (Not to exceed) |
|---------|------------------|---|
| | pH | 5.5-9.0 |
| | Temperature | 40°C |
| | Suspended solids | 100 mg/l |
| | Zinc | 2 mg/l |
| | BOD | 30 mg/l |
| | COD | 100 mg/l |
| | Chlorides | 600 mg/l |
| | Sulphates | 1000 mg/l |
| | TDS | 2100 mg/l |
| | % Sodium | 60 mg/l |
| | Oil and grease | 10 mg/l |
| | Phenolics | 1.2 mg/l |
| | Cyanides | 0.2 mg/l |
| | Fluorides | 1.5 mg/l |
| | Sulphides | 2.0 mg/l |
| | Chromium (Cr+6) | 0.1 mg/l |
| | Chromium (Total) | 1.0 mg/l |
| | Copper | 0.2 mg/l |
| | Lead | 0.1 mg/l |

20. Mercury 0.01 mg/l
 21. Nickel 3.0 mg/l

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

B. Guidelines for discharge of gaseous emission :

- 1.0 DG Sets
- 1.1 DG sets at drill site as well as production station shall conform with the norm notified under the Environment (Protection) Act, 1986.
- 2.0 Elevated/ground flares
- 2.1 Cold venting of gases shall never be resorted to and all the gaseous emissions are to be flared.
- 2.2 All flaring shall be done by elevated flares except where there is any effect on crop production in adjoining areas due to the flaring. In such cases, one may adopt ground flaring.
- 2.3 In case of ground flare, to minimise the effects of flaring, the flare pit at Group Gathering Station (GGS) Oil Collecting Station (OCS) and Group Collection Station (GCS) shall be made of RCC surrounded by a permanent wall (made of refractory brick) of minimum 5m height to reduce the radiation and glaring effects in the adjoining areas.
- 2.4 A green belt of 100m width may be developed around the flare after the refractory wall in case of ground flaring.
- 2.5. If the ground flaring with provision of green belt is not feasible, enclosed ground flare system shall be adopted, and be designed with proper enclosure height, to meet the 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 maximum GLC never exceeds the prescribed ambient air quality limit.

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

C. Guidelines for disposal of solid waste :

- 1.0 Disposal of drill cuttings
- 1.1 The drill cuttings shall be conveyed through a conveyor system to the disposal pit after proper washing.
- 1.2 No drill cuttings (of any composition) shall be disposed 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 and Forests guidelines. The site shall be approved by the concerned authority (State Government/State Pollution Control Board).
- 1.3 The disposal of drill cuttings (on-shore/off-shore) shall conform to the guidelines provided by the Ministry of Environment and Forests.

- 1.4 The secured land-fill pit shall be covered with a thick layer of local top soil provided with proper top slope, after drilling operation is over.
- 2.0 Disposal of drilling 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 Boards). The disposal of mud shall conform to the guidelines provided by the Ministry of Environment and Forests under the Hazardous Wastes (Management and Handling) Rules, 1989.
- 2.2 No mud (of any composition) shall be disposed off-shore. For off-shore installation, the unusable portion of the mud shall be brought back to the shore for disposal in a secured 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 centralised treatment facility. In case of off-shore installation, these may be brought to the shore and treated.
- 3.0 Production stage solids 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.

| S.No. | Industry | Parameter | Standards |
|-------|---------------------------------------|----------------------------|--|
| 1. | 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°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 (C₆H₅OH) 1.0
- Sulphides (as S) 2.0
- Phosphate (as P) 5.0

Note: (i) The limit of BOD (3 days at 27°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 units depending upon the process and product.

(iii) No limit for COD is prescribed, but it shall be monitored. If the COD of the treated effluent is greater than 250 mg/l, such industrial units are required to identify chemicals causing the same. In case these are found to be toxic, as defined in the Hazardous Chemicals Rules, 1989 (Schedule I), the State Boards in such cases shall direct the industries to install tertiary treatment system within the stipulated time limit. This may be done on a case-to-case basis.

74. Emission Standards for brick kilns:

I. Minimal National Emission Standards for Bricks Kilns:

| Size | Kiln capacity | Maximum limit for the concentration of particulate matter (mg/N cu.m) |
|--------|--|---|
| 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 finger chimney high draught kilns and/or settling chamber.

II. Stack height regulation:

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

| Kiln capacity | Stack height |
|--|--|
| Less than 15,000 bricks per day (less than 15 ft trench width) | Minimum stack height of 22m or, Induced draught fan operating with minimum draught of 50 mm Water Gauge with 12m stack height. |

| | |
|--|--|
| 15,000—30,000 bricks per day (15-22 ft trench width) | Minimum stack height of 27m with gravitational settling chamber or induced draught fan operating with min. draught of 50 mm Water Gauge with 15m stack height. |
| More than 30,000 bricks per day (more than 22 ft trench width) | Minimum stack height of 30m with gravitational settling chamber or, induced draught fan operating with min. draught of 50mm Water Gauge with 17m stack height. |
| 1[III. Existing moving chimney bull's trench kilns shall be dispensed with by 30th June, 2002 and no new moving chimney kilns shall be allowed to come up: PROVIDED that only those brick kilns shall be given extension of time who shall furnish affidavits to the concerned authority in the State giving approval for brick kilns to the effect that the prescribed standards shall be complied by them by 30-6-2002, and no further extension of time shall be sought by them: PROVIDED FURTHER that the units shall submit a bank guarantee for the amount specified below, to the respective State Pollution Control Board for completing the conversion within the period so specified and in case of non-compliance, the amount of bank guarantee shall be forfeited. | |
| Large scale brick kilns (more than 30,000 bricks per day) | Rs. 30,000 |
| Medium scale brick kilns (between 15,000 to 30,000 bricks per day) | Rs. 20,000 |
| Small scale brick kilns (less than 15,000 bricks per day) | Rs. 10,000.] |

IV. Considering the immediate need to protect the top soil and to find ways for safe disposal/ utilisation of flyash, it is provided that from the 1st January, 1997, all bricks manufacturing units within a radius of 50 kms from any thermal power plant, shall utilise flyash in optimal proportion for making bricks.

| Parameter | MINAS (Recipient body specified) | | |
|-----------------------|----------------------------------|--------------|----------------------|
| | Marine | Brackish | Inland surface water |
| pH | 6.5—9 | 6.5—9 | 6.5—9 |
| 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 |
| Ammoniacal nitrogen | 5 mg/l | 50 mg/l | 30 mg/l |
| Bio-assay | 96 hours | 96 hours | 96 hours |
| | 30% survival | 90% survival | 90% survival |

1 Substituted by-GSR 54(E), dt. 22-1-2002, w.e.f. 22-1-2002.

Note: MINAS for disposal in brackish and inland surface water are without any dilution. Standards for Dual Process Soda Ash Plants:

| Parameter | Mines (Inland surface water) |
|--------------------------------|------------------------------|
| pH | 6.5—8.0 |
| Ammoniacal nitrogen as N(mg/l) | 50 |
| Nitrate nitrogen, as N(mg/l) | 10 |
| Cyanide, as CN (mg/l) | 0.2 |
| Hexavalent chromium (mg/l) | 0.1 |
| Total chromium (mg/l) | 2.0 |
| Suspended solids, (mg/l) | 100 |
| Oil and grease (mg/l) | 10 |

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

76. Emission standard for SO₂ 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 instal scrubber, followed by a stack of height six times the diameter of the Cupola beyond the charging door.

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

| Sl. No. | Characteristics | Requirement | Method of Test ref. to P. of IS:1448 |
|---------|-----------------------------------|----------------------------------|--------------------------------------|
| (i) | Reid Vapour Pressure at 38°C, KPa | 35 to 70 | P : 39 |
| (ii) | Benzene, per cent by volume, max | 5.0 ⁽¹⁾ | P : 104 |
| (iii) | Lead Content as (Pb) g/l, max | 0.15 (low leaded) ⁽²⁾ | P : 38 |
| | | 0.013 (unleaded) | |

1 Substituted by-GSR 54(E), dt. 22-1-2002, w.e.f. 22-1-2002.

Note :

- (a) Above specifications apply to HSD only.
- (b) For new refineries coming up during or after, 1997 specification applicable by 2000 for existing refineries shall be applicable by 1997.
- (c) 'P' refers to parts of IS : 1448.]

| Sl. No. | Industry | Parameter | Standards | |
|---------|--|--|----------------|--------------------|
| | | | New batteries | Existing batteries |
| 1[79. | Coke oven plants (by product recovery type | Fugitive Visible Emissions | | |
| | | (a) Leakage from 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)* |
| | | Stack Emission of Coke Oven | | |
| | | (a) SO ₂ (mg/Nm ³) | 800 | 800 |
| | | (b) NO _x (mg/Nm ³) | 500 | 500 |
| | | (c) SPM (mg/Nm ³) | 50 | 50 |
| | | (a) SPM emission during charging (stack emission) mg/Nm ³ | 25 | 25 |
| | | (b) SPM emission during coke pushing (stack emission) gm/ton of coke | 5 | 5 |
| | | Sulphur in coke oven gas used for heating (mg/Nm ³) | 800 | 800 |
| | | Emission for quenching operation Particulate matter gm/MF of coke produced | 50 | 50 |
| | | Benzo-Pyrene (BOP) concentration in work zone air (ug/Nm ³) | | |
| | | —Battery area (top of the battery) | 5 | 5 |
| | | —Other units in coke oven plant | 2 | 2 |
| | | —Ambient standards (mg/m ³) | 10 | 10 |

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

- (iv) Sulphur, per cent by mass, max 0.10 (unleaded) P : 34
0.20 (leaded)
- (v) Potential Gum, g/m³, Max 50 ASTM 873 : 8
- (vi) Gum (Solvent Washed) g/m³, Max 40 P : 29
- (vii) Oxygenates Content Ether (MTBE, ETBE) Alcohol, per cent by volume, Max 15
- (viii) Phosphorus See Note⁽³⁾ ASTM D 3231

Note : (1) 3.0 per cent by volume maximum in metro cities by 2000 AD.

(2) 0.15 g/l by 31st December, 1996 (for entire country).

0.013 g/l by 1st April, 1995 (in four metro cities);

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

(3) Phosphorous containing additives shall be absent.

Note : (a) Above specifications applies to leaded as well as unleaded petrol except lead content.
(b) For new refineries coming up during or after 1997 the specification applicable by 2000 for existing refineries shall be applicable by 1997.

78. Specification of Diesel Fuel for Emission Related Parameters :

| Sl. No. | Characteristics | Requirement | Method of Test ref. to P. of IS:1448 |
|---------|---|---------------------------|--------------------------------------|
| (i) | Density at 15°C, Kg/m ³ | 820 to 880 ⁽¹⁾ | P : 32 |
| (ii) | Cetane Number, min | 45.0 ⁽²⁾ | P : 9 |
| (iii) | Distillation 85% by volume recovery at °C max | 350 | P : 18 |
| | 95% by volume recovery at °C, max. | 370 | |
| (iv) | Sulphur, per cent by mass | 0.50 ⁽³⁾ | P : 33 |

(1) 820 to 860 by 2000 AD

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

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

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

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

| | | |
|---------------------|--------------------|-----|
| Oxide manufacturing | Particulate matter | 25 |
| Paste mixing | Lead | 10 |
| Assembling | Particulate matter | 25 |
| PVC Section | Lead | 10 |
| | Particulate matter | 25 |
| | 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.

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 |

- (i) New-coke oven units shall follow any of the low-emission procedures, such as, coke-dry cooling, non-recovery coke-ovens. Indirect quenching process, jumbo coke-oven reactor, modified wet quenching system with appropriate environmental controls (e.g. baffles, filtering media, collection and treatment of residual water from quench tower and recycling; use of process water as quenching water shall not be permissible).
- (ii) Effective pollution control measures (for e.g. Extensive maintenance and cleaning of oven doors and frame seals, ascension pipes, charging holes and lids and other equipment; On-main charging system (HPLA); Luting charging holes with clay-suspension; Modified guide/transfer car with emission control system etc.) shall be taken to reduce coal charging and coke pushing emissions. The bleeder of the coke oven shall be flared.
- (iii) 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 set up after the publication of this notification shall be treated as new units

- *HPLA — Aspiration through high pressure liquor injection in goose neck.
- *PLD — Per cent leaking doors.
- *PLL — Per cent leaking lids.
- *PLO — Per cent leaking offtakes.]

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 APITC |

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

²[81. Battery manufacturing industry

(i) Lead Acid Battery Manufacturing Industries.

| Emission Standards | | |
|--------------------|-----------|---|
| Source | Pollutant | Standards Conc. based (mg/Nm ³) |
| Grid casting | Lead | 10 |

1 Inserted by GSR 504(E), dt. 20-8-1998, w.e.f. 21-8-1998.
2 Inserted by GSR 7, dt. 22-12-1998, w.e.f. 2-1-1999.

(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 NO_x

- (a) For existing units-150 ppm (v/v) at 15% excess oxygen.
 (b) For new units effective from 1-6-1999.

| Total generation of gas turbine | Limit for Stack NO _x emission (v/v), at 15% excess oxygen ¹ |
|---|--|
| (a) 400 MW and above | (i) 50 ppm for the units burning natural gas (ii) 100 ppm for the units burning naphtha |
| (b) Less than 400 MW but up to 100 MW | (i) 75 ppm for the units burning natural gas (ii) 100 ppm for the units burning naphtha |
| (c) Less than 100 MW | 100 ppm for units burning natural gas or naphtha as fuel |
| (d) For the plants burning gas in a conventional boiler | 100 ppm |

- (ii) Stack height H in m should be calculated using the formula $H=14 Q^{0.3}$, where Q is the emission rate of SO₂ 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 |

¹[83. x x x]

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

A : New thermal power plants commissioned after June 1, 1999.—New thermal power plants, which will be using water from rivers/lakes/reservoirs, shall install cooling towers irrespective of location and capacity. For 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 midstream 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.—

1. Fugitive emission standards:

—The difference in the value of suspended particulate matter, delta (Δ), measured between 25 and 30 metre from the enclosure of coal-crushing plant in the downward and leeward wind direction shall not exceed 150 microgram per cubic meter. Method of measurement shall be High Volume Sampling and Average Flow Rate, not less than 1.1 m³ per minute, using Upwind/Downwind method of measurement.

2. Effluent discharge standards:

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

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

| Sl.No | Parameter | Limits |
|-------|------------------------|----------|
| 1. | pH | 5.5-9.0 |
| 2. | Total suspended solids | 100 mg/l |
| 3. | Oil & Grease | 10 mg/l |
| 4. | BCD (3 days 27 °C) | 30 mg/l |
| 5. | COD | 250 mg/l |
| 6. | Phenolics | 1.0 mg/l |

3. Noise level standards :

—Operational/Working Zone-not to exceed 85 dB (A) Leq for 8 hours' exposure.
 —The ambient air quality standards, in respect of noise as notified under Environmental (Protection) Rules, 1986 shall be followed at the boundary line of the coal washery.

4. Code of practice for Coal Washery :

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

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

—Water-sprinkling by using fine atomizer nozzle arrangement shall be provided on the coal heaps and on and 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 metre per tonne of coal.

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

—Green belt shall be developed along the roadside, 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 vehicles operating in the coal washeries should conform to 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 on the types of

uses and activities, water quality criteria have been specified to determine its suitability for a particular purpose. Among the various types of uses there is one use that demands highest level of water quality/purity and that is termed as '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-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 given in Tables 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)

| Sl. No. | Parameter | Standards | Rationale/Remarks |
|---------|------------------|---|---|
| 1 | pH range | 6.5—8.5 | 4 |
| 1. | Dissolved Oxygen | 5.0 mg/l or 60 per cent saturation value, whichever is higher | General broad range, conducive for propagation of aquatic lives, is given. Value largely dependent upon soil-water interaction. |
| 2. | Colour and Odour | No noticeable colour or offensive odour | Not less than 3.5 mg/l at any time of the year for protection of aquatic lives. |
| 3. | Floating Matters | Nothing obnoxious or detrimental for use purpose | Specially caused by chemical compounds like creosols, phenols, naphtha, pyridine, benzene, toluene etc. causing visible colouration of salt crystal and tainting of fish flesh. |
| 4. | Suspended Solids | None from sewage or industrial waste origin | Surfactants should not exceed an upper limit of 1.0 mg/l and the concentration not to cause any visible foam. |
| 5. | | | 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 not exceed 0.1 mg/l because it has effect on fish eggs and larvae. |
| 7. | Heavy Metals: Mercury (as Hg) Cadmium (as Cd) Lead (as Pb) | 0.001 mg/l 0.001 mg/l | Values depend on : (i) Concentration in salt, fish and shell fish. (ii) Average per capita consumption per day. (iii) Minimum ingestion rate that induces symptoms of resulting diseases. |

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

TABLE 1.2

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

| Sl. 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 propagating aquatic lives. |
| 2. | Dissolved Oxygen | 4.0 mg/l or 50 per cent saturation value, whichever is higher. | Not less than 3.5 mg/l at any time for protection of aquatic lives. |
| 3. | Colour and Odour | No noticeable colour or offensive odour | Specially caused by chemical compounds like creosols, phenols, naphtha, benzene, pyridine, toluene, etc. causing visible colouration of water and tinting of and odour in fish flesh. |
| 4. | Floating Matters | Nothing obnoxious or detrimental for use purpose. | None in concentration that would impair usages specially assigned to this class. |

| | | | |
|----|--|---------------------------------|---|
| 5. | Turbidity | 30 NTU (Nephelo Turbidity Unit) | Measured at 0.9 m depth. |
| 6. | Fecal Coliform | 500/100 ml (MPN) | The average value not exceeding 200/100 ml. in 20 per cent of samples in the year and in 3 consecutive samples in monsoon months. |
| 7. | Biochemical Oxygen Demand (BOD) (3 days at 27°C) | 3 mg/l | Restricted for bathing (aesthetic quality of water). Also prescribed by IS : 2296-1974. |

TABLE 1.3

PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-II WATERS
(For Industrial Cooling, Recreation (non-contact) and Aesthetics)

| Sl. No. | Parameter | Standards | Rationale/Remarks |
|---------|------------------|--|---|
| 1 | 2 | 3 | 4 |
| 1. | pH range | 6.5—8.5 | The range is conducive for propagation of aquatic species and restoring natural system. |
| 2. | Dissolved Oxygen | 3.0 mg/l or 40 per cent saturation value, whichever is higher. | To protect aquatic lives. |
| 3. | Colour and Odour | No noticeable colour or offensive odour | None in such concentration that would impair usages specifically assigned to this class. |
| 4. | Floating Matters | No visible, obnoxious floating debris, oil slick, scum | As in (3) above. |
| 5. | Fecal Coliform | 500/100 ml (MPN) | Not exceeding 1000/100 ml in 20 per cent 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. |

| | | | |
|----|--|--|---|
| 2. | Dissolved Oxygen | 3.0 mg/l or 40 per cent saturation value whichever is higher | To protect aquatic lives |
| 3. | Colour and Odour | None in such concentrations that would impair any usages specifically assigned to this class | As in (1) above. |
| 4. | Sludge deposits, solid refuse, floating solids, oil, grease & scum | None except for such small amount that may result from discharge or appropriately treated sewage and/or industrial waste effluents | As in (1) above. |
| 5. | Fecal Coliform | 500/100 ml (MPN) | Not exceeding 1000/100 ml in 20 per cent of samples in the year and in 3 consecutive samples in monsoon months. |

87. Emission Regulations for Rayon Industry

- (a) Existing Plants Estimation of Uncontrolled Emission Quantity (EQ) of CS₂.
 For VSF,
 EQ = 125 kg of CS₂/t of fibre
 For VFY,
 EQ = 225 kg of CS₂/t of fibre

| Stack Height (H) requirement, m | Remarks |
|---------------------------------|--|
| $11 Q \text{ O}41-3VSD/u$ | A minimum of 80% of total emission shall pass through stack. If the calculated stack height is less than 30 m, a minimum of height 30 m shall be provided. |
| where | Q—CS ₂ emission rate, kg/hr |
| | V _s —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 stacks 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,

| | | | |
|-----|-----------------------------|------------------|--|
| *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 are same.

TABLE 1.4

PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-IV WATERS (For Harbour Waters)

| Sl. No. | Parameter | Standards | Rationale/Remarks |
|---------|--|---|--|
| 1. | pH range | 6.5—9. | To minimize corrosive and scaling effect. |
| 2. | Dissolved Oxygen | 3.0 mg/l or 40 per cent saturation value, whichever is higher | Considering bio-degradation of oil and inhibition to oxygen production 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 per cent 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-V WATERS (For Navigation and Controlled Waste Disposal)

| Sl. No. | Parameter | Standards | Rationale/Remarks |
|---------|-----------|-----------|---|
| 1. | pH range | 6.0—9.0 | As specified by New England Inter-State Water Pollution Control Commission. |
| | | 3 | 4 |

all the stacks carrying CS₂ emission shall be of same height (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 CS₂ and H₂S measurements in consultation with State Pollution Control Board (SPCB) to ensure attainment of WHO recommended ambient air quality norms (CS₂ = 100µg/m³ and H₂S = 150µg/m³, 24=hr, average).

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

Permissible emission limits are :

CS₂ = 21 kg/t of fibre

H₂S = 6.3 kg/t of fibre

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

[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 as follows :-

A. From June 1, 2000

| Class | Displacement | CO (g/kw-ltr) | | HC + NOx (g/kw-ltr) | |
|-------|--------------|-----------------|-----------------|---------------------|-----------------|
| | | 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 |

B. From June 1, 2001

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

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

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

- (v) Automotive Research Association of India, Pune.
- (vi) Indian Institute of Petroleum, Dehradun.
- (vii) Indian Oil Corporation, R & D Centre, Faridabad.
- (viii) 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 send the experts in the field to oversee the testing.

89. Noise standards for fire-crackers .

A. (i) The manufacture, sale or use of fire-crackers generating noise level exceeding 125 dB(A) or 145 dB(C)_{pk} 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 5 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 measurements shall be made on a hard concrete surface of minimum 5 meter diameter or equivalent.

(ii) The measurements 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 Explosives shall ensure implementation of these standards.

Note : dB(A) : A-weighted impulse Sound Pressure Level in decibel
dB(C)_{pk} : C-weighted Peak Sound Pressure Level in decibel.]

190. Standards for coal mines

(1) Air Quality Standards : The Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur dioxide (SO₂) and Oxides of Nitrogen (NOx) concentration in downwind direction considering predominant wind direction, at a distance of 50 metres from the following dust generating sources shall not exceed the standard specified in the Tables I, II and III given below :

Dust Generating Sources

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

TABLE I

| Category | Pollutant | Time weighted average | Concentration in Ambient Air | Method of Measurement |
|--|--|----------------------------|--|--|
| 1 | 2 | 3 | 4 | 5 |
| I New Coal Mines (Coal Mines commenced operation after the date of publication of this notification) | Suspended Particulates Matter (SPM) | Annual Average* 24 hours** | 360 µg/m ³ 500 µg/m ³ | -High Volume Sampling (Average, flow rate not less than 1.1 m ³ /minute) |
| | Respirable Particulate Matter (size less than 10 µm) (R.M) | Annual Average* 24 hours** | 180 µg/m ³ 250 µg/m ³ | Respirable Particulate Matter sampling and analysis |
| | Sulphur Dioxide (SO ₂) | Annual Average* 24 hours** | 80 µg/m ³ 120 µg/m ³ | 1. Improved wet and Gaeke method 2. Ultraviolet fluorescence |
| | Oxide of Nitrogen as NO ₂ | Annual Average* 24 hours** | 80 µg/m ³ 120 µg/m ³ | 1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemiluminescence |

TABLE II

| Category | Pollutant | Time weighted average | Concentration in Ambient Air | Method of Measurement |
|---|-------------------------------------|----------------------------|--|--|
| 1 | 2 | 3 | 4 | 5 |
| II. Existing coal fields/mines given below : Karanpura, Ramgarh, Giridih, Rajhara, Wardha, Nagpur, Silewara, | Suspended particulates Matter (SPM) | Annual Average* 24 hours** | 430 µg/m ³ 600 µg/m ³ | -High Volume Sampling (Average flow rate not less than 1.1 m ³ /minute) |

| Category | Pollutant | Time weighted average | Concentration in Ambient Air | Method of Measurement |
|---|--|----------------------------|--|--|
| 1 | 2 | 3 | 4 | 5 |
| Pench Kanhan, Patharkhera, Umrer, Korba, Chirimiri, Central India Coalfields (including Baikunthpur, Birsampur), Singrauli, Ib Valley, Talcher, Godavary-Valley and any other | Respirable Particulate Matter (size less than 10 µm) (RPM) | Annual Average* 24 hours** | 215 µg/m ³ 300 µg/m ³ | Respirable Particulate Matter sampling and analysis |
| | Sulphur Dioxide (SO ₂) | Annual Average* 24 hours** | 80 µg/m ³ 120 µg/m ³ | 1. Improved wet and Gaeke method 2. Ultraviolet fluorescence |
| | Oxide of Nitrogen as NO ₂ | Annual Average* 24 hours** | 80 µg/m ³ 120 µg/m ³ | 1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemiluminescence |

TABLE III

| Category | Pollutant | Time weighted average | Concentration in Ambient Air | Method of Measurement |
|--|--|----------------------------|--|--|
| 1 | 2 | 3 | 4 | 5 |
| III. Coal mines located in the coal field of -Jharia - Raniganj - Bokaro | Suspended Particulates Matter (SPM) | Annual Average* 24 hours** | 500 µg/m ³ 700 µg/m ³ | -High Volume Sampling (Average flow rate not less than 1.1 m ³ /minute) |
| | Respirable Particulate Matter (size less than 10 µm) (RPM) | Annual Average* 24 hours** | 250 µg/m ³ 300 µg/m ³ | Respirable Particulate Matter sampling and analysis |
| | Sulphur Dioxide (SO ₂) | Annual Average* 24 hours** | 80 µg/m ³ 120 µg/m ³ | 1. Improved wet and Gaeke method 2. Ultraviolet fluorescence |
| | Oxide of Nitrogen as NO ₂ | Annual Average* 24 hours** | 80 µg/m ³ 120 µg/m ³ | 1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemiluminescence |

Note :

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

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

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

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

(2) Frequency of Sampling

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

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

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

(3) Effluent Standards

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

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

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

Optional parameters : All other parameters indicated in the general standards for discharge of environment pollutants under Schedule VI, shall be in addition to the effluent standards specified under Clause 3.

(Monitoring frequency shall be once in a year for the optional parameters)

(4) Noise Level Standards

6.00 AM-10.00 PM

10.00 PM-6.00 AM

Noise level Leq 75 dB(A)

Leq 70 dB(A)

(Monitoring frequency for noise level shall be once in fortnight)

Occupational exposure limit of noise specified by Director General of Mines Safety (DGMS) shall be complied with by the coal mines.

91. Noise Limit for Generator Sets run with Petrol or Kerosene

1. Noise limit

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

| Noise Limit from | |
|-----------------------|-------------------|
| September 1, 2002 | September 1, 2003 |
| Sound Power Level Lwa | 86 dBA |

2. Applicability

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

PROVIDED that these rules shall not apply to :

- any genset manufactured or imported for the purpose of exports outside India, or
- the genset is intended for the purpose of sample only and not for sale in India.

3. Requirement of certification

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

4. Verification of conformity of production (COP)

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

5. Sale of generator sets not complying with these rules

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

6. Requirement of conformance labelling

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

- the label shall be durable and legible,
- the label shall be affixed on a part necessary for normal operation of the 'product' and not normally requiring replacement during the 'product' life.

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

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

7. Nodal agency

- The Central Pollution Control Board shall be the nodal agency for implementation of these rules.
- In case of any dispute or difficulty in implementation of these rules the matter shall be referred to the nodal agency.

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

8. Certification body

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

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

9. Compliance and testing procedure

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

92. Standards for Effluents from Textile Industry

| Parameter | Concentration not to exceed, milligram per litre (mg/l), except pH |
|--|--|
| pH | 5.5-9.0 |
| Total suspended solids | 100 |
| Bio-chemical oxygen demand (BOD) | 30 |
| Chemical oxygen demand (COD) | 250 |
| Total residual chlorine | 1 |
| Oil and grease | 10 |
| Total chromium as Cr | 2 |
| Sulphide as S | 2 |
| Phenolic compounds as C ₆ H ₆ OH | 1 |

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

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

93. Primary Water Quality Criteria for Bathing Waters

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

TABLE 1

PRIMARY WATER QUALITY CRITERIA FOR BATHING WATER

(Water used for organised outdoor bathing)

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

194. Noise Limit for Generator Sets Run with Diesel

1. Noise limit for diesel generator sets (upto 1000 KVA) manufactured on or after the 1st July, 2004].

The maximum permissible sound pressure level for new diesel generator (DG) sets with rated capacity upto 1000 KVA, manufactured on or after the 1st July, 2004] shall be 75 dB(A) at 1 metre from the enclosure surface.

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

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

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

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

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

1 Inserted vide GSR No. 371(E), dt. 17-5-2002, w.e.f. 17-5-2002.

2 Substituted for "1st July, 2003" vide GSR No. 520(E), dt. 1-7-2003, w.e.f. 1-7-2003.

- 2.2 The acoustic enclosure or acoustic treatment of the room shall be designed for minimum 25 dB(A) insertion loss or for meeting the ambient noise standards, whichever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under such circumstances the performance may be checked for noise reduction upto actual ambient noise level, preferably, in the night time). The measurement for Insertion Loss may be done at different points at 0.5m from the acoustic enclosure/room, and then averaged.
- 2.3 The DG set shall be provided with proper exhaust muffler with insertion loss of minimum 25 dB(A).
- 2.4 These limits shall be regulated by the State Pollution Control Boards and the State Pollution Control Committees.
- 2.5 Guidelines for the manufacturers/users of Diesel Generator sets shall be as under:
1. The manufacturer shall offer to the user a standard acoustic enclosure of 25 dB(A) insertion loss and also a suitable exhaust muffler with insertion loss of 25 dB(A).
 2. The user shall make efforts to bring down the noise levels due to the DG set, outside his premises, within the ambient noise requirements by proper sitting and control measures.
 3. Installation of a DG set must be strictly in compliance with the recommendations of the DG set manufacturer.
 4. A proper routine and preventive maintenance procedure for the DG set should be set and followed in consultation with the DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use.
3. Limits of Noise for DG sets (upto 1000 KVA) manufactured on or after the 1st July, 2004.
- 3.1 Applicability
1. These rules apply to DG sets upto 1000 KVA rated output, manufactured or imported in India, on or after 1st July, 2004
 2. These rules shall not apply to—
 - (a) DG sets manufactured or imported for the purpose of exports outside India; and
 - (b) DG sets intended for the purpose of sample and not for sale in India.
- 3.2 Requirement of Certification
- Every manufacturer or importer (hereinafter referred to as "supplier") of DG set (hereinafter referred to as "product") to which these regulations apply must have valid certificates of Type Approval and also valid certificates of Conformity of Production for each year, for all the product models being manufactured or imported from 1st July, 2004] with the noise limit specified in paragraph 1.

- 3.3 Sale, import or use of DG sets not complying with the rules prohibited
No person shall sell, import or use of a product model, which is not having a valid Type Approval certificate and Conformity of Production certificate.
- 3.4 Requirement of Conformance Labelling
- (i) The supplier of the 'product' must affix a conformance label on the product meeting the following requirements:—
 - (a) The label shall be durable and legible.
 - (b) The label shall be affixed on a part necessary for normal operation of the 'product' and not normally requiring replacement during the 'product' life.
 - (ii) The conformance label must contain the following information:—
 - (a) Name and address of the supplier (if the address is described in the owner's manual, it may not be included in the label)
 - (b) Statement "This product conforms to the Environment (Protection) Rules, 1986".
 - (c) Noise limit viz., 75 dB(A) at 1m
 - (d) Type approval certificate number.
 - (e) Date of manufacture of the product.
- 3.5 Nodal Agency
- (i) The Central Pollution Board shall be the nodal agency for implementation of these regulations.
 - (ii) In case of any dispute or difficulty in implementation of these regulations, the matter shall be referred to the nodal agency.
 - (iii) The nodal agency shall constitute a Committee to advise it on all matters; including the disputed matters, related to the implementation of these regulations.
- 3.6 Authorised agencies for certification
- The following agencies are authorised to carry out such tests as they deem necessary for giving certificates for Type Approval and Conformity of Production testings of DG sets and to give such certificates:—
- (i) Automotive Research Association of India, Pune
 - (ii) National Physical Laboratory, New Delhi
 - (iii) Naval Science & Technology Laboratory, Visakhapatnam
 - (iv) Fluid Control Research Institute, Palghat
 - (v) National Aerospace Laboratory, Bangalore
- 3.7 Compliance and Testing Procedure
- The compliance and testing procedure shall be prepared and published by the Central Pollution Control Board, with the help of the certifier agencies.

95. Emission Limits for New Diesel Engines (upto 800 KW) for Generator Sets (Gensets Applications

1. Emission Limits

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

TABLE

| Capacity of diesel engines | Date of implementation | Emission Limits (g/kw-hr) for | | | | Smoke Limit (light absorption coefficient, m-1) (at full load) | | Test Cycle | |
|----------------------------|------------------------|-------------------------------|-----|-----|-----|--|-------------------|------------|--|
| | | NOx | HC | CO | PM | Torque % | Weighting factors | | |
| Upto 19 kW | 1-7-2004 | 9.2 | 1.3 | 3.5 | 0.3 | 0.7 | 100 | 0.05 | |
| 19kW upto 176 kW | 1-1-2004 | 9.2 | 1.3 | 5.0 | 0.5 | 0.7 | 75 | 0.25 | |
| | 1-7-2004 | 9.2 | 1.3 | 3.5 | 0.3 | 0.7 | 25 | 0.30 | |
| 176kW upto 800kW | 1-7-2004 | 9.2 | 1.3 | 3.5 | 0.3 | 0.7 | 10 | 0.10 | |

Note I : The diesel engine [supplier] in the category of engines upto 19 kW, who are unable to meet the emission limits fixed for such diesel engines for gensets applications vide the notification of the Government of India, in the Ministry of Environment and Forests number GSR 371(E) dt. 17-5-2002 (herein referred to as the said notification), may avail the benefit of extension of time provided under this notification subject to the condition that every such [supplier] shall submit (i) an affidavit to the Central Pollution Control Board or the respective State Pollution Control Boards or Committees where they are located to the effect that the specified emission limits shall be complied with by them as per the extended date of implementation given hereinabove for that category of engines without seeking further extension of time and (ii) a bank guarantee of Rs. 50,000 (Rupees Fifty thousand) which in case of non compliance shall stand forfeited.

Note II : The diesel engine [supplier] in the category of engines of more than 19 kW and upto 800 kW, who are unable to meet the emission limits fixed for such diesel engines for gensets applications vide the said notification may avail the benefit of extension of time provided under this notification subject to the condition that every such [supplier] shall submit (i) an affidavit to the Central Pollution Control Board or the respective State Pollution Control Boards or Committees where they are located to the effect that the specified emission limits shall be complied with by them as per the extended date of implementation given hereinabove for that category of engines without seeking further extension of time and (ii) a bank guarantee for an amount of Rs. 10,00,000/- (Rupees ten lakhs) per parent engine model which in case of non-compliance shall stand forfeited.

Note III : The diesel engine [supplier] in the category of engines of more than 176 kW and upto 800 kW shall, in addition to the conditions specified in Note II above, also give an affidavit to the Central Pollution Control Board or to the respective State

1 Substituted for the word "manufacturers" or "manufacturer" by the Environment (Protection) Amndt. Rules, 2004 vide GSR 92(E), dt. 29-1-2004, w.e.f. 3-2-2004.

Pollution Control Boards or Committees where they are located to the effect that they shall develop either individual or a common test facility and get the same approved by the certification agencies mentioned in paragraph 8 of serial number 95 of Schedule 1.]

2. Applicability

These rules shall apply to all new diesel engines for genset applications (hereinafter referred to as 'engine') manufactured in India and all diesel engines for genset applications and diesel gensets (hereinafter referred to as 'product'), imported into India, after the effective date:

- PROVIDED that these rules shall not apply to—
- any engine manufactured or engine or product imported for the purpose of export outside India, or
 - any engine or product intended for the purpose of sample only and not for sale in India.

3. Requirement of certification

Every manufacturer of engine or every importer of engine or product must have valid certificates of Type Approval and certificates of Conformity of Production for each year, for all engine models being manufactured or for all engine or product models being imported, after the effective date with the emission limit as specified in paragraph 1.

- Sale, import or use of engine or product not complying with these rules
- No person shall sell, import or use of an engine or a product which is not having a valid Type Approval certificate and Conformity of Production certificate as per paragraph 3.

5. Requirement of conformance labelling

(i) All the engines (individually) or as part of the product shall be clearly engraved 'Genset Engine' on the cylinder block.

(ii) The engine or the product must be affixed with a conformance label meeting the following requirements:—

- the label shall be durable and legible;
- the label shall be affixed on a part necessary for normal operation of the engine or the product and not normally requiring replacement during the life of the engine or the product.

(iii) The conformance label must contain the following information:—

- name an address of the engine manufacturer or the engine or product importer (if the address is given in the owner's manual, it may not be included in the label);
- statement that 'this engine or product conforms to the Environment (Protection) Rules, 1986';
- type approval certificate number;
- date of manufacture of engine or in case of import, the date of import of the engine or the product.

6. Compliance with BIS specifications

All engines upto [19kW] (individually) or as part of the product shall carry ISI mark and meet relevant BIS specifications (IS 10001).

7. Nodal agency

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

8. Authorised agencies for certification

The following agencies are authorised to carry out such tests as they deem necessary for giving certificates of Type Approval and Conformity of Production tests for Diesel engines and to give such certificates:—

- (i) Automotive Research Association of India, Pune.
- (ii) Vehicle Research and Development Establishment, Ahmednagar.

9. Compliance and testing procedure

The compliance and testing procedure shall be prepared and published by the Central Pollution Control Board with the help of the Certification Agencies.

10. Fuel Specification

The specification of commercial fuel applicable for diesel gensets shall be the same as applicable for commercial HSD (High Speed Diesel) applicable for diesel vehicles in the area, from time to time.]

[Explanation: For the purposes of this paragraph, 'supplier' means manufacturer of new diesel engines for genset applications in India and importer of such diesel engines for genset applications and diesel gensets imported into India.]

196. Emission Standards for Diesel Engines (Engine rating more than 0.8 MW (800 KW) for Power Plant, Generator Set Applications and other Requirements.

TABLE

| Parameter | Area Category | Total engine rating of the plant (includes existing as well as new generator sets) | Generator sets commissioning date | |
|--|---------------|--|-----------------------------------|---------------------------|
| | | | Before 1-7-03 | Between 1-7-03 and 1-7-05 |
| NO _x (as NO ₂) (At 15% O ₂) dry basis in ppmv | A | Upto 75 MW | 1100 | 970 |
| | B | Upto 150 MW | | 710 |
| | A | More than 75 MW | 1100 | 710 |
| | B | More than 150 MW | | 360 |

1 Inserted by the Environment (Protection) Amdt. Rules, 2004, vide GSR 92(E), dt. 29-1-2004, w.e.f. 3-2-2004.

2 Inserted by GSR 489(E), dt. 9-7-2002, w.e.f. 11-7-2002.

| | | | |
|--|--|----------|---|
| NMHC (as C) (at 15% O ₂), mg/Nm ³ | Both A and B | 150 | 100 |
| PM (at 15% O ₂), mg/Nm ³ | Both A and B | 75 | 75 |
| Furnace Oils-LSHS & FO | Both A and B | 150 | 100 |
| CO (at 15% O ₂), mg/Nm ³ | Both A and B | 150 | 150 |
| Sulphur content in fuel | A | | <2% |
| | B | | 4<4% |
| Fuel specification | For A only | Upto 5MW | Only Diesel fuels (HSD, LDO) shall be used. |
| Stack height (for sets commissioned after 1-7-2003) | Stack height shall be maximum of the following, in meter: (i) 14 Q ^{0.5} , Q = Total SO ₂ emission from the plant in kg/hr. (ii) Minimum 6 m. above the building where generator set is installed. (iii) 30m. | | |

Note :—

1. Acronyms used:

| | | | |
|-----------------|---|--------------------|---|
| MW | : Mega (10 ⁶) Watt | PO | : Furnance Oil |
| NO _x | : Oxides of Nitrogen | HSD | : High Speed Diesel |
| NO ₂ | : Nitrogen Dioxide | LDO | : Light Diesel Oil |
| O ₂ | : Oxygen | LSHS | : Low Sulphur Heavy Stock |
| NMHC | : Non-Methane Hydrocarbon | kPa | : Kilo Pascal |
| C | : Carbon | mm | : Milli (10 ⁻³) metre |
| PM | : Particulate Matter | kg/hr | : Kilo (10 ³) gram per hour |
| CO | : Carbon Monoxide | mg/Nm ³ | : Milli (10 ⁻³) gram per Normal metre cubic |
| SO ₂ | : Sulphur Dioxide | | |
| ppmv | : part per million (10 ⁶) by volume | | |

2. Area categories A and B are defined as follows:

Category A: Areas within the municipal limits of towns/cities having population more than 10 lakhs and also upto 5 km beyond the municipal limits of such town/cities.

Category B: Areas not covered by category A.

3. The standards shall be regulated by the State Pollution Control Boards or Pollution Control Committees, as the case may be.
4. Individual units with engine ratings less than or equal to 800 KW are not covered by this notification.
5. Only following liquid fuels viz, High Speed Diesel, Light Diesel Oil, Low Sulphur Heavy Stock and Furnace Oil or liquid fuels with equivalent specifications shall be used in these power plants and generator sets.
6. For expansion project, stack height of new generator sets shall be as per total Sulphur Dioxide emission (including existing as well as additional load).
7. For multi engine plants, fuels shall be grouped in cluster to get better plume rise and dispersion. Provision for any future expansion should be made in planning stage itself.
8. Particulate matter, Non-Methane Hydrocarbon and Carbon Monoxide levels are to be normalized to 25°C, 1.01 Kilo Pascal (760 mm of mercury) pressure and zero percent moisture (dry basis).
9. Measurement shall be performed at steady load conditions of more than 85% of the rated load.
10. Continuous monitoring of Oxides of Nitrogen shall be done by the plants whose total engine capacity is more than 50 Mega Watt. However, minimum once in six month monitoring for other parameters shall be adopted by the plants.
11. Following methods may be adopted for the measurement of emission parameters,—

| Sl. No. | Emission parameters | Measurement Methods |
|---------|---------------------|--|
| 1. | Particulates | Gravimetric |
| 2. | SO ₂ | Barium Perchlorate-Thorin indicator method |
| 3. | NO _x | Chemiluminescence, Non Dispersive Infra Red, Non Dispersive Ultra-violet (for continuous measurement), Phenol disulphonic method |
| 4. | CO | Non Dispersive Infra Red |
| 5. | O ₂ | Paramagnetic, Electrochemical sensor |
| 6. | NMHC | Gas Chromatograph—Flame Ionisation Detector |

SCHEDULE II

[***]

²[SCHEDULE III]

AMBIENT AIR QUALITY STANDARDS IN RESPECT OF NOISE

[Rule 3]

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

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

Note 2 : Night time is reckoned in between 9 p.m. and 6 a.m.

Note 3 : Silence zone is defined as areas up to 100 metres around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the Competent Authority.

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

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

³[SCHEDULE IV

STANDARDS FOR EMISSION OF SMOKE, VAPOUR, ETC., FROM MOTOR VEHICLES

[Rule 3]

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

(2) On and from the 1st day of March, 1990, every motor vehicle in use shall comply with the following standards :—

- (a) Idling CO (Carbon monoxide) emission limit for all four wheeled petrol driven vehicles shall not exceed 3 per cent by volume;
- (b) Idling CO emission limit for all two and three wheeled petrol drive vehicles shall not exceed 4.5 per cent by volume;

1 Schedule II relating to rule 3, inserted vide GSR 919(E), dt. 12-9-1988 now omitted by GSR 80(E), w.e. 31-12-1993.

2 Inserted by GSR 1063(E), w.e.f. 26-12-1989.

3 Inserted by GSR 54(E), w.e.f. 5-2-1990.

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

| Method of test | Maximum smoke density | | |
|---|-----------------------------------|-------------|----------------|
| | Light absorption co-efficient m-1 | Bosch Units | Hartidge Units |
| (a) Full load at a speed of 60% to 70% of maximum engine rated 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 opacity as specified at Annexure 'IV' to this Schedule.

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

| Mass of Carbon Monoxide (CO) Max. grams per KWH | Mass of Hydrocarbons(HC) Max. grams per KWH | Mass of Nitrogen Oxides (NO) Max. grams per KWH |
|--|--|--|
| 14 | 3.5 | 18 |

(6) Each motor vehicle manufactured on and after the dates specified in paragraphs (2), (3), (4) and (5) shall be certified by the manufacturers to be conforming to the standards specified in the said paragraphs and the manufacturers shall further certify that the components liable to effect the emission of gaseous pollutants are so designed, constructed and assembled as to enable the vehicle, in nominal use, despite the vibration to which it may be subjected, to comply with the provisions of the said paragraphs.

(7) Test for smoke emission level and Carbon Monoxide level for motor vehicles—

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

(b) The driver or any person in charge of the vehicle shall upon demand by any officer referred to in sub-paragraph (a), submit the vehicle for testing for the purpose of measuring the standard of smoke or the levels of other pollutants or both.

(c) The measurement of standard of smoke shall be done with a smoke meter of a type approved by the State Government and the measurement of other

pollutants like Carbon Monoxide shall be done with instruments of a type approved by the State Government.

ANNEXURE I
MASS EMISSION STANDARDS FOR PETROL DRIVEN VEHICLES
(Paragraph 3)

1. Type Approval Tests:
Two and Three Wheeler Vehicles

| Reference Mass, R(Kg) | CO(g/km) | HC (g/km) |
|-----------------------|------------------------------|----------------------------|
| (1) | (2) | (3) |
| R ≤ 150 | 12 | 8 |
| 150R ≤ 350 | $12 + \frac{18(R-150)}{200}$ | $8 + \frac{4(R-150)}{200}$ |
| R > 350 | 30 | 12 |

Light Duty Vehicles

| Reference Mass, <i>rw</i> (Kg) | CO(g/km) | HC (g/km) |
|--------------------------------|----------|-----------|
| <i>rw</i> ≤ 1020 | 14.3 | 2.0 |
| 1020 < <i>rw</i> ≤ 1250 | 16.5 | 2.1 |
| 1250 < <i>rw</i> ≤ 1470 | 18.8 | 2.1 |
| 1470 < <i>rw</i> ≤ 1700 | 20.7 | 2.3 |
| 1700 < <i>rw</i> ≤ 1930 | 22.9 | 2.5 |
| 1930 < <i>rw</i> ≤ 2150 | 24.9 | 2.7 |
| <i>rw</i> ≤ 2150 | 27.1 | 2.9 |

2. Conformity of production tests

Two and three wheelers vehicle*

| Reference Mass, R(Kg) | CO(g/km) | HC (g/km) |
|-------------------------|------------------------------|-----------------------------|
| (1) | (2) | (3) |
| R < 150 | 15 | 8 |
| 150R < 350 | $15 + \frac{25(R-150)}{200}$ | $10 + \frac{5(R-150)}{200}$ |
| R > 350 | 40 | 15 |
| <i>rw</i> ≤ 1020 | 17.3 | 2.7 |
| 1020 ≤ <i>rw</i> ≤ 1250 | 19.7 | 2.7 |
| 1250 ≤ <i>rw</i> ≤ 1470 | 22.5 | 2.8 |

| | | |
|------------------|------|-----|
| 1470 ≤ rw ≤ 1700 | 24.9 | 3.0 |
| 1700 ≤ rw ≤ 1930 | 27.6 | 3.3 |
| 1930 ≤ rw ≤ 2150 | 29.9 | 3.5 |
| rw ≤ 2150 | 32.6 | 3.7 |

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

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

ANNEXURE II

BREAKDOWN OF THE OPERATING CYCLE USED FOR THE TESTS

[Paragraph 31]

| No. of operation | Acceleration (m/sec 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. Deceleration | -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 | 34-34 | 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

REFERENCE FUEL FOR TYPE AND PRODUCTION CONFORMITY TESTS
[Paragraph 31]

| Sl.No. | Characteristic | Requirements | Method of test (ref. of P. or IS : 1448*) |
|--------|---|--------------------------------|---|
| (1) | (2) | (3) | (4) |
| 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: | Not limited but to be reported | P:18(1967) |
| | (a) Initial boiling point | 10 | 10 |
| | (b) Recovery up to 20°C per cent by volume, min. | 50 | 50 |
| | (c) Recovery up to 125°C 50 per cent by volume | 90 | 90 |
| | (d) Recovery up to 130°C per cent by volume, min. | 215°C | 215°C |
| | (e) Final boiling point, max. | 2 | 2 |
| | (f) Residue per cent by volume, max. | 87 | 94 |
| 5. | Octane number (Research method) max. | 360 | P: 27 (1960) |
| 6. | Oxidation stability in minutes, min. | 4.0 | P: 28 (1966) |
| 7. | Residue on evaporation mg/100 ml. max. | 4.0 | P: 29(1960) (Air-jet solvent washed) |

| | | | | |
|-----|--|------|------|------------------------------|
| 8. | Sulphur, total, per cent 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. | Red vapour pressure at 38 degree C, kgf/cm ³ , max. | 0.70 | 0.70 | P: 39 (1967) |

* Methods of test for petroleum and its products

ANNEXURE IV

LIMIT VALUES OF EXHAUST GAS CAPACITY APPLICABLE FOR DIESEL DRIVEN VEHICLES—THE ENGINE TESTS AT STEADY SPEED
[Paragraph 4]

| Nominal Flow G (l/s) | Absorption Coefficient K (m-1) | Nominal Flow G (l/s) | Absorption Coefficient (Km-1) |
|----------------------|--------------------------------|----------------------|-------------------------------|
| 42 | 2.00 | 120 | 1.20 |
| 45 | 1.91 | 125 | 1.17 |
| 50 | 1.82 | 130 | 1.15 |
| 55 | 1.75 | 135 | 1.13 |
| 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 |

[SCHEDULE V]
[Rule 72]

| Sl.No. | Place at which the discharge of any environment pollutant in excess of prescribed standards occurs or is apprehended to occur | Authorities or agencies to be intimated | Appointed under |
|--------|--|---|--|
| (1) | (2) | (3) | (4) |
| 1. | Factories as defined under the Factories Act, 1948 (a) Owned by the Central Government and engaged in carrying out the purposes of the Atomic Energy Act, 1962. (b) Factories other than those mentioned in para (a) | (i) Atomic Energy Regulatory Board (AERB). (ii) The Ministry of Environment and Forests (i) The Chief Inspector of Factories (ii) The Inspector of Factories having local jurisdiction (iii) The Ministry of Environment and Forests (i) Controller-General of Mines (ii) Regional Controller of Mines having local jurisdiction (iii) The Ministry of Environment and Forests | The Atomic Energy Act, 1962 -do- -do- The Mines and Minerals (Regulation and Development) Act, 1957 -do- -do- The Indian Ports Act, 1901 -do- The Plantations Labour Act, 1951 -do- -do- |
| 2. | Mine as defined under the Mines and Minerals (Regulation and Development) Act, 1957 | (i) Controller-General of Mines (ii) Regional Controller of Mines having local jurisdiction (iii) The Ministry of Environment and Forests | The Mines and Minerals (Regulation and Development) Act, 1957 -do- -do- |
| 3. | Port as defined under the Indian Ports Act, 1908 | (i) Conservator of Ports (ii) The Ministry of Environment and Forests | The Indian Ports Act, 1901 -do- |
| 4. | Plantation as defined under the Plantations Labour Act, 1951 | (i) The Chief Inspector of Plantations (ii) The Inspector of Plantations having local jurisdiction (iii) The Ministry of Environment and Forests | The Plantations Labour Act, 1951 -do- -do- |

1. Inserted by SO 82(E), w.e.f. 16-2-1987.
2. Renumbered by GSR 422(E), w.e.f. 19-5-1993.
3. Substituted by SO 64(E), w.e.f. 18-1-1988.

| | | | | |
|-----|---|--|----------|----------|
| 4. | Omitted by GSR 80(E), w.e.f. 31-12-1993. | 5.5 to 9 | 5.5 to 9 | 5.5 to 9 |
| 5. | pH value | 5.5 to 9 | — | — |
| 6. | Temperature | shall not exceed 5°C above the receiving water temperature | — | — |
| 7. | Oil and grease mg/l max. | 10 | 20 | 10 |
| 8. | Total residual Chlorine mg/l max. | 1.0 | — | — |
| 9. | Ammonical Nitrogen (as N), mg/l max. | 50 | 50 | — |
| 10. | Total Kjeldahl Nitrogen [N] | 100 | — | — |
| 11. | Free Ammonia [NH ₃] mg/l max. | 5.0 | — | — |
| 12. | Biochemical Oxygen demand BOD (3 days at 27°C) [mg/l, max.] | 30 | 350 | 100 |
| 13. | Chemical oxygen demand, mg/l, max. | 250 | — | — |
| 14. | Arsenic (as As), [mg/l], max. | 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 | — |
| 17. | Cadmium (as Cd) mg/l, max. | 2.0 | 1.0 | — |

| | | | |
|----|---|--|---------------------------------|
| 5. | Motor vehicle as defined under the Motor Vehicles Act, 1939 | (i) State Transport Authority (ii) Regional Transport Authority having regional jurisdiction (iii) The Ministry of Environment and Forests | Motor Vehicles Act, 1939 |
| 6. | Ship as defined under the Merchant Shipping Act, 1958 | (i) Director-General of Shipping (ii) Surveyor having jurisdiction (iii) The Ministry of Environment and Forests. | The Merchant Shipping Act, 1958 |

[SCHEDULE VI]
GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS
PART A—EFFLUENTS
[Rule 3A]

| Sl. No. | Parameter | Standards | | |
|---------|------------------------------------|--------------------------------|---------------|---|
| | | Inland surface water | Public sewers | Land for irrigation |
| (1) | (2) | (3(a)) | (3(b)) | (3(c)) |
| 1. | Colour and odour | See 6 of Annexure-1 | — | See 6 of Annexure-1 |
| 2. | Suspended solids mg/l, max. | 100 | 600 | 200 |
| 3. | Particle size of suspended solids. | shall pass 850 micron IS Sieve | — | (a) For process waste water—100. (b) For cooling water effluent above total suspended matter of influent. (a) Floatable solids, max. 3 mm. (b) Settleable solids, max 850 microns. |

1 Inserted by GSR 422(E), w.e.f. 19-5-1993.

1 Substituted by GSR 80(E), w.e.f. 31-12-1993.

| | | | | | | | | | | |
|-----|---|------|------|---|------|--|--|--|--|--|
| 18. | Hexavalent Chromium (as Cr + 6), mg/l, max. | 0.1 | 2.0 | — | 1.0 | (b) Beta emitters ¹ [Micro curie/ml] max. | 10 ⁻⁶ | 10 ⁻⁶ | 10 ⁻⁷ | [10 ⁻⁶] |
| 19. | Total Chromium (as Cr) mg/l, max. | 2.0 | 2.0 | — | 2.0 | 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 |
| 20. | Copper (as Cu) mg/l, max. | 3.0 | 3.0 | — | 3.0 | Manganese (as Mn) | 2 mg/l | 2 mg/l | 2 mg/l | 2 mg/l |
| 21. | Zinc (as Zn) mg/l, max. | 5.0 | 15 | — | 15 | Iron (as Fe) | 3 mg/l | 3 mg/l | 3 mg/l | 3 mg/l |
| 22. | Selenium (as Se) mg/l, max. | 0.05 | 0.05 | — | 0.05 | Vanadium (as V) | 0.2 mg/l | 0.2 mg/l | 0.2 mg/l | 0.2 mg/l |
| 23. | Nickel (as Ni) mg/l, max. | 3.0 | 3.0 | — | 5.0 | Nitrate Nitrogen | 10 mg/l | — | — | 20 mg/l |

[Entries 24 to 26 omitted by GSR 80(E), w.e.f. 31-12-1993]

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PART B

WASTE WATER GENERATION STANDARDS

| Sl. No. | Industry | Quantity |
|---------|--|--|
| 1. | Integrated iron and steel | 16 ¹ [m ³ /tonne] of finished steel |
| 2. | Sugar | 0.4 ¹ [m ³ /tonne] of cane crushed |
| 3. | Pulp and paper industries | |
| | (a) Larger pulp and paper | |
| | (i) Pulp and paper | 175 ¹ [m ³ /tonne] of paper produced |
| | ^{1a} [(ii) Viscose staple fibre | 150 m ³ /tonne of product |
| | (iii) Viscose filament yarn | 500m ³ /tonne of product] |
| | (b) Small pulp and paper: | |
| | (i) Agro-residue based | 150 ¹ [m ³ /tonne] of paper produced |
| | (ii) Waste paper based | 50 ¹ [m ³ /tonne] of paper produced |
| 4. | Fermentation industries | |
| | (a) Maltory | 3.5 ¹ [m ³ /tonne] of grain produced |
| | (b) Brewery | 0.25 M ³ /kl of beer produced |
| | (c) Distillery | 12 M ³ /kl of alcohol produced |
| 5. | Caustic soda | |
| | (a) Membrane cell process | ¹ [m ³ /tonne] of caustic soda produced excluding cooling tower blowdown |

¹ Substituted by GSR 80(E), w.e.f. 31-12-1993.

¹ Substituted by GSR 80(E), w.e.f. 31-12-1993.

- (b) Mercury cell process
- 4 ¹[m³/tonne] of caustic soda produced (mercury bearing), 10% blowdown permitted for cooling tower
6. Textile Industries:
Man-made fibre
- (i) Nylon and polyester 120 ¹[m³/tonne] of fibre produced
- (ii) Viscose rayon 150 ¹[m³/tonne] of product
7. Tanneries 28 ¹[m³/tonne] of raw hide
8. Starch, glucose and related products 8 ¹[m³/tonne] of maize crushed
9. Dairy 3M³/kl of milk
10. Natural rubber processing industry 4 ¹[m³/tonne] of rubber
11. Fertiliser
- (a) Straight nitrogenous fertiliser 5 ¹[m³/tonne] of urea or equivalent produced
- (b) Straight phosphatic fertiliser (SSP and TSP) excluding manufacture of any acid 0.5 ¹[m³/tonne] of SSP/TSP
- (c) Complex fertiliser Standards of nitrogenous and phosphatic fertiliser are applicable depending on the primary product.

PART C

LOAD BASED STANDARDS

| Parameter | Quantity in ¹ [kg/1000 tonnes of crude processed] |
|--|--|
| Oil and grease | 10.00 |
| Phenol | 0.70 |
| BOD | 10.50 |
| Suspended solids | 14.00 |
| Sulphide | 0.35 |
| 2. Large pulp and paper, newsprint/rayon grade plants of capacity above 24000 ¹ [tonne]/annum | 2 ¹ [kg/tonne] of product |

¹ Substituted by GSR 80(E), w.e.f. 31-12-1993.

PART D
GENERAL EMISSION STANDARDS

I. Concentration based standards :

| Sl. No. | Parameter | Standard concentration, not to exceed (in mg/Nm ³) |
|---------|---|---|
| 1. | ¹ [Particulate matter (PM ₁₀)] | 150 |
| 2. | ¹ [Total Fluoride] | ¹ [25] |
| 3. | Asbestos | ¹ [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 |
| 7. | [Omitted by GSR 80(E), w.e.f. 31-12-1993.] | |
| 8. | Sulphuric acid | 50 |
| 9. | Carbon monoxide | ¹ [1% max v/v] |
| 10. | [Omitted by GSR 80(E), w.e.f. 31-12-1993.] | |
| 11. | Lead | ¹ [10 mg/Nm ³] |

II. Equipment based standards :

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

| Sl. No. | Parameter | Standard |
|---------|--|--|
| 1. | Sulphur dioxide | Stack-height limit in ¹ [metre] |
| | (i) Power generation capacity: | |
| | 500 MW and more | 275 |
| | 200/210 MW and above to but less than 500 MW | 220 |
| | less than 200/210 MW | H = 14 (Q) ^{0.3} |
| | (ii) Steam generation capacity | Coal consumption per day |
| | Less than 2 ¹ [tonne/hr] | ² [***] |
| | 2 to 5 ¹ [tonne/hr] | |
| | 5 to 10 ¹ [tonne/hr] | |
| | 10 to 15 ¹ [tonne/hr] | |

¹ Substituted by GSR 80(E), w.e.f. 31-12-1993.

² Omitted by GSR 80(E), w.e.f. 31-12-1993.

- 15 to 20¹ [tonne/hr]
- 20 to 25¹ [tonne/hr]
- 25 to 30¹ [tonne/hr]
- More than 30 T/hr

Note : H—Physical height of the stack in ¹[metre]

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

III. Load/Mass-based standards:

| Sl. No. | Industry | Parameter | Standard |
|---------|--|--|---|
| 1. | ¹ [Fertiliser (Urea)] | | |
| | Commissioned prior to 1-1-1982 | ¹ [Particulate matter (PM)] | 2 ¹ [kg/tonne] of product |
| | Commissioned after 1-1-1982 | ¹ [Particulate matter (PM)] | 0.5 ¹ [kg/tonne] of product |
| 2. | Copper, Lead and ¹ [Zinc smelter converter] | Sulphur dioxide | 4 ¹ [kg/tonne] of concentrated ¹ [(100%) acid produced] |
| 3. | Nitric Acid | Oxides of Nitrogen | 3 ¹ [kg/tonne] of weak acid (before concentration) produced |
| 4. | Sulphuric Acid | Sulphur dioxide | 4 ¹ [kg/tonne] of concentrated (100%) acid produced |
| 5. | Coke oven | Carbon monoxide | 3 ¹ [kg/tonne] of coke produced |
| 6. | Oil refineries | | |

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

| Process | Parameter | Standard |
|---|-----------------|--|
| Distillation ¹ [(Atmospheric plus vacuum)] | Sulphur dioxide | 0.25 ¹ [kg/tonne] of feed in this process |
| Catalytic cracker | -do- | 2.5 ¹ [kg/tonne] of feed in this process |
| Sulphur recovery unit ² [***] | -do- | 120 ¹ [kg/tonne] of Sulphur in the feed |
| 7. Aluminium plants: | | |
| (f) Anode bake oven | Total Fluoride | 0.3 kg/mt of Aluminium |

1 Substituted by CSR 80(E), w.e.f. 31-12-1993.
2 Omitted by CSR 80(E), w.e.f. 31-12-1993.

- (ii) Pot room
- (a) VSS -do-
- (b) HSS -do-
- (c) PBSW -do-
- (d) PBCW -do-

- 4.7 kg/mt of Aluminium
- 6 kg/mt of Aluminium
- 2.5 kg/mt of Aluminium
- 1.0 kg/mt of Aluminium

Note :

VSS = Vertical Stud Soderberg

HSS = Horizontal Stud Soderberg

¹[PBSW = Pre Backed Side Work]

¹[PBCW = Pre Backed Centre Work]

8. Glass industry

(a) Furnace capacity

(i) Up to the product draw capacity of 60 mt/day Particulate matter 2 kg/hr

(ii) Product draw capacity more than 60 mt/day -do- drawn 0.8 kg/mt of product

PART E

NOISE STANDARDS

A. Noise limits for automobiles ¹[free field distance at 7.5 metres] in dB(A) at the manufacturing stage—

- (a) Motorcycle, scooters and three-wheelers 80
- (b) Passenger cars 82
- (c) Passenger or commercial vehicles up to 4 mt 85
- (d) Passenger or commercial vehicles above 4 mt and up to 12 mt 89
- (e) Passenger or commercial vehicles exceeding 12 mt 91

²[AA. Noise limits for vehicles at manufacturing stage

The test method to be followed shall be IS : 3028 - 1998.

(1) Noise limits for vehicles applicable at manufacturing stage from the year 2003

| S. No. | Type of vehicle | Noise Limits dBA | Date of Implementation |
|--------|--|------------------|------------------------|
| 1. | Two wheeler Displacement upto 80 cm ³ | 75 | 1st January, 2003 |
| | Displacement more than 80 cm ³ but upto 175 cm ³ | 77 | |
| | Displacement more than 175 cm ³ | 80 | |

1 Substituted by GSR 80(E), w.e.f. 31-12-1993.
2 Substituted vide CSR 80(E), w.e.f. 31-12-1993.

| | | |
|-----|---|-----|
| 6.0 | Vehicles used for the transport of goods with a maximum GVW exceeding 3.5 tonnes. | |
| 6.1 | With an engine power less than 75 KW | 77 |
| 6.2 | With an engine power of 75 KW or above but less than 150 KW. | 78 |
| 6.3 | With an engine power of 150 KW or above. | 80] |

B. Domestic appliances and construction equipments at the manufacturing stage to be achieved by 31-12-1993—

- (a) Window air conditioners of 1 ton to 1.5 ton 68
- (b) Air [coolers] 60
- (c) Refrigerators 46
- ²[(d) x x x] 75
- (e) Compactors (rollers), front loaders, concrete mixers, cranes (movable), vibrators and saws

ANNEXURE I

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

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

1. The waste waters and gases are to be treated with the best available technology [(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 take into account the assimilative capacities of the receiving bodies, especially water bodies so that quality of the intended use of the receiving water is not affected. Where such quality is likely to be affected, discharges should not be allowed into water bodies.
5. The Central and State Boards shall put emphasis on the implementation of clean technologies by the industries in order to increase fuel efficiency and reduce the generation of environmental pollutants.
6. All efforts should be made to remove colour and unpleasant odour as far as practicable.
7. The standards mentioned in this Schedule ³[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)

1 Substituted by CSR 80(E), w.e.f. 31-12-1993.
 2 Omitted vide CSR 371(E), dt. 17-5-2002, w.e.f. 17-5-2002.
 3 Inserted by CSR 80(E), w.e.f. 31-12-1993.

| | | | |
|----|--|----------------|-------------------|
| 2. | Three wheeler Displacement upto 175 cm ³ Displacement more than 175 cm ³ | 77 80 | 1st January, 2003 |
| 3. | Passenger car | 75 | 1st January, 2003 |
| 4. | Passenger or commercial vehicle Gross vehicle weight upto 4 tonne Gross vehicle weight more than 4 tonnes but upto 12 tonnes Gross vehicle weight more than 12 tonnes | 80 83 85 | 1st July, 2003 |

(2) Noise limits for vehicles at manufacturing stage applicable on and from 1st April, 2005

| Sl. No. | Type of vehicles | Noise limits dB(A) |
|---------|---|-----------------------|
| 1.0 | Two wheelers | |
| 1.1 | Displacement upto 80 cc | 75 |
| 1.2 | Displacement more than 80 cc but upto 175 cc | 77 |
| 1.3 | Displacement more than 175 cc | 80 |
| 2.0 | Three wheelers | |
| 2.1 | Displacement upto 175 cc | 77 |
| 2.2 | Displacement more than 175 cc | 80 |
| 3.0 | Vehicles used for the carriage of passengers and capable of having not more than nine seats, including the driver's seat | 74 |
| 4.0 | Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat, and a maximum Gross Vehicle Weight (GVW) of more than 3.5 tonnes | |
| 4.1 | With an engine power less than 150 KW | 78 |
| 4.2 | With an engine power of 150 KW or above | 80 |
| 5.0 | Vehicles used for carriage of passengers having more than nine seats, including the driver's seat: vehicles used for the carriage of goods. | |
| 5.1 | With a maximum GVW not exceeding 2 tonnes | 76 |
| 5.2 | With a maximum GVW greater than 2 tonnes but not exceeding 3.5 tonnes. | 77 |

Brine plant, (c) Chlorine handling, (d) Hydrogen handling, and (e) Hydrochloric acid plant.

9. [Omitted by GSR 176(E), w.e.f. 3-4-1996.]
10. All effluents discharged including from the industries such as cotton textile, composite woollen mills, synthetic rubber, small pulp and paper, natural rubber, petro-chemicals, tanneries, paint, dyes, slaughter houses, food and fruit processing and dairy [industries] into surface waters shall conform to the BOD limits specified above, namely, 30 mg/l. For discharge of an effluent having a BOD more than 30 mg/l, the standards shall conform to those given above for other receiving bodies, namely, sewers, coastal waters and land for irrigation.
11. [Omitted by GSR 30(E), w.e.f. 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 :
- The limits should be complied with at the end of treatment plant before dilution.
 - 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.
 - 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.
 - Industries are required to analyse 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 Wastes (Management and Handling) Rules, 1989 the State Boards in such cases shall direct the industries to install tertiary treatment stipulating time limit.
15. Standards specified in Part A of Schedule VI for discharge of effluents into the public sewer shall be applicable only if such sewer lead to a secondary treatment including biological treatment system, otherwise these discharge into sewers shall be treated as discharge into inland surface waters.)

ANNEXURE II

(For the purpose of Part D)

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

- In case of cement plants, the total dust (from all sections) shall be within 400 mg/¹[nm³] and 250 mg/¹[nm³] for the plants up to 200t/day and more than 200 t/day capacities respectively.
- 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/¹[nm³].
- 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/¹[nm³].
- In case of lime kilns of capacity more than 5t/day and up to 40t/day, the PM emission shall be within 500 mg/¹[nm³].
- In case of horse shoe/pulsating grate and spreader stroker bagasse-fired-boilers, the PM emission shall be within 500 (12% CO₂) and 800 (12% CO₂) mg/¹[nm³] respectively. In respect of these boilers, if more than attached to a single stack, the emission standard shall be fixed, based on added capacity of all the boilers connected with the stack.
- In case of asbestos dust, the same shall not exceed 2 mg/¹[nm³].
- In case of the urea plants commissioned after 1-1-1982, coke ovens and lead glass units, the PM emission shall be within 50 mg/¹[nm³].
- In case of small boilers of capacity less than 2 tons/hr and between 2 to 5 tons/hr the PM emissions shall be within 1600 and 1200 mg/¹[nm³].
- In case of integrated iron and steel plants, PM emission up to 400 mg/¹[nm³] shall be allowed during oxygen lancing.
- In case of stone crushing units, the suspended PM contribution value at a distance of 40 metres from a controlled, isolated as well as from a unit located in the cluster should be less than 600 ¹[micrograms/nm³].²[***].

These units must also adopt the following pollution control measures:—

- Dust containment cum suppression system for the equipment;
 - Construction of wind breaking walls;
 - Construction of the metallised roads within the premises;
 - Regular cleaning and wetting of the ground within the premises;
 - Planting of a green belt along the periphery.
- (k) In case of Ceramic industry, form the other sources of pollution, such as basic raw material and processing operations, heat recovery dryers, mechanical finishing operation, all possible preventive measures should be taken to control PM emissions as far as practicable.
2. The total Fluoride emission in respect of glass and phosphatic fertilizers shall not exceed 5 mg/nm³ and 25 mg/nm³ respectively.

3. ¹[In case of copper, lead and zinc smelting, the off-gases may, as far as possible, be utilized for manufacturing sulphuric acid.]
- ²[4. In case of cupolas (foundries) having capacity (melting rate) less than 3 tonne/hour, the particulate matter emission shall be within 450 mg/nm³. In these cases it is essential that stack is constructed over the cupola beyond the charging door and the emissions are directed through the stack, which should be at least six times the diameter of cupola. In respect of arc furnaces and induction furnaces, provision has to be made for collecting the fumes before discharging the emissions through the stack.]

³[SCHEDULE VII

[Rule 3B]

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

| Pollutant | Time weighted averaged | Concentration in Ambient Air | | | Method of measurement |
|---------------------------------------|------------------------|------------------------------|----------------------------------|-----------------------|--|
| | | Industrial area | Residential rural and other area | Sensitive area | |
| Sulphur dioxide (SO ₂) | Annual Average* | 80 ug/m ³ | 60 ug/m ³ | 15 ug/m ³ | Improved West and Caeke method |
| | 24 hours** | 120 ug/m ³ | 80 ug/m ³ | 30 ug/m ³ | Ultraviolet Fluorescence |
| Oxides of Nitrogen as NO ₂ | Annual Average* | 80 ug/m ³ | 60 ug/m ³ | 15 ug/m ³ | Jacob and Hochheiser modified (N-Arsenite) Method |
| | 24 hours** | 120 ug/m ³ | 80 ug/m ³ | 30 ug/m ³ | Gas Phase Chemiluminescence |
| Suspended Particulate Matter (SPM) | Annual Average* | 360 ug/m ³ | 140 ug/m ³ | 70 ug/m ³ | High volume sampling |
| | 24 hours** | 500 ug/m ³ | 200 ug/m ³ | 100 ug/m ³ | Average flow rate not less than 1.1 m ³ /minute |

Substituted by CSR 80(E), w.e.f. 31-12-1993.
Added by CSR 80(E), w.e.f. 31-12-1993.
Inserted by CSR 176(E), w.e.f. 3-4-1996.

| | | | | | |
|--|-------------------------------|---|--|--|---|
| Respirable particulate matter (size less than 10 µm) (RPM) | Annual Average* 24 hours** | 120 ug/m ³ 150 ug/m ³ | 60 ug/m ³ 100 ug/m ³ | 50 ug/m ³ 75 ug/m ³ | Respirable particulate matter sampler |
| Lead (Pb) | Annual Average* 24 hours** | 1.0 ug/m ³ 1.5 ug/m ³ | 0.75 ug/m ³ 1.00 ug/m ³ | 0.50 ug/m ³ 0.75 ug/m ³ | AAS method after sampling using EMP 2000 or equivalent filter paper |
| Carbon monoxide | 8 hours** 1 hour | 5.0 mg/m ³ 10.0 mg/m ³ | 2.0 mg/m ³ 4.0 mg/m ³ | 1.0 mg/m ³ 2.0 mg/m ³ | Non-dispersive infrared spectroscopy. |

* Annual Arithmetic mean of minimum 10 measurements in a year taken twice a week 24 hourly at uniform interval.

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

Note : 1. National Ambient Air Quality Standard : The levels of a air quality necessary with an adequate margin of safety, to protect the public health, vegetation and property.

2. Whenever and wherever two consecutive values exceeds the limit specified above for the respective category, it shall be considered adequate reason to institute regular/continuous monitoring and further investigations.]

APPENDIX—A

FORM I

[Rule 7]

NOTICE OF INTENTION TO HAVE SAMPLE ANALYSED

To

.....
.....

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

* Specify the place from where the sample is taken.

(Seal)

Date.....

FORM II
[Rule 8]
MEMORANDUM OF GOVERNMENT ANALYST

From
To
The Government Analyst
.....
The portion of sample described below is sent herewith for analysis (under rule 6 of the Environment (Protection) Rules, 1986.
The portion of the sample has been marked by me with the following mark :
Details of the portion of samples taken.

Name and designation of person
who sends the sample
(SEAL)

FORM III
[Rule 8]
REPORT BY GOVERNMENT ANALYST

Report No.
Date.....
I hereby certify that I.....Government Analyst duly appointed under section 13 of the Environment (Protection) Act, 1986, received on the.....day of 19 from
*a sample 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 that the result of the analysis to be as follows :
**

The condition of seals, fastening of samples on receipt was as follows :
Signed this.....day of.....19.....Address.....
Signature
(Government Analyst)

To
* Here write the names of the officer/authority from whom the sample was obtained.
** Here write full details of analysis and method of analysis.

FORM IV
[Rule 11]
NOTICE

By registered post-acknowledgement due

From
Shri.....

To

Notice under section 19(b) of the Environment (Protection) Act, 1986.
Whereas an offence under the Environment (Protection) Act, 1986, has been committed/is being committed by** I/we hereby give notice of 60 days under section 19(b) of Environment (Protection) Act, 1986, of my/our intention to file a complaint in the court against.....*** for violation of section of the Environment (Protection) Act, 1986.

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

Place.....
Date.....
Signature(s)

Explanation :

- * In case the notice is given in the name of a company, documentary evidence authorising the person to sign the notice on behalf of the company shall be enclosed to this notice.
Company for this purpose means a company defined in the explanation to sub-rule (6) of rule 4.
- ** Here give the name and address of the alleged offender. In case of a manufacturing/processing/operating unit, indicate the name/location/nature of activity, etc.
- *** Documentary evidence shall include photographs/technical reports/health reports of the area, etc., for enabling enquiry into the alleged violation/offence.

¹[FORM V
ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR
ENDING THE 31ST MARCH.....

PART A

- (i) Name and address of the owner/occupier of the industry, operation or process.
- (ii) Industry category Primary—(STC Code) Secondary—(STC Code).
- (iii) Production capacity—Units—
- (iv) Year of establishment.
- (v) Date of the last environmental statement submitted.

1 Substituted by GSR 386(E), w.e.f. 28-4-1993, previously inserted by GSR 329(E) w.e.f. 13-3-1992.

PART—D
HAZARDOUS WASTES

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

| Hazardous wastes | Total Quantity (Kg) | |
|--|------------------------------------|-----------------------------------|
| | During the previous financial year | During the current financial year |
| (a) From process | | |
| (b) From pollution control facilities. | | |
| PART—E SOLID WASTES | | |
| | Total quantity | |
| | During the previous financial year | During the current financial year |
| (a) From process | | |
| (b) From pollution control facility | | |
| (c) (1) Quantity recycled or re-utilised within the unit | | |
| (2) Sold | | |
| (3) Disposed | | |

PART—F

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

PART—G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

PART—H

Additional measures/investment proposal for environmental protection, abatement of pollution, prevention of pollution.

PART—I

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

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) | (3) |
| 1. | | |
| 2. | | |

(2) Raw material consumption

| Name of raw materials | Name of products | Consumption of raw material per unit | |
|-----------------------|------------------|--------------------------------------|-----------------------------------|
| | | During the previous financial year | During the current financial year |
| 1. | | | |
| 2. | | | |

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

PART—C

POLLUTION DISCHARGED TO ENVIRONMENT / UNIT OF OUTPUT

(*Parameter as specified in the consent issued)

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

HAZARDOUS WASTES (MANAGEMENT AND HANDLING) RULES, 1989

[Notification No. SO 594(E), dt. 28-7-1989]¹

In exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules, namely :—

1. Short title and commencement

(1) These rules may be called the Hazardous Wastes (Management and Handling) Rules, 1989.

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

2. Application

These rules shall apply to ²[the handling of] hazardous wastes as specified in ³[Schedules] and shall not apply to—

- (a) waste water and exhaust gases as covered under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981), and rules made thereunder;
- (b) wastes arising out of the operation from ships beyond five kilometres as covered under the provisions of the Merchant Shipping Act, 1958 (44 of 1958), and the rules made thereunder;
- (c) radioactive wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962), and rules made thereunder.
- ⁴[(d) bio-medical wastes covered under the Bio-Medical Wastes (Management and Handling) Rules, 1998 made under the Act;
- (e) wastes covered under the Municipal Solid Wastes (Management and Handling) Rules, 2000 made under the Act; and
- (f) the lead acid batteries covered under the Batteries (Management and Handling) Rules, 2001 made under the Act.]

5[3. Definitions

In these rules, unless the context otherwise requires—

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

- (2) "applicant" means a person or an organisation that applies, in Form I, for granting of authorisation to perform specific activities connected with handling of hazardous wastes;
- (3) "auction" means bulk sale of wastes by invitation of tenders or auction, contract or negotiation by individual(s), companies or Government departments;
- (4) "auctioneer" means a person or an organisation that auctions wastes;
- (5) "authorisation" means permission for collection, transport, treatment, reception, storage and disposal of hazardous wastes, granted by the competent authority in Form 2;
- (6) "authorised person" means a person or an organisation authorised by the competent authority;
- (7) "Central Pollution Control Board" means the Central Board constituted under sub-section (1) of section 3 of the Water (Prevention and Control of Pollution) Act, 1974;
- (8) "disposal" means deposit, treatment, recycling and recovery of any hazardous wastes;
- (9) "export" with its grammatical variations and cognate expressions, means taking out of India to a place outside India;
- (10) "exporter" means any person under the jurisdiction of the exporting country who exports hazardous wastes and the exporting country itself, which exports hazardous wastes;
- (11) "environmentally sound management of hazardous wastes" means taking all steps required to ensure that the hazardous wastes are managed in a manner which will protect health and the environment against the adverse effects which may result from such wastes;
- (12) "facility" means any location wherein the processes incidental to the waste generation, collection, reception, treatment, storage and disposal are carried out;
- (13) "Form" means a Form appended to these rules;
- (14) "hazardous waste" means any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances, and shall include—
- (a) wastes listed in column (3) of Schedule-1;
 - (b) wastes having constituents listed in Schedule-2 if their concentration is equal to or more than the limit indicated in the said Schedule; and
 - (c) wastes listed in Lists 'A' and 'B' of Schedule-3 (Part-A) applicable only in case(s) of import or export of hazardous wastes in accordance with rules 12, 13 and 14 if they possess any of the hazardous characteristics listed in Part-B of Schedule-3.

Explanation : For the purposes of this clause,—

- (i) all wastes mentioned in column (3) of Schedule-1 are hazardous wastes irrespective of concentration limits given in Schedule-2 except as otherwise indicated and Schedule-2 shall be applicable only for wastes or waste constituents not covered under column (3) of Schedule-1;

¹ Published in Gazette of India, Extraordinary, Pt. II, sec. 3(ii), dt. 28-7-1989.

² Inserted by SO 24(E), w.e.f. 6-1-2000.

³ Substituted for "Schedule" by SO 24(E), w.e.f. 6-1-2000.

⁴ Inserted vide S.O. 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

⁵ Substituted, *ibid*

- (ii) Schedule-3 shall be applicable only in case(s) of import or export;
- (15) "hazardous wastes site" means a place for collection, reception, treatment, storage and disposal of hazardous wastes which has been duly approved by the competent authority;
- (16) "illegal traffic" means any transboundary movement of hazardous wastes as specified in Rule 15;
- (17) "import", with its grammatical variations and cognate expressions, means bringing into India from a place outside India;
- (18) "importer" means an occupier or any person who imports hazardous wastes;
- (19) "manifest" means transporting document(s) prepared and signed by the occupier in accordance with Rule 7;
- (20) "non-ferrous metal wastes" means wastes listed in Schedule 4;
- (21) "operator of facility" means a person who owns or operates a facility for collection, reception, treatment, storage and disposal of hazardous wastes;
- (22) "recycler" means an occupier who procures and processes wastes for recovery;
- (23) "recycling of waste oil" means reclamation by way of treatment to separate solids and water from waste oils using methods such as heating, filtering, gravity settling, centrifuging, dehydration, viscosity and specific gravity adjustment;
- (24) "registered re-refiner or recycler" means a re-refiner or recycler registered for reprocessing wastes with the Ministry of Environment and Forests or the Central Pollution Control Board, as the case may be, for reprocessing wastes;
- (25) "re-refining of used oil" means applying a process to the material composed of used oil so as to produce high quality base stock for further manufacture of lubricants or for other petroleum products by blending or any other process;
- (26) "Schedule" means the Schedule appended to these rules;
- (27) "State Government" means a State Government and in relation to a Union territory, the Administrator thereof appointed under Article 239 of the Constitution;
- (28) "State Pollution Control Board or committee" means the Board or committee under sub-section (1) of section 4 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);
- (29) "storage" means storing hazardous wastes for a temporary period, at the end of which the hazardous wastes is treated and disposed off;
- (30) "transboundary movement" means any movement of hazardous waste or other wastes from an area under the national jurisdiction of one country or through an area under the national jurisdiction of another country or to or through an area not under the national jurisdiction of any country, provided at least two countries are involved in the movement;
- (31) "transport" means off-site movement of hazardous waste by air, rail, road or water;

- (32) "transporter" means a person engaged in the off-site transportation of hazardous waste by air, rail, road or water;
- (33) "treatment" means a method, technique or process, designed to change the physical, chemical or biological characteristics or composition of any hazardous waste so as to render such wastes harmless;
- (34) "used oil" means any oil—
 (i) derived from crude oil or mixtures containing synthetic oil including used engine oil, gear oil, hydraulic oil, turbine oil, compressor oil, industrial gear oil, heat transfer oil, transformer oil, spent oil and their tank bottom sludges; and
 (ii) suitable for re-refining if it meets the specifications laid down in Schedule 5, but does not include waste oil;
- (35) "waste oil" means any oil—
 (i) which includes spills of crude oil, emulsions, tank bottom sludge and slop oil generated from petroleum refineries, installations or ships; and
 (ii) is unsuitable for re-refining, but can be used as fuel in furnaces if it meets the specifications laid down in Schedule 6;
- (36) words and expressions used in these rules and not defined but defined in the Act shall have the meanings respectively assigned to them in the Act.]
4. ¹[Responsibility of the occupier and operator of a facility for handling of wastes]
- ²[(1) The occupier and the operator of a facility shall be responsible for proper collection, reception, treatment, storage and disposal of hazardous wastes listed in Schedules 1, 2 and 3.]
- (2) The occupier or any other person acting on his behalf who intends to get his hazardous waste treated by the operator of a facility under sub-rule (1), shall give to the operator of a facility such information as may be specified by the ³[State Pollution Control Board or ⁴[Committee]].
- ⁵[(3) It shall be the responsibility of the occupier and the operator of a facility, to take all steps to ensure that the wastes listed in Schedules 1, 2 and 3 are properly handled, and disposed of without any adverse effects to the environment.]
- ⁶[4A. Duties of the occupier and operator of a facility
 It shall be the duty of the occupier and the operator of a facility to take adequate steps while handling hazardous waste to,—
 (i) Contain contaminants and prevent accidents and limit their consequences on human and the environment; and
 (ii) provide persons working on the site with information, training and equipment necessary to ensure their safety.

¹ Substituted for "Responsibility of the occupier for handling of wastes" by SO 24(E), w.e.f. 6-1-2000.

² Substituted by SO 24(E), w.e.f. 6-1-2000.

³ Substituted by SO 625(E), dt. 3-9-1996, w.e.f. 3-9-1996.

⁴ "Committee" means a Committee notified under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 with respect to Union Territories as specified by the Hazardous Wastes (Management & Handling) (Amendment) Rules, 1996, s. 2 vide SO 625(E), dt. 3-9-1996.

⁵ Inserted by SO 24(E), w.e.f. 6-1-2000.

⁶ Inserted by SO 625(E), dt. 3-9-1996.

4B. Duties of the authority

Subject to the provisions of these rules, the authority shall also perform duties as specified in Column 3 of the [Schedule 7].

5. Grant of authorisation for handling hazardous wastes

(1) Hazardous wastes shall be collected, treated, stored and disposed of only in such facilities as may be authorised for this purpose.

²{(2) Every occupier, handler, or a recycler recycling, hazardous wastes shall make an application in Form 1 to the Member-Secretary, State Pollution Control Board or Committee, as the case may be or any officer designated by the State Pollution Control Board or Committee for the grant of authorisation for any of the said activities:

PROVIDED that an occupier or a recycler not having a hazardous wastes treatment and disposal facility of his own and is operating in an area under the jurisdiction assigned by the State Pollution Control Board or Committee, as the case may be, for a common Treatment, Storage and Disposal Facility (TSD/F) shall become a member of this facility and send his waste to this facility to ensure proper treatment and disposal of hazardous wastes generated failing which the authorisation granted to the said occupier or recycler in accordance with this sub-rule may be cancelled after giving a reasonable opportunity to such occupier or recycler, as the case may be, of being heard or shall not be granted by the State Pollution Control Board or Committee, as the case may be.

(3) Any person who intends to be an operator of a facility for the collection, reception, treatment, transport, storage and disposal of hazardous wastes, shall make an application in Form 1 to the Member-Secretary, State Pollution Control Board or Committee for the grant of authorisation for all or any of the above activities specified in this rule.]

(4) The ³{Member-Secretary, State Pollution Control Board or or any officer designated by the Board} or Committee shall not issue an authorisation unless it is satisfied that the operator of a facility or an occupier, as the case may be, possesses appropriate facilities, technical capabilities and equipment to handle hazardous wastes safely.

⁴{(4A) The authorisation application complete in all respects shall be processed by the State Pollution Control Board within ninety days of the receipt of such application}

(5) The authorisation to operate a facility shall be issued in Form 2 and shall be subject to conditions laid down therein.

⁵{(6)(i) An authorisation granted under this rule shall, unless suspended or cancelled, be in force during the period of its validity as specified by the State Pollution Control Board or Committee from the date of issue or from the date of renewal, as the case may be.]

(ii) An application for the renewal of an authorisation shall be made in Form 1, before its expiry.

(iii) The authorisation shall continue to be in force until it is renewed or revoked.

¹ Substituted for "Schedule 4" vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

² Substituted, *ibid.*

³ Substituted for "State Pollution Control Board" by SO 24(E), w.e.f. 6-1-2000.

⁴ Inserted by SO 24(E), w.e.f. 6-1-2000.

⁵ Substituted vide S.O. 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

¹{(7) The [Member-Secretary, State Pollution Control Board or or any officer designated by the Board] or Committee may, after giving reasonable opportunity of being heard to the applicant, refuse to grant any authorisation.

²{(8) The Member-Secretary, State Pollution Control Board or any officer designated by the Board shall renew the authorisation granted under sub-rule (6), after examining each case on merit, subject to the following,—

(i) on submission of annual returns by the occupier or operator of facility in Form 4;

³{(ii) on steps taken, by the applicant wherever feasible, for reduction and prevention in the waste generated or for recycling or reuse;}

(iii) on fulfilment of conditions prescribed in the authorisation regarding management in an environmentally sound manner of wastes; and

⁴{(iv) x x x}

⁵{(9) Every State Pollution Control Board or Committee shall maintain a register containing particulars of the conditions imposed under these rules for any disposal of hazardous wastes, on any land or premises and it shall be open for inspection during office hours to any person interested or affected or a person authorised by him in this behalf. The entries in the register shall be considered as proof of grant of authorisation for management and handling of hazardous wastes on such land or premises and the conditions subject to which it was granted.]

6. Power to suspend or cancel an authorisation

(1) The ⁶{State Pollution Control Board or Committee} may cancel an authorisation issued under these rules or suspend it for such period as it thinks fit, if in its opinion, the authorised person has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these rules, after giving the authorised person an opportunity to show cause and after recording reasons therefor.

(2) Upon suspension or cancellation of the authorisation and during the pendency of an appeal under rule 12, the ³{State Pollution Control Board or Committee} may give directions to the persons whose authorisation has been suspended or cancelled for the safe storage of the hazardous wastes, and such person shall comply with such directions.

7. Packaging, labelling and transport of hazardous wastes

⁷{(1) The occupier or operator of a facility shall ensure that the hazardous wastes are packaged, based on the composition in a manner suitable for handling, storage and transport and the labelling and packaging shall be easily visible and be able to withstand physical conditions and climatic factors.

(2) Packaging, labelling and transport of hazardous wastes shall be in accordance with the provisions of the rules made by the Central Government under the Motor Vehicles Act, 1988, and other guidelines issued from time to time.]

¹ Substituted for "State Pollution Control Board" by SO 24(E), w.e.f. 6-1-2000.

² Inserted by SO 24(E), w.e.f. 6-1-2000.

³ Substituted vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

⁴ Clause (iv) omitted, *ibid.*

⁵ Inserted, *ibid.*

⁶ Substituted by SO 625(E), dt. 3-9-1996.

⁷ Substituted by SO 24(E), w.e.f. 6-1-2000.

¹[(3) All hazardous waste containers shall be proved with a general lable as given in Form 8.

²[(4) The occupier shall prepare six copies of the manifest in Form 9 comprising of colour code indicated below (all six copies to be signed by the transporter):

| Copy number with colour code | Purpose |
|---------------------------------|---|
| 1 | 2 |
| Copy 1 (white) | to be forwarded by the occupier to the State Pollution Control Board or Committee. |
| Copy 2 (yellow) | to be retained by the occupier after taking signature on it from the transporter and rest of the four copies to be carried by the transporter |
| Copy 3 (pink) | to be retained by the operator of the facility after signature |
| Copy 4 (orange) | to be returned to the transporter by the operator of facility after accepting waste |
| Copy 5 (green) | to be returned by the operator of the facility to State Pollution Control Board/Committee after treatment and disposal of wastes |
| Copy 6 (blue) | to be returned by the operator of the facility to the occupier after treatment and disposal of wastes. |

³[(5) The occupier shall forward copy number 1 (white) to the State Pollution Control Board or Committee and in case the hazardous waste is likely to be transported through any transit State, the occupier shall prepare an additional copy each for such State and forward the same to the concerned State Pollution Control Board or Committee before he hands over the hazardous waste to the transporter. No transporter shall accept hazardous wastes from an occupier for transporter unless it is accompanied by copy numbers 2 to 5 of the manifest. The transporter shall return copy number 2 (yellow) of the manifest signed with date to the occupier as token of receipt of the other four copies of the manifest and retain the remaining four copies to be carried and handed over to respective agencies as specified in sub-rule (4).

⁴[(6) In case of transport of hazardous wastes to a facility for treatment, storage and disposal existing in a State other than the State where hazardous wastes are generated, the occupier shall obtain 'No Objection Certificate' from the State Pollution Control Board or Committee of the concerned State or Union territory Administration where the facility is existing.]

⁵[(7) The occupier shall provide the transporter with relevant information in Form 10, regarding the hazardous nature of the wastes and measures to be taken in case of an emergency.]

1 Inserted by SO 24(E) w.e.f. 6-1-2000.
2 Substituted vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

¹[8. Disposal sites

²(1) The occupier or operator of a facility or any association of occupiers shall be jointly and severally responsible for identifying sites for establishing the facility for treatment, storage and disposal of hazardous wastes.

³(2) The State Government, operator of a facility or any association of occupiers shall jointly and severally be responsible for, and identify sites for common facility for treatment, storage and disposal of hazardous wastes in the State.

⁴(3) The operator of a facility, occupier or any association of occupiers shall undertake an environmental impact assessment (EIA) of the selected site(s) and shall submit the EIA report to the State Pollution Control Board or Committee.

⁵(4) The State Pollution Control Board or Committee shall on being satisfied with the EIA report, cause a public notice for conducting a public hearing as per the procedure contained in the Environment Impact Assessment Notification, 1994 published vide S.O. 60(E), dt. 27-1-1994 as amended from time to time.

⁶(5) The State Pollution Control Board or Committee shall forward to the State Government or Union Territory Administration, as the case may be the project report including EIA report and details of public hearing along with its recommendations within a period of 30 days from the last date of public hearing.

⁷(6) The State Government shall complete the assessment within a period of thirty days from the date of receipt of the documents mentioned in sub-rule (5) and convey the decision of its approval of site(s) or otherwise within 30 days thereafter to the concerned operator of the facility, occupier or any association of occupiers.

⁸(7) After approval of the site or sites, the State Government shall acquire the site(s) or inform the occupier or any operator of facility, or any association of occupiers to acquire the site(s) for setting up the facility for treatment, storage and disposal of hazardous wastes. The State Government shall simultaneously notify such site(s). The State Government shall also compile and publish periodically an inventory of such hazardous wastes disposal sites and facilities;

⁹(8) Setting up of an on-site facility for treatment, storage and disposal of hazardous wastes for captive use shall be governed by the authorisation procedure laid down in Rule 5.]

¹⁰[8A. Design and setting up of disposal facility

¹¹(1) The occupier, any association or operator of a facility, as the case may be, shall design and set up disposal facility as per the guidelines issued by the Central Government or the State Government, as the case may be;

¹²(2) The occupier, any association or operator, shall before setting up a disposal facility get the design and the layout of the facility approved by the State Pollution Control Board;

¹³(3) The State Pollution Control Board shall monitor the setting up and operation of a facility regularly.

1 Substituted by SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.
2 Inserted by SO 24(E), w.e.f. 6-1-2000.

8B. Operation and closure of landfill site

- (1) The occupier or the operator as the case may be, shall be responsible for safe and environmentally sound operation of the facility as per design approved under Rule 8-A by the State Pollution Control Board;
- (2) The occupier or the operator shall ensure that the closure of the landfill as per the design approved under Rule 8-A by the State Pollution Control Board.]

9. Records and returns

(1) The occupier generating hazardous waste and operator of a facility for collection, reception, treatment, transport, storage and disposal of hazardous waste shall maintain records of such operations in Form 3.

(2) The occupier and operator of a facility shall send annual returns to the [State Pollution Control Board or Committee] in Form 4.

²(3) The State Pollution Control Board or Committee shall prepare an inventory of hazardous wastes as nearly as possible to Form 4 within its jurisdiction and compile other related information like treatment and disposal of hazardous wastes based on the returns filed by respective occupier and operator of facility as per sub-rule (2).]

10. Accident reporting and follow-up

Where an accident occurs at the facility or on a hazardous waste site or during transportation of hazardous wastes, the occupier or operator of a facility shall report immediately to the ³[State Pollution Control Board or Committee] about the accident in Form 5.

⁴[11. Import and Export of Hazardous Wastes for dumping and disposal

Import of hazardous wastes from any country to India and export of hazardous wastes from India to any country for dumping or disposal shall not be permitted.]

⁵[12. Import and Export of Hazardous Wastes for recycling and reuse

(1) Save as otherwise provided, no person shall import or export hazardous wastes or substances containing or contaminated with such hazardous wastes as specified in Schedule 8.

(2) The Ministry of Environment and Forests shall be the nodal Ministry to deal with the trans-boundary movement of hazardous wastes and to grant permission of transit of hazardous wastes through any part of India.

(3) Import and export of hazardous wastes shall be permitted as raw material for recycling or reuse.

(4) The authorities mentioned in column 2 of Schedule 7 shall be responsible for regulation of export and import of hazardous wastes.

(5) Any occupier importing or exporting hazardous wastes shall provide detailed information in Form 7-A to the Customs authorities.

(6) Any occupier importing or exporting hazardous wastes shall comply with the articles of the Basel Convention to which the Central Government is a signatory.

(7) In case of any dispute as to the grant of permission to import or export hazardous wastes, the matter shall be referred to the Central Government for a decision.]

1 Substituted by SO 625(E), dt. 3-9-1996, w.e.f. 6-9-1996.

2 Inserted vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

3 Substituted by SO 625(E), dt. 3-9-1996, w.e.f. 6-9-1996.

4 Substituted by SO 24(E), w.e.f. 6-1-2000.

5 Substituted vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

13. Import of Hazardous Waste

¹(1) Every occupier seeking to import hazardous wastes shall apply to the State Pollution Control Board or Committee at least 120 days in advance of the intended date of commencement of the shipment in Form 6;]

(2) The State Pollution Control Board shall examine the application received from the occupier within thirty days and forward the application with recommendation and requisite stipulations for safe transport, storage and processing, to the Ministry of Environment and Forests;

(3) The Ministry of Environment and Forests, Government of India will examine the application received from the State Pollution Control Board and after satisfying itself will grant permission for imports subject to the following:—

(a) environmentally friendly/appropriate technology used for reprocessings;

(b) the capability of the importer to handle and reprocess hazardous wastes in an environmentally sound manner;

(c) presence of adequate facility for treatment and disposal of wastes generated; and

(d) approvals, no objection certificates and authorisations from all concerned authorities; and

²{(e) x x x }

(4) The Ministry of Environment & Forests, Government of India, shall forward a copy of the permission granted, to the Central Pollution Control Board, the State Pollution Control Board and the concerned Port and Customs authorities for ensuring compliance of the conditions of imports and to take appropriate steps for safe handling of the waste at the time of off-loading.

(5) An application for licence to the Directorate General of Foreign Trade for import shall be accompanied with the permission granted by the Ministry of Environment and Forests, Government of India under sub-rule (3) to the importer and an authenticated copy of Form 7 of the Exporter under sub-rule (3) of Rule 14;

(6) The port and customs authorities shall ensure that the shipping document is accompanied with an authenticated copy of Form 7 and the test report from an accredited laboratory of analysis of the hazardous waste shipped;

(7) The occupier having valid permission to import shall inform the State and Central Pollution Control Board and the Port authorities of the arrival of the consignment of hazardous wastes ten days in advance;

(8) the occupier importing hazardous waste shall maintain the records of hazardous waste imports as specified in Form 6-A and the record so maintained shall be available for inspection.

³{(9) An occupier importing hazardous wastes listed under an Open General Licence of the Directorate General of Foreign Trade shall register himself with the Ministry of Environment and Forests or any other authority or agency such as the Central Pollution Control Board designated by it in accordance with the procedure laid down under Rule 19.]

1 Substituted vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

2 Omitted, ibid.

3 Inserted, ibid.

14. Export of Hazardous Waste

- (1) The exporting country or the exporter as the case may be, hazardous waste shall apply ninety days in advance in Form 7 to the Ministry of Environment and Forests, Government of India, seeking permission for the proposed export and transboundary movement;
- (2) The Ministry of Environment and Forests, Government of India, on receipt of such Form 7 from an exporter or an exporting country shall examine the case on merit and grant or refuse permission for export to India;
- (3) The Ministry of Environment and Forests, and communicate the grant of permission by authentication on Form 7 to the exporter and the exporting country and endorse a copy of the same of the Central Pollution Control Board and the State Pollution Control Board;
- (4) The exporter shall ensure that no consignment is shipped prior to the requisite authentication being received. The exporter shall also ensure that the shipping document is accompanied with Form 7-A, an authenticated copy of Form 7 and an authenticated copy of the test report from an accredited laboratory of analysis of the hazardous waste;
- (5) The occupier, exporting hazardous waste to any other country shall seek permission from the competent authority of that country prior to any shipment;
- (6) Every occupier exporting hazardous waste shall inform the Central Government of the permission sought for exporting, permission granted for export and details of the export in Form 7.

15. Illegal Traffic

- (1) The movement of hazardous waste from or to the country shall be considered illegal:
- if it is without prior permission of the Central Government; or
 - if the permission has been obtained through falsification, misrepresentation or fraud; or
 - it does not conform to the shipping details provided in the document;
- (2) In case of illegal movement, the hazardous wastes in question;
- shall be shipped back within thirty days either to the exporter or to the exporting country;
 - shall be disposed of within thirty days from the date of off-loading subject to inability to comply with sub-rule (2)(i) above: [in accordance with the procedure laid down by the State Pollution Control Board or Committee in consultation with Central Pollution Control Board].
- (3) In case of illegal transboundary movement of hazardous wastes, the occupier exporting hazardous waste from the country or the exporter exporting hazardous waste to the country and importer importing hazardous waste into the country shall ensure that the waste in question is safely stored and shipped or disposed off in an environmentally sound manner within thirty days from the date of off-loading;
- (4) The exporting country shall bear costs incurred for the disposal of such wastes.

1 Inserted vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

16. Liability of the occupier, transporter and operator of a facility

- (1) The occupier, transporter and operator of a facility shall be liable for damages caused to the environment resulting due to importer handling and disposal of hazardous waste listed in schedules 1, 2 and 3;
- ¹[(2) The occupier and operator of a facility shall also be liable to reinstate or restore damaged or destroyed elements of the environment at his cost, failing which the occupier or the operator of a facility, as the case may be, shall be liable to pay the entire cost of remediation or restoration and pay in advance an amount equal to the cost estimated by the State Pollution Control Board or Committee. Thereafter, the Board or Committee shall plan and cause to be executed the programme for remediation or restoration. The advance paid to State Pollution Control Board or Committee towards the cost of remediation or restoration shall be adjusted once the actual cost of remediation or restoration is finally determined and the remaining amount, if any, shall be recovered from the occupier or the operator of the facility.]

- (3) The occupier and operator of a facility shall be liable to pay a fine as levied by the State Pollution Control Board with the approval of the Central Pollution Control Board for any violation of the provisions under these rules.

17. Transitional provisions

Where (a) On the date of coming into operation of these rules, an occupier handling hazardous wastes who is required to comply with the provisions of these rules, it will be sufficient compliance if the occupier and the authorities do so within three months after the date of coming into force of these rules;

(b) State Pollution Control Boards and Pollution Control Committees are required to oversee the compliance.]

²[18. Appeal

(1) An appeal shall lie, against any order of grant or refusal of an authorisation by the Member-Secretary, State Pollution Control Board or any officer designated by the Board to the Secretary, Department of Environment of the State Government by whatever name called.

(2) Every appeal shall be in writing and shall be accompanied by a copy of the order appealed against and shall be presented within thirty days of the receipt of the order passed.]

³[(3) Every appeal filed under this rule shall be disposed of within a period of sixty days from the date of such filing.]

³[19. Procedure for registration and renewal of registration of recyclers and re-refiners

(1) Every person desirous of recycling or re-refining non-ferrous metal wastes as specified in Schedule 4 or used oil or waste oil shall register himself with the Central Pollution Control Board:

PROVIDED that no owner or occupier of an industrial unit having captive recycling of non-ferrous metals or recycling of waste oil or re-refining of used oil facility shall be required to register under these rules:

1 Substituted vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

2 Substituted by SO 24(E), 6-1-2000.

3 Inserted vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

PROVIDED FURTHER that no person who has registered with the Ministry of Environment & Forests before the commencement of the Hazardous Wastes (Management and Handling) Amendment Rules, 2003, shall, unless such registration is cancelled or ceases to operate under sub-rule (3) of Rule 21, be required to register under this sub-rule as given in the certificate of registration.

(2) Every application for registration under this rule shall be made in Form 11 along with a copy each of the following documents to the Central Pollution Control Board for the grant of such registration:

- (a) letter of consents granted under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981;
- (b) authorisation granted under rule 5 of these rules;
- (c) certificate of registration with District Industries Centre;
- (d) proof of installed capacity of plant and machinery issued by either State Pollution Control Board or Committee or the District Industries Centre; and
- (e) report from the State Pollution Control Board or Committee regarding proof of compliance of effluent and emission standards and treatment and disposal of hazardous wastes as stipulated by that Board or Committee.

(3) If the Central Pollution Control Board is satisfied that the recyclers or re-refiners possess requisite facilities, technical capabilities, and equipment to recycle or re-refine the wastes and dispose of the hazardous wastes generated, it shall grant a certificate of registration to such recycler or re-refiner, as the case may be.

(4) The Central Pollution Control Board shall dispose of the application for registration within 120 days of receipt of such application with complete details.

(5) The certificate of registration granted under sub-rule (3) shall be valid for a period of two years from the date of its issue unless suspended or cancelled earlier.

(6) Every application for renewal of registration of a certificate of registration granted under sub-rule (3) shall be made in Form 11 along with the documents mentioned in sub-rule (2) at least two months before the expiry of the period of validity of such certificate. The Central Pollution Control Board shall renew the registration of the recycler or re-refiner granted under sub-rule (3) after examining each case on merit.

(7) The Central Pollution Control Board may, after giving reasonable opportunity to the applicant of being heard, by order, refuse to grant certificate of registration of renewal.

(8) The Central Pollution Control Board may cancel or suspend a registration or renewal granted under these rules, if in its opinion the registered recycler has failed to comply with any of the conditions of registration, or with any provisions of the Act or rules made thereunder after giving him an opportunity of being heard and after recording the reasons therefor.

(9) An appeal against any order of suspension or cancellation or refusal of registration or renewal passed by Central Pollution Control Board shall lie with the Secretary, Ministry of Environment and Forests (hereinafter referred to as the appellate authority).

(10) The memorandum of appeal under sub-rule (9) shall be in writing and shall be accompanied with a copy of the order appealed against and shall be presented within 30 days of passing of the order.

PROVIDED that the appellate authority may allow a memorandum of appeal to be filed after the expiry of the said period of thirty days, but in no case later than 45 days

if the appellate authority is satisfied that there exists sufficient cause for not preferring the appeal in time.

(11) On receipt of a memorandum of appeal under sub-rule (9), the appellate authority shall within ninety days from the date of receipt of such memorandum of appeal and after giving the appellant an opportunity of being heard pass such order as he may deem fit.

(12) In case of units registered with the Ministry of Environment and Forests or the Central Pollution Control Board for items placed under "free category" in Notification Nos. 22 (RE-99) 1997-2002, dt. 30-7-1999; 26 (RE-99) 1997-2002, dt. 10-9-1999; 38 (RE-2000) 1997-2002, dt. 16-10-2000 and 6 (RE-2001) dt. 31-3-2001 issued by the Directorate General of Foreign Trade and other similar notifications issued based on the advice of Ministry of Environment and Forests, prior import permission from that Ministry shall not be required.

(13) Recyclers and re-refiners registered with the Government of India in the Ministry of Environment and Forests or the Central Pollution Control Board shall maintain a record of wastes purchased, processed and sold and shall file an annual return in Form 12 to the respective State Pollution Control Board or Committee, as the case may be, latest by 31st January of every year.

20. Responsibility of waste generator

(1) No owner or occupier generating non-ferrous metal waste specified in Schedule 4 or generating used oil or waste oil of ten tons or more per annum shall sell or auction such non-ferrous metal wastes, used oil or waste oil except to a registered re-refiner or recycler, as the case may be, who undertakes to re-refine or recycle the waste within the period of validity of his certificate of registration.

(2) Any waste oil which does not meet the specifications laid down in Schedule 6 shall not be auctioned or sold but shall be disposed of in hazardous wastes incinerator installed with air pollution control devices and meeting emission standards.

(3) The persons generating waste or auctioneers shall ensure that at the time of auction or sale, the period of validity of the certificate of registration of the registered re-refiner or recycler is sufficient to reprocess the quantity of wastes being sold or auctioned to him.

(4) The waste generators and auctioneers shall ensure that the wastes are not allowed to be stored for more than ninety days and shall maintain a record of auctions and sale of such wastes and make these records available to the State Pollution Control Board or Committee for inspections.

(5) The waste generators and auctioneers shall file annual returns of auction and sale in Form 13 latest by 31st day of January of every year to the respective State Pollution Control Board or Committee.

21. Technology and standards for re-refining or recycling

(1) Re-refiners and recyclers shall use only environmentally sound technologies while recycling and re-refining non-ferrous metal wastes or used oil or waste oil. In case of used oil, re-refiners using acid clay process or modified acid clay process shall switch over within six months from the date of commencement of the Hazardous Wastes (Managements and Handling) Amendment Rules, 2003 to other environmentally sound technologies as under:—

- (a) Vacuum distillation with clay treatment;
- (b) Vacuum distillation with hydrotreating;
- (c) Thin film evaporation process.

(d) Any other technology approved by the Ministry of Environment and Forests.

(2) The re-refiners and recyclers registered with the Ministry of Environment and Forests or the Central Pollution Control Board in accordance with the procedure laid down in Rule 19 shall file a compliance report of having adopted one of the technologies mentioned in sub-rule (1) within six months from the date of commencement of the Hazardous Wastes (Management and Handling) Amendment Rules, 2003.

(3) Notwithstanding anything contained in a certificate of registration granted to a recycler or re-refiner, such registration with the Ministry of Environment and Forests shall cease to be valid if he fails to comply with sub-rule (1).

(4) The State Pollution Control Board or Committee shall inspect the re-refining and recycling units within three months of the expiry of the six months period referred to in sub-rule (1) and submit a compliance report to the Central Pollution Control Board which shall compile such information and furnish the same to the Ministry of Environment and Forests on a regular basis.

(5) The Ministry of Environment and Forests shall notify from time-to-time specifications and standards to be followed by recyclers and re-refiners.]

SCHEDULE 1

[Refer rule 3(14)(a)]

LIST OF HAZARDOUS WASTES

| Sl. No. | Processes | Hazardous Wastes |
|---------|---|---|
| 1. | Petrochemical processes and pyrolytic operations | 1.1 Furnace/reactor residue and debris* 1.2 Tarry residues 1.3 Oily sludge emulsion 1.4 Organic residues 1.5 Residues from alkali wash of fuels 1.6 Still bottoms from distillation process 1.7 Spent catalyst and molecular sieves 1.8 Slop oil from wastewater 1.9 ETP sludge containing hazardous constituents |
| 2. | Drilling operation for oil and gas production | 2.1 Drill cuttings containing oil 2.2 Sludge containing oil 2.3 Drilling mud and other drilling wastes* |
| 3. | Cleaning, emptying and maintenance of petroleum storage tanks including ships | 3.1 Oil-containing cargo residue, washing water and sludge 3.2 Chemical-containing cargo residue and sludge 3.3 Sludge and filters contaminated with oil 3.4 Ballast water containing oil from ships. |
| 4. | Petroleum refining/re-refining used oil/recycling of waste oil | 4.1 Oily sludge/emulsion 4.2 Spent catalyst 4.3 Slop oil 4.4 Organic residues from process 4.5 Chemical sludge from waste water treatment 4.6 Spent clay containing oil |

1 Substituted by Hazardous Wastes (Management and Handling) Amndt. Rules, 2003, vide SO-593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

| | | |
|-----|--|--|
| 12. | Metal surface treatment, such as etching, staining, polishing, galvanising, cleaning, degreasing, plating, etc. | 12.1 Acid residues 12.2 Alkali residues 12.3 Spent bath/sludge containing sulphide, cyanide and toxic metals 12.4 Sludge from bath containing organic solvents 12.5 Phosphate sludge 12.6 Sludge from staining bath 12.7 Copper etching residues 12.8 Plating metal sludge 12.9 Chemical sludge from waste water treatment |
| 13. | Production of iron and steel including other ferrous alloys (electric furnaces; steel rolling and finishing mills; Coke oven and by product plant) | 13.1 Process dust* 13.2 Sludge from acid recovery unit 13.3 Benzol acid sludge 13.4 Decanter tank tar sludge 13.5 Tar storage tank residue |
| 14. | Hardening of steel | 14.1 Cyanide-, nitrate-, or nitrite-containing sludge 14.2 Spent hardening salt |
| 15. | Production of asbestos or asbestos-containing materials | 15.1 Asbestos-containing residues 15.2 Discarded asbestos 15.3 Dust/particulates from exhaust gas treatment. |
| 16. | Production of caustic soda and chlorine | 16.1 Mercury bearing sludge 16.2 Residue/sludges and filter cakes* 16.3 Brine sludge containing mercury |
| 17. | Production of acids | 17.1 Residues, dusts or filter cakes* 17.2 Spent catalyst* |
| 18. | Production of nitrogenous and complex fertilizers | 18.1 Spent catalyst* 18.2 Spent carbon* 18.3 Sludge/residue containing arsenic 18.4 Chromium sludge from water cooling tower 18.5 Chemical sludge from waste water treatment |
| 19. | Production of phenol | 19.1 Residue/sludge containing phenol |
| 20. | Production and/or industrial use of solvents | 20.1 Contaminated aromatic, aliphatic or naphthenic solvents not fit for originally intended use 20.2 Spent solvents 20.3 Distillation residues |
| 21. | Production and/or industrial use of paints, pigments, lacquers, varnishes, plastics and inks | 21.1 Wastes and residues 21.2 Fillers residues |

| | | |
|-----|---|---|
| 5. | Industrial operations using mineral/synthetic oil as lubricant in hydraulic systems or other applications | 5.1 Used/spent oil 5.2 Wastes/residues containing oil |
| 6. | Secondary production and/or use of zinc | 6.1 Sludge and filter press cake arising out of zinc sulphate production 6.2 Zinc fines/dust/ash/skimmings (dispersible form) 6.3 Other residues from processing of zinc ash/skimmings 6.4 Flue gas dust and other particulates* |
| 7. | Primary production of zinc/lead/copper and other non-ferrous metals except aluminium | 7.1 Flue gas dust from roasting* 7.2 Process residues 7.3 Arsenic-bearing sludge 7.4 Metal bearing sludge and residue including jarosite 7.5 Sludge from ETP and scrubbers |
| 8. | Secondary production of copper | 8.1 Spent electrolytic solutions 8.2 Sludges and filter cakes 8.3 Flue gas dust and other particulates* |
| 9. | Secondary production of lead | 9.1 Lead slag/Lead bearing residues 9.2 Lead ash/particulate from flue gas |
| 10. | Production and/or use of cadmium and arsenic and their compounds | 10.1 Residues containing cadmium and arsenic |
| 11. | Production of primary and secondary aluminium | 11.1 Sludges from gas treatment 11.2 Cathode residues including pot lining wastes 11.3 Tar containing wastes 11.4 Flue gas dust and other particulates* 11.5 Wastes from treatment of salt slags and black drosses* |

| | | |
|-----|--|---|
| 22. | Production of plastic raw materials | 22.1 Residues of additives used in plastics manufacture like dyestuffs, stabilizers, flame retardants, etc. 22.2 Residues of plasticisers 22.3 Residues from vinylchloride monomer production 22.4 Residues from acrylonitrile production 22.5 Non-polymerised residues |
| 23. | Production and/or industrial use of glues, cements, adhesive and resins | 23.1 Wastes/residues (not made with vegetable or animal materials)* |
| 24. | Production of canvas and textiles | 24.1 Textile chemical residues* 24.2 Chemical sludge from waste water treatment |
| 25. | Industrial production and formulation of wood preservatives | 25.1 Chemical residues 25.2 Residues from wood alkali bath |
| 26. | Production or industrial use of synthetic dyes, dye-intermediates and pigments | 26.1 Process waste sludge/residues containing acid or other toxic metals or organic complexes 26.2 Chemical sludge from waste water treatment 26.3 Dust from air filtration system |
| 27. | Production or industrial use of materials made with organosilicone compounds | 27.1 Silicone-containing residues 27.2 Silicone oil residues |
| 28. | Production/formulation of drugs/pharmaceuticals | 28.1 Residues and wastes* 28.2 Spent catalyst/spent carbon 28.2 Off-specification products 28.3 Date-expired, discarded and off-specification drugs/medicines 28.4 Spent mother liquor 28.5 Spent organic solvents |
| 29. | Production, use and formulation of pesticides including stock-piles | 29.1 Wastes/residues containing pesticides 29.2 Chemical sludge from waste water treatment 29.3 Date-expired and off-specification pesticides |
| 30. | Leather tanneries | 30.1 Chromium bearing residue and sludge 30.2 Chemical sludge from waste water treatment |
| 31. | Electronic Industry | 31.1 Residues and wastes* 31.2 Spent etching chemicals and solvents |
| 32. | Pulp & Paper Industry | 32.1 Spent chemicals 32.2 Corrosive wastes arising from use of strong acid and bases 32.3 Sludge containing adsorbable organic halides |

| | | |
|-----|---|--|
| 33. | Disposal of barrels/containers used for handling of hazardous wastes/chemicals | 33.1 Chemical-containing residue from decontamination and disposal 33.2 Sludge from treatment of waste water arising out of cleaning/disposal of barrels/containers 33.3 Discarded containers/barrels/liners used for hazardous wastes/chemicals |
| 34. | Purification processes for air and water | 34.1 Flue gas cleaning residue* 34.2 Toxic metal-containing residue from used-ion exchange material in water purification 34.3 Chemical sludge from waste water treatment 34.4 Chemical sludge, oil and grease skimming residues from common industrial effluent treatment plants (CETPs) and industry-specific effluent treatment plants (ETPs) 34.5 Chromium sludge from cooling water treatment |
| 35. | Purification process for organic compounds/solvents | 35.1 Filters and filter material which have organic liquids in them, e.g. mineral oil, synthetic oil and organic chlorine compounds 35.2 Spent catalyst* 35.3 Spent carbon* |
| 36. | Waste treatment processes, e.g. incineration, distillation, separation and concentration techniques | 36.1 Sludge from wet scrubbers 36.2 Ash from incineration of hazardous waste, flue gas cleaning residues 36.3 Spent acid from batteries 36.4 Distillation residues from contaminated organic solvents |

*Unless proved otherwise by the occupier based on sampling and analysis carried out by a laboratory recognized under the Act not to contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein.

SCHEDULE 2

(Refer rule 3(14)(b))

LIST OF WASTES CONSTITUENTS WITH CONCENTRATION LIMITS*

Class A

Concentration limit: $\geq 50\text{mg/kg}$

- A1 Antimony and antimony compounds
- A2 Arsenic and arsenic compounds
- A3 Beryllium and beryllium compounds
- A4 Cadmium and cadmium compounds
- A5 Chromium (VI) compounds
- A6 Mercury and mercury compounds
- A7 Selenium and selenium compounds
- A8 Tellurium and tellurium compounds
- A9 Thallium and thallium compounds
- A10 Inorganic cyanide compounds
- A11 Metal carbonyls

- A12 Naphthalene
- A13 Anthracene
- A14 Phenanthrene
- A15 Chrysene, benzo (a) anthracene, fluoranthene, benzo (a) pyrene, benzo (K) fluoranthene, indeno (1, 2, 3-cd) pyrene and benzo (ghi) perylene
- A16 halogenated compounds of aromatic rings, e.g. polychlorinated biphenyls, polychloroterphenyls and their derivatives
- A17 Halogenated aromatic compounds
- A18 Benzene
- A19 Organo-chlorine pesticides
- A20 Organo-tin Compounds

*Waste constituents and their concentration limits given in this list are based on BAGA (the Netherlands Environment Protection Agency) List of Hazardous Substances. In order to decide whether a specific material listed above is hazardous or not, following points be taken into consideration:

- (i) If a component of the waste appears in one of the five risk classes listed above (A, B, C, D or E) and the concentration of the component is equal to or more than the limit for the relevant risks class, the material is then classified as hazardous waste.
- (ii) If a chemical compound containing a hazardous constituent is present in the waste, the concentration limit does not apply to the compound, but only to the hazardous constituent itself.
- (iii) If multiple hazardous constituents from different class are present in the waste, the concentration are added together.
- (iv) If multiple hazardous constituents from different classes are present in the waste, the lowest concentration limit corresponding to the constituent(s) applies.
- (v) For substances in water solution, the concentration limit for dry matter must be used. If the dry matter content is less than 0.1% by weight, the concentration limit, reduced by a factor of one thousand, applies to the solution.

Class B

Concentration limit: $\geq 5,000$ mg/kg

- B1 Chromium (III) compounds
- B2 Cobalt compounds
- B3 Copper compounds
- B4 Lead and lead compounds
- B5 Molybdenum compounds
- B6 Nickel compounds
- B7 Inorganic Tin compounds
- B8 Vanadium compounds
- B9 Tungsten compounds
- B10 Silver compounds
- B11 Halogenated aliphatic compounds
- B12 Organo phosphorus compounds
- B13 Organic peroxides

- B14 Organic nitro- and nitroso-compound.
- B15 Organic azo- and azoxy compounds
- B16 Nitriles
- B17 Amines
- B18 (Iso- and thio-) cyanates
- B19 Phenol and phenolic compounds
- B20 Mercaptans
- B21 Asbestos
- B22 Halogen-silanes
- B23 Hydrazine (s)
- B24 Flourine
- B25 Chlorine
- B26 Bromine
- B27 White and red phosphorus
- B28 Ferro-silicate and alloys
- B29 Manganese-silicate
- B30 Halogen-containing compounds which produce acidic vapours on contact with humid air or water, e.g. silicon tetrachloride, aluminium chloride, titanium tetrachloride

Class C

Concentration limit: $\geq 20,000$ mg/kg

- C1 Ammonia and ammonium compounds
- C2 Inorganic peroxides
- C3 Barium compounds except barium sulphate.
- C4 Fluorine compounds
- C5 Phosphate compounds except phosphates of aluminium, calcium and iron
- C6 Bromates, (hypo-bromites)
- C7 Chlorates, (hypo-chlorites)
- C8 Aromatic compounds other than those listed under A12 to A18
- C9 Organic silicone compounds
- C10 Organic sulphur compounds
- C11 Iodates
- C12 Nitrates, nitrites
- C13 Sulphides
- C14 Zinc compounds
- C15 Salts of per-acids
- C16 Acid amides
- C17 Acid anhydrides

Class D

Concentration limit : $\geq 50,000$ mg/kg

- D1 Total Sulphur
- D2 Inorganic acids
- D3 Metal hydrogen sulphates
- D4 Oxides and hydroxides except those of hydrogen, carbon, silicon, iron, aluminum, titanium, manganese, magnesium, calcium
- D5 Total hydrocarbons other than those listed under A12 to A18
- D6 Organic oxygen compounds
- D7 Organic nitrogen compounds expressed as nitrogen
- D8 Nitrides
- D9 Hydrides

Class E

Regardless of concentration limit; Classified as hazardous wastes at all concentrations

- E1 Flammable substances
- E2 Substances which generate hazardous quantities of flammable gases on contact with water or damp air

SCHEDULE 3

[Refer rule 3(14)(c) & 12(n)]

PART A: LISTS OF WASTES APPLICABLE FOR IMPORT AND EXPORT

LIST-A*

| Basel No. | Description of Wastes | Annex-I** | Annex-III# | OECD No. | Customs Code |
|-----------|--|-----------|-------------|----------|--------------|
| AI | Metal and Metal bearing wastes | | | | |
| A1010 | Metal waste and waste consisting of alloys of the following metals, but excluding such wastes specified on list B (corresponding minor entry under List B in brackets) | | | | |
| | - Antimony | Y27 | 6.1, 11, 12 | AA070 | ex 2620.90 |
| | - Cadmium | Y26 | 6.1, 11, 12 | AA070 | ex 2620.90 |
| | - Lead | Y31 | 6.1, 11, 12 | | |
| A1020 | Waste having as constituents or contaminants, excluding metal wastes in massive form, any of the following: | | | | |
| | - Cadmium, cadmium compounds. (see B1020) | Y26 | 6.1, 11, 12 | AA070 | ex 2620.90 |

| | | | | | |
|-------|--|----------|-------------|--------|--------------------------------------|
| | - Antimony, antimony compounds. (see B1020) | Y27 | | | |
| | - Tellurium, tellurium compounds. (see B 1020) | Y28 | 6.1, 11, 12 | AA070 | ex 2620.90 |
| | - Lead, lead compounds. (see B1020) | Y31 | 6.1, 11, 12 | AA030 | ex 2620.20 |
| A1040 | Wastes having as constituents any of the following | | | | |
| | - Metal carbonyls | Y19 | 6.1, 11, 12 | | |
| A1050 | Galvanic sludges | Y17 | 6.1, 12 | AA120 | |
| A1060 | Wastes Liquors from the pickling of metals. | Y17 | 6.1, 12 | AA130 | |
| A1070 | Leaching residues from zinc processing, dusts and sludges such as jarosite, hematite, goethite, etc. | Y23 | 12 | AA 140 | |
| A1080 | Waste Zinc residues not included on list B containing lead and cadmium in concentrations sufficient to exhibit hazard characteristics indicated in Part B of this schedule (see B1080 and B1100) | Y23 | 4.3, 12 | AA020 | ex 2620.19, ex 2620.1, ex 2817 |
| A1090 | Ashes from the incineration of insulated copper wire | Y22 | 12 | | |
| A1100 | Dust and residues from gas cleaning systems of copper smelters. | Y18, Y22 | 12 | | ex 2620.30 |
| A1110 | Spent electrolytic solutions from copper electrorefining and electrowinning operations | Y22 | 12 | | ex 2620.30 |
| A1120 | Wastes sludges, excluding anode slimes, from electrolytic purification systems in copper electrorefining and electrowinning operations. | Y18 Y22 | 12 | | ex 2620.30 |
| A1130 | Spent etching solutions containing dissolved copper. | Y22 | 12 | | ex 3824.90 |
| A1150 | Precious metal ash from incineration of printed circuit boards not included on list 'B' (see B-1160) | | AA 161 | | ex 7112.10 |
| A1160 | Waste Lead acid batteries whole or crushed. | Y31 | 6.1, 11, 12 | AA 170 | |

| | | | | | |
|-------|--|--|--------------|--|-------------------|
| A3080 | Waste ethers not including those specified in List B | | | | AC130 |
| A3120 | Fluff: light fraction from shredding | | | | AC 190 |
| A3130 | Waste organic phosphorus compounds | | Y37 | | AC200 |
| A3140 | Waste non-halogenated organic solvents (but excluding such wastes specified on List B) | | Y42 | | AC210 |
| A3160 | Waste halogenated or unhalogenated non-aqueous distillation residues arising from organic solvent recovery operations | | Y18 | | AC230 |
| A3170 | Waste arising from the production of aliphatic halogenated hydrocarbons (such as chloromethanes, dichloroethane, vinylchloride, vinylidene chloride, allyl chloride and epichlorohydrin) | | Y45 | | AC240 |
| A4 | Wastes which may contain either inorganic or organic constituents | | | | |
| A4010 | Wastes from the production and preparation and use of pharmaceutical products but excluding such wastes specified on List B | | Y2 | | ADVISE R010 |
| A4040 | Wastes from the manufacture formulation and use of wood preserving chemicals | | Y5, Y22, Y24 | | ADVISE R030 |
| A4070 | Waste from the production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish excluding those specified in List B (B4010) | | Y12 | | ADVISE R070 |
| A4080 | Wastes of an explosive nature excluding such wastes specified on List B | | Y15 | | |
| A4090 | Waste acidic or basic solutions excluding those specified in List B (B2120) | | Y34, Y35 | | AB110 ADVISE R110 |

| | | | | | |
|-------|--|---------------|-------------|-------|--------------------------|
| A1170 | Unsorted waste batteries excluding mixtures of only List B batteries. Waste batteries not specified on List B containing Schedule 2 constituents to an extent to render them hazardous (see B1090) | Y26, Y29, Y31 | 6.1, 11, 12 | | ex 8548.10 ex 8548.90 |
| A1180 | Waste Electrical and electronic assemblies or scrap containing compounds such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in Part B of this Schedule (see B1110) | | | | |
| A2 | Wastes containing principally inorganic constituents, which may contain metals and organic materials | | | | |
| A2010 | Glass waste from cathode ray tubes and other activated glasses | Y31 | 6.1, 11, 12 | AB040 | ex 7001.00 |
| A2030 | Wastes catalysts but excluding such wastes specified on List B | Y31 | | | |
| A3 | Wastes containing principally organic constituents which may contain metals and inorganic materials | | | | |
| A3010 | Waste from the production or processing of petroleum coke and bitumen | Y11 | | AC010 | ex 2713.90 |
| A3020 | Waste mineral oils unfit for their originally intended use | Y8 | | AC030 | 2710.00 3823.90 |
| A3050 | Wastes from production formulation and use of resins, latex, plasticisers, glues/adhesives excluding such wastes specified in List B (B4020) | Y13 | | AC090 | |
| A3070 | Waste phenol, phenol compounds including chlorophenol in the form of liquids or sludges | Y39 | | AC110 | |

** Annex. I of Basel Convention denoting serial no. of the category of wastes to be controlled.
 # Annex. III of Basel Convention denoting serial numbers of the hazard characteristics (Part B of this Schedule).

*LIST - B**

| | | | |
|-------|--|---|---|
| B1 | Metal and metal-bearing wastes | | |
| B1010 | Metal and metal-alloy wastes in metallic, non-dispersible form: - Precious metals (gold, silver, platinum)** - Iron and steel scrap** - Nickel scrap*** - Aluminum scrap**** - Zinc scrap**** - Tin scrap**** - Tungsten scrap** - Molybdenum scrap*** - Tantalum scrap*** - Cobalt scrap*** - Bismuth scrap*** - Titanium scrap*** - Zirconium scrap*** - Manganese scrap*** - Germanium scrap*** - Vanadium scrap*** - Hafnium scrap*** - Indium scrap*** - Niobium scrap*** - Rhenium scrap*** - Gallium scrap*** - Magnesium scrap**** - Copper scrap**** - Thorium scrap - Rare earths scrap | GA130 GA190 GA200 GA220 GA230 GA250 GA260 GA280 GA310 GA320 GA330 GA340 GA350 GA360 GA370 GA210 GA120 | 750300 ex 810291 ex 810310 ex 810510 ex 810600 ex 810810 ex 810910 ex 811100 ex 811230 ex 811240 ex 8112.91 ex 8112.91 ex 8112.91 ex 8112.91 ex 8112.91 810420 740400 |

| | | | | |
|-------|---|-----|--|---------|
| A4100 | Wastes from industrial pollution control devices for cleaning of industrial off-gases excluding such wastes specified on List B | Y18 | | |
| A4110 | Wastes that contain, consist of or are contaminated with any of the following: Any congener of polychlorinated dibenzofuran Any congener of polychlorinated dibenzodioxin | Y23 | | RC010 |
| A4120 | Wastes that contain, consist of or are contaminated with peroxides. | | | |
| A4130 | Waste packages and containers containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein. | | | |
| A4140 | Waste consisting of or containing off specification or out-dated chemicals containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein. | Y3 | | |
| A4150 | Waste chemical substances arising from research and development or teaching activities which are not identified and/or are new and whose effects on human health and/or the environment are not known | Y14 | | |
| A4160 | Spent activated carbon not included on List B (B2060) | | | ex 2803 |

* List A given as Annex. VIII of the Basel Convention on Transboundary Movement of Hazardous Wastes and their disposal comprises of wastes characterized as hazardous under Article 1, paragraph 1(a) of the Convention. Inclusion of wastes on this list does not preclude the use of hazard characteristics given in Annex. III of Basel Convention to demonstrate that the wastes are not hazardous. Above list is modified to the extent that certain waste categories given in List 'A' (Annex VIII) of Basel Convention have been prohibited for import and export under the Environment (Protection) Act, 1986 and are listed separately under Schedule 8 of these Rules. Hazardous wastes in the above list are restricted and cannot be allowed to be imported into the country without DGFT licence.

| | | | |
|-------|--|----------------|--|
| B1020 | Clean, uncontaminated metal scrap, including alloys, in bulk finished form (sheet, plate, beams, rods, etc.), of: - Antimony scrap [@] - Cadmium scrap [@] - Lead scrap ^y - Tellurium scrap ^p | GA270 GA240 | ex 8110.00 ex 8107.10 |
| B1030 | Refractory metals containing residues | | |
| B1040 | Scrap assemblies from electrical power generation not contaminated with lubricating oil PCB or PCT to an extent to render them hazardous | | |
| B1050 | Mixed non-ferrous metal, heavy fraction scrap, not containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein | | |
| B1060 | Waste tellurium in metallic elemental form including powder | | |
| B1070 | Waste of copper and copper alloys in dispersible form, unless they contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein ⁵ | | ex 2620.30 |
| B1080 | Zinc ash and residues including zinc alloys residues in dispersible form unless they contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein ⁷ | | ex 2620.10 ex 2620.19 ex 2817.00 |
| B1090 | Waste batteries conforming to specification, excluding those made with lead, cadmium or mercury. | | ex 8548.10 ex 8548.90 |
| B1100 | Metal bearing wastes arising from melting, smelting and refining of metals: T ¹ Hard Zinc Spelter T ² Zinc-containing drosses: Galvanizing slab zinc top dross (>90% Zn) Galvanizing slab zinc bottom dross (>92% Zn) Zinc die casting dross (>85% Zn) Hot dip galvanizers slab zinc dross (batch) (>92% Zn) Zinc skimmings | CB | |

| | | | |
|-------|---|-----------------------|------------------------------|
| | - Slags from copper processing for further processing or refining containing arsenic, lead or cadmium unless they contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein - Slages from precious metals processing for further refining. - Wastes of refractory linings, including crucibles, originating from copper smelting - Aluminium skimmings (or skims) excluding salt slag - Tantalum-bearing tin slags with less than 0.5% tin | GB40 AA50 GBO50 | ex 2620.30 ex 2620.90 |
| B1110 | Electrical and electronic assemblies - Electronic assemblies consisting only of metals or alloys - Waste Electrical and electronic assemblies scrap (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal - Waste electrical and electronic assemblies scrap (including printed circuit boards) not containing components such as accumulators and other batteries included on List A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or not contaminated with constituents such as cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein | GC GCO10 GCO20 | |
| B1120 | Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal. Spent catalysts excluding liquids used as catalysts, containing any of: Transition metals, excluding waste catalysts (spent catalysts, liquid used catalysts or other catalysts) on List A: | | |

| | | |
|--------------|---|-------------------------|
| Scandium | Titanium | |
| Vanadium | Chromium | |
| Manganese | Iron | |
| Cobalt | Nickel | |
| Copper | Zinc | |
| Yttrium | Zirconium | |
| Niobium | Molybde- num | |
| Hafnium | Tantalum | |
| Tungsten | Rhenium | |
| Lanthanoides | (rare earth metals): | |
| Lanthanum | Cerium | |
| Praseodymium | Neody | |
| Samarium | Europium | |
| Gadolinium | Terbium | |
| Dysprosium | Holmium | |
| Erbium | Thulium | |
| Ytterbium | Lutetium | |
| B1130 | Cleaned spent precious metal bearing catalysts | ex 381510 ex 711510 |
| B1140 | Precious metal bearing residues in solid form which contain traces of inorganic cyanides | ex 381510 ex 711510 |
| B1150 | Precious metals and alloy wastes (gold, silver, the platinum group) in a dispersible form | ex 3181510 ex 711510 |
| B1160 | Precious-metal ash from the incineration of printed circuit boards (note the related entry on list A.A1150) | |
| B1170 | Precious metal ash from the incineration of photographic film | ex 284310 |
| B1180 | Waste photographic film containing silver halides and metallic silver | |
| B1190 | Waste photographic paper containing silver halides and metallic silver | |

| | | | |
|-------|--|--------------------------------------|--|
| B1200 | Granulated slag arising from the manufacture of hot acid steel | GCO80 | ex 261900 |
| B1210 | Slag arising from the manufacture of iron and steel including slag as a source of Titanium dioxide and Vanadium ^y | | ex 261900 |
| B1220 | Slag from zinc production, chemically stabilized, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction ^u | | |
| B1230 | Mill scaling arising from manufacture of iron and steel | | ex 261900 |
| B1240 | Copper Oxide mill-scale ^k | | |
| B2 | Wastes containing principally inorganic constituents, which may contain metals and organic materials | | |
| B2010 | Wastes from mining operations in non-dispersible form - Natural graphite waste ^u - State wastes ^w - Mica wastes ^u - Leucite, nepheline and nepheline syenite waste ^u - Feldspar waste (lumps & powder) ^u - Fluorspar waste ^u - Silica wastes in solid form excluding those used in foundry operations | GDO10 GDO40 GDO50 GDO60 | 255400 252930 252910 252921 252922 |
| B2020 | Glass wastes in non-dispersible form: - Cullet and other wastes and scrap of glass except for glass from cathode ray tubes and other activated glasses ^u | | |
| B2030 | Ceramic wastes in non-dispersible form: Cermet wastes and scrap (metal ceramic composites) ^w - Ceramic based fibres Other wastes containing principally inorganic constituents: | GF GFO20 | ex 8113.00 |
| B2040 | - Partially refined calcium sulphate produced from flue gas desulphurisation (FGD) | GCO10 | ex 262100 |

| | | | |
|-------|---|-------------------------|-------------------------------------|
| | epoxy resins alkyd resins polyamides - The following fluorinated polymer wastes (excluding post-consumer wastes): Perfluoroethylene/propylene Perfluoroalkoxy alkane Metafluoroalkoxy alkane polyvinylfluoride polyvinylidene fluoride | GH015 GH015 GH015 | ex 391520 ex 391520 ex 391520 |
| B3020 | Paper, paperboard and paper product wastes** The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: - Unbleached paper or paperboard or of corrugated paper or paperboard - other paper or paperboard, made mainly of bleached chemical pulp, not coloured in the mass - paper or paperboard made mainly of mechanical pulp (for example, newspapers, journals and similar printed matter) - other, including but not limited to (1) laminated paperboard (2) unsorted scrap. | | |
| B3030 | Textile wastes The following materials, provided they are not mixed with other wastes and are prepared to a specification: Silk waste (including cocoons unsuitable for reeling, yarn waste and garnetted stock) ^A - not carded or combed - other Waste of wool or of fine or coarse animal hair, including yarn waste but excluding garnetted stock* - noils of wool or of fine animal hair | | |

| | | | |
|-------|--|--|--|
| | - other waste wool or of fine animal hair - waste of coarse animal hair Cotton waste (including yarn waste and garnetted stock)* - yarn waste (including thread waste) - garnetted stock - other Flax tow and waste* Tow and waste (including yarn waste and garnetted stock) of true hemp (<i>Cannabis sativa</i> L.)** Tow and waste (including yarn waste and garnetted stock) of jute and other textile bast fibres (excluding flax, true hemp and ramie)** Tow and waste (including yarn waste and garnetted stock) of sisal and other textile fibres of the genus <i>Agave</i> ** Tow, noils and waste (including yarn waste and garnetted stock) of coconut** Tow, noils and waste (including yarn waste and garnetted stock) of abaca (<i>Manila</i> hemp or <i>Musa textilis</i> Née)** Tow, noils and waste (including yarn waste and garnetted stock) of ramie and other vegetable textile fibres, not elsewhere specified or included Waste (including noils, yarn waste and garnetted stock) of man-made fibres** - of synthetic fibres - of artificial fibres Worn clothing and other worn textile articles Used rags ^A , scrap twine, cordage, rope and cables and worn out articles of twine, cordage, rope or cables of textile materials - sorted Rubber wastes** The following materials, provided they are not mixed with other wastes: | | |
| B3040 | | | |

| | | |
|-------|---|--|
| B3100 | Leather dust, ash, sludges or flours not containing hexavalent chromium compounds or biocides | |
| B3110 | Fellmongery wastes not containing hexavalent chromium compounds or biocides or infectious substances | |
| B3120 | Wastes consisting of food dyes** | |
| B3130 | Waste polymer ethers and waste non-hazardous monomer ethers incapable of forming peroxides | |
| B3140 | Waste pneumatic tyres, excluding those which do not lead to resource recovery, recycling, reclamation or direct reuse** | |
| B4 | Wastes which may contain either inorganic or organic constituents | |
| B4010 | Wastes consisting mainly of water-based/latex paints, inks and hardened varnishes not containing organic solvents, heavy metals or biocides to an extent to render them hazardous (note the related entry in list A A4070) | |
| B4020 | Wastes from production, formulation and use of resins, latex, plasticizers, glues/adhesives, not listed on list A, free of solvents and other contaminants to an extent that they do not exhibit Annex III characteristics, e.g. water-based, or glues based on casein starch, dextrin, cellulose ethers; polyvinyl alcohols (note the related entry on list A A3050) | |
| B4030 | Used single-use cameras, with batteries not included on list A | |

List B given as Annex IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and their Disposal comprises of wastes not covered by Article 1, paragraph 1(a) of the Convention, unless they contain material listed under Annex I of the Convention to an extent causing them to exhibit Annex III characteristics. Status of wastes in the above list with regard to their import in the country is indicated in respective footnotes. (for details, refer to ITC-HS Classification (EXIM Policy) brought out by the Directorate General of Foreign Trade, Ministry of Commerce). Other residual and waste products of chemical and allied industries appearing in the above list but not specified in the EXIM Policy are restricted and cannot be allowed to be imported into the country without DGFT licence.

** Import permitted in the country without any licence or restriction.

*** Restricted, import permitted in the country with DGFT licence only for the purpose of re-processing or reuse.

| | | | |
|----------------|--|----------------|--------------------|
| B3050 | - Waste and scrap of hard rubber (e.g. ebonite)* - Other rubber wastes (excluding such wastes specified elsewhere) Untreated cork and wood waste Wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms** Cork waste: crushed, granulated or ground cork** | | |
| B3060 | Wastes arising from agrofood industries provided it is not infectious: Wine lees** Dried and sterilized vegetable waste, residues and by-products, whether or not in the form of pellets, of a kind used in animal feeding, not elsewhere specified or included** Degras: residues resulting from the treatment of fatty substances or animal or vegetable waxes ^b Waste of bones or horn cores unworked, defatted, simply prepared (but not cut to shape), treated with acid or degelatinised ^b Fish waste ^b Cocoa shells, husks, skins and other cocoa waste** Other wastes arising from agro-food industry excluding by-products which meet national and international requirements and standards for human or animal consumption | GM100 GM110 | 050690 ex 51191 |
| B3070 | The following wastes:** - Waste of human hair** - Waste straw** - Deactivated fungus mycelium from penicillin production to be used as animal feed | | |
| B3080 B3090 | Waste parings and scrap of rubber** Paring and other wastes of leather or of composition leather not suitable for the manufacture of leather articles, excluding leather sludges, not containing hexavalent chromium compounds and biocides (note the related entry on list A A3100) | | |

- **** Import of material covered by ISRI code is permitted without licence; for other material, DGFT licence is necessary.
- ***** Import of copper scrap namely copper wire covered under ISRI code "Druid" and Jelly filled copper cables is permitted without a licence to units registered with the Ministry of Environment & Forests.
- ⊙ Restricted, import permitted in the country with DGFT licence only for the purpose of reprocessing or reuse.
- Y Restricted, import of the following material covered under Battery scrap is permitted in the country with DGFT licence:
 - Battery scrap, namely the following: Lead battery plates covered by ISRI, Code word Rails Battery lugs covered by ISRI, Code word Rakes.
 - Battery wastes, namely the following: Scrap drained/dry while intact, lead batteries covered by ISRI, Code word Rains, Scrap wet whole intact lead batteries covered by ISRI, Code word Rink, Scrap industrial intact lead cells covered by ISRI Code word Rono, Scrap whole intact industrial lead batteries covered by ISRI, Code word Roper, Edison batteries covered by ISRI, Code word Vaunt.
 - Other waste and scrap.
- P Import permitted in the country without any licence or restriction.
- S Copper dross containing copper greater than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively; spent cleaned metal catalyst containing copper; and Copper reverts, cake and residues containing lead and cadmium equal to or less than 1.25% and 0.1% respectively are allowed for import without DGFT licence to units (actual users) registered with MoEF upto an annual quantity limit indicated in the Registration letter. Copper reverts, cake and residues containing lead and cadmium greater than 1.25% and 0.1% respectively are under restricted category for which import is permitted only against DGFT licence for the purpose of processing or reuse by units registered with MoEF (actual users).
- T Zinc ash/skimmings in dispersible form containing zinc more than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively and spent cleaned metal catalyst containing zinc are allowed for import without DGFT licence to units registered with MoEF (actual users) upto an annual quantity limit indicated in Registration Letter. Zinc ash and skimmings containing less than 65% zinc and lead and cadmium equal to or more than 1.25% and 0.1% respectively and hard zinc spelter and brass dross containing lead greater than 1.25% are under restricted category for which import is permitted against DGFT licence and only for purpose of processing or reuse by units registered with MoEF (actual users).
- U Import permitted in the country without any licence or restriction.
- V Slag and dross other than granulated, scalings and other wastes are restricted; import permitted with DGFT licence only for the purpose of reprocessing or reuse.
- R Copper oxide mill scale are allowed for import in the country without DGFT licence to units (actual users) registered with MoEF upto an annual quantity limit indicated in the Registration Letter.
- W Restricted, import permitted in the country with DGFT licence only for the purpose of reprocessing or resale.

- Z Import of limestone and other calcareous stones of a kind used for manufacture of lime or cement permitted in the country without any licence or restriction.
- A Restricted, import permitted in the country with DGFT licence only for reprocessing or reuse. Import permitted without DGFT licence, if material is in completely mutilated form conforming to the requirement specified by Customs authorities.
- B ~~Permitted, import permitted in the country with DGFT licence only for reprocessing or reuse. Import permitted without DGFT licence, if material is in completely mutilated form conforming to the requirement specified by Customs authorities.~~

PART B: LIST OF HAZARDOUS CHARACTERISTICS

Code Characteristic

1 Explosive

An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such speed as to cause damage to the surroundings (UN Class 1; HI)

3 Flammable Liquids

The word "flammable" has the same meaning as "inflammable". Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc. but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5°C, closed-cup test, or not more than 65.5°C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition).

4.1 Flammable Solids

Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.

4.2 Substances or wastes liable to spontaneous combustion

Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.

4.3 Substances or wastes which, in contact with water emit flammable gases
 Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

5.1 Oxidizing

Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.

5.2 Organic Peroxides

Organic substances or wastes which contain the bivalent-O-O- structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.

- 6.1 Poisons (Acute)
Substances or wastes liable either to cause death or serious injury or to harm health if swallowed or inhaled or by skin contact.
- 6.2 Infectious substances
Substances or wastes containing viable micro organisms or their toxins which are known or suspected to cause disease in animals or humans.
- 8 Corrosives
Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.
- 10 Liberation of toxic gases in contact with air or water
Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.
- 11 Toxic (Delayed or chronic)
Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity).
- 12 Ecotoxic
Substances or wastes which if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems.
- 13 Capable by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

SCHEDULE 4

[Refer rules 3(20), 19(1) and 20(1)]

LIST OF NON-FERROUS METAL WASTES APPLICABLE FOR REGISTRATION OF RECYCLERS

| Waste Category | Waste Type |
|----------------|----------------------------------|
| 1 | 2 |
| 1 | Brass Scrap |
| 2 | Brass Dross |
| 3 | Copper Scrap |
| 4 | Copper Dross |
| 5 | Copper Oxide mill scale |
| 6 | Copper reverts, cake and residue |

| | |
|----|---|
| 7 | Waste Copper and copper alloys |
| 8 | Slags from copper processing for further processing or refining |
| 9 | Insulated Copper Wire Scrap/copper with PVC sheathing including ISRI-code material namely "Druid" |
| 10 | Jelly filled copper cables |
| 11 | Spent cleared metal catalyst containing copper |
| 12 | Nickel Scrap |
| 13 | Spent catalyst containing nickel, cadmium, zinc, copper and arsenic |
| 14 | Zinc Scrap |
| 15 | Zinc Dross-Hot dip Galvanizers SLAB |
| 16 | Zinc Dross-Bottom Dross |
| 17 | Zinc ash/skimmings arising from galvanizing and die casting operations |
| 18 | Zinc ash/skimming/other zinc bearing wastes arising from smelting and refining |
| 19 | Zinc ash and residues including zinc alloy residues in dispersible form. |
| 20 | Spent cleared metal catalyst containing zinc |
| 21 | Mixed non-ferrous metal scrap |
| 22 | Lead acid battery plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. |

SCHEDULE 5

[Refer rule 3(34)]

SPECIFICATIONS FOR USED OIL SUITABLE FOR RE-REFINING

| Sl. No. | Parameter | Maximum Permissible Limit |
|---------|----------------------------------|---------------------------|
| 1 | 2 | 3 |
| 1. | Colour | 8 hazen units |
| 2. | Water | 15% |
| 3. | Density | 0.85 to 0.95 |
| 4. | Kinematic Viscosity cSt at 100°C | 1.0 to 32 |
| 5. | Dilutents | 15% vol. |
| 6. | Neutralisation No. | 3.5 mg KOH/g |
| 7. | Saponification value | 18 mg KOH/g |
| 8. | Total halogens | 4000 ppm |
| 9. | Polychlorinated biphenyls (PCBs) | Below detection limit |

| | | |
|-----|---------------------------------|---------|
| 10. | Lead | 100 ppm |
| 11. | Arsenic | 5 ppm |
| 12. | Cadmium+Chromium+Nickel | 500 ppm |
| 13. | Polyaromatic hydrocarbons (PAH) | 6% |

SCHEDULE 6

[Refers rules 3(35) and 20(2)]

SPECIFICATIONS FOR WASTE OIL SUITABLE FOR RECYCLING

| Sl. No. | Parameter | Limit |
|---------|---|-----------------------|
| 1 | 2 | 3 |
| 1. | Sediment | 5% (maximum) |
| 2. | Heavy Metals (cadmium + chromium + nickel + lead + arsenic) | 605 ppm maximum |
| 3. | Polyaromatic hydrocarbons (PAH) | 6% maximum |
| 4. | Total halogens | 4000 ppm maximum |
| 5. | Polychlorinated biphenyls (PCBs) | Below Detection Limit |

SCHEDULE 7

[Refer rules 4(B) and 12(4)]

LIST OF AUTHORITIES AND CORRESPONDING DUTIES

| Sl. No. | Authority | Corresponding Duties |
|---------|---|---|
| 1 | 2 | 3 |
| 1. | Ministry of Environment and Forests under the Environment (Protection) Act, 1986 | (i) Identification of hazardous wastes [rule 3(14)] (ii) Permission to exporters [rule 14] (iii) Permission to importers [rule 13] (iv) Registration of non-ferrous metal wastes and used oil/waste oil [rule 20] (v) Permission for transit of hazardous wastes through India [rule 12(2)] |
| 2. | Central Pollution Control Board constituted under the Water (Prevention and Control of Pollution) Act, 1974 | (i) Con-ordination of activities of State Pollution Control Boards/Committees |

| | | |
|----|--|--|
| | | (ii) Conduct training courses for authorities dealing with management of hazardous wastes (iii) Recommend standards and specifications for treatment and disposal of wastes and leachates Recommend procedures for characterization of hazardous wastes. (iv) Sector specific documentation to identify waste streams(s) for inclusion in Hazardous Wastes Rules (v) Prepare guidelines to prevent/reduce/minimize the generation and handling of hazardous wastes (vi) Any other function under Rules delegated by the Ministry of Environment and Forests |
| 3. | State Government/Union Territory Government/Administration | (i) Identification of site(s) for common treatment, storage and disposal facility (TSDF) [rule 8(2)] (ii) Assess EIA reports and convey the decision of approval of site or otherwise [rule 8(6)] (iii) Acquire the site or inform operator of facility or occupier or association of occupiers to acquire the site [rule 8(7)] (iv) Notification of sites [rule 8(7)] (v) Publish periodically an inventory of all disposal sites in the State/Union territory [rule 8(7)] |
| 4. | State Pollution Control Boards or Pollution Control Committees constituted under the Water (Prevention and Control of Pollution) Act, 1974 | (i) Inventorisation of hazardous wastes [rule 9(3)] (ii) Grant and renewal of authorisation [rule 5] (iii) Monitoring of compliance of various provisions and conditions of authorisation including exports and imports |

| | | |
|----|--|---|
| | | (iv) Issue of public notice and conduct public hearing [rule 8(4)] (v) Examining the applications for imports submitted by the importers and forwarding the same to Ministry of Environment and Forests [rule 13(1) & (2)] (vi) Implementation of programmes to prevent/reduce/minimise the generation of hazardous wastes (vii) Action against violations of Hazardous Wastes (Management and Handling) Rules, 1989 |
| 5. | Directorate General of Foreign Trade constituted under the Foreign Trade (Development and Regulation) Act, 1992 | (i) Grant of licence for import of hazardous wastes [rule 13(5)] (ii) Refusal of licence for hazardous wastes prohibited for imports or export [rule 12(7)] |
| 6. | Port Authority under Indian Ports Act, 1908 (15 of 1908) and Customs Authority under the Customs Act, 1962 (52 of 1962). | (i) Verify the documents [rule 13(6)] (ii) Inform the Ministry of Environment and Forests of any illegal traffic [rule 15] (iii) Analyse wastes permitted for imports and exports (iv) Train officials on the provisions of the Hazardous Wastes Rules and in the analysis of hazardous wastes (v) Take action against export/import violations under the Indian Ports Act, 1908/Customs Act, 1962 |

SCHEDULE 8

[Refer rule 12(1)]

HAZARDOUS WASTES PROHIBITED FOR IMPORT AND EXPORT

| Sl. No | Basel* No. | OECD** No. | Description of material |
|--------|------------|------------|-------------------------|
| 1 | 2 | 3 | 4 |
| 1. | A 1010 | AA 100 | Mercury |

| | | | |
|-----|--------|--------|--|
| 2. | A 1030 | AA 100 | Waste having Mercury: Mercury Compounds as constituents or contaminants |
| 3. | A 1010 | AA 070 | Beryllium |
| 4. | A 1020 | AA 070 | Waste having Beryllium: Beryllium Compounds as constituents or contaminants |
| 5. | A 1010 | AA 090 | Arsenic |
| 6. | A 1030 | AA 090 | Waste having Arsenic: Arsenic compounds as constituents or contaminants |
| 7. | A 1010 | AA 070 | Selenium |
| 8. | A 1020 | AA 070 | Waste having Selenium: Selenium Compounds as constituents or contaminants |
| 9. | A 1010 | AA 080 | Thallium |
| 10. | A 1030 | AA 080 | Waste having Thallium: Thallium Compounds as constituents or contaminants |
| 11. | A 1040 | AA 070 | Hexavalent-Chromium Compounds |
| 12. | A 1140 | | Wastes Cupric Chloride and Copper Cyanide Catalysts |
| 13. | A 2020 | | Waste inorganic fluorine compounds in the form of liquids or sludge but excluding calcium fluoride sludge |
| 14. | A 2040 | | Waste gypsum arising from chemical industry processes if it contains any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein |
| 15. | A 2050 | RB010 | Waste Asbestos (Dust and Fibres) |
| 16. | A 2060 | | Coal fired power plant fly ash if it contains any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein |
| 17. | A 3030 | | Wastes that consist of or are contaminated with leaded antiknock compound sludge or leaded petrol (gasoline) sludges. |
| 18. | A 3040 | | Waste thermal (heat transfer) fluids. |
| 19. | A 3060 | | Waste Nitrocellulose. |
| 20. | A 3090 | | Waste leather dust, ash, sludges and flours when containing hexavalent chromium compounds or biocides. |

FORM 1

[Refer rules 3(2), 5(2)(3) and 6(ii)]

**APPLICATION FOR OBTAINING AUTHORISATION FOR COLLECTION/
RECEPTION/TREATMENT/TRANSPORTS/STORAGE/DISPOSAL
OF HAZARDOUS WASTE***

From

To
The Member Secretary,
..... Pollution Control Board,
.....

Sir,

I/We hereby apply for authorisation/renewal of authorisation under sub-rules (2) and (3) and clause (ii) of sub-rule (6) of rule 5 of the Hazardous Wastes (Management and Handling) Rules, 1989 for collection/reception/treatment/transport/storage/disposal of hazardous wastes.

For Office Use Only

5. Code No.:
6. Whether the unit is situated in a critically polluted area as identified by Ministry of Environment and Forests;
To be filled in by Applicant

PART A: GENERAL

- 3.(a) Name and address of the unit and location of activity
(b) Authorisation required for (Please tick mark appropriate activity/activities:
(i) collection
(ii) reception
(iii) treatment
(iv) transport
(v) storage
(vi) disposal
(c) In case of renewal of authorisation previous authorisation number and date
- 4.(a) Whether the unit is generating hazardous waste as defined in the Hazardous Wastes (Management and Handling) Rules, 1989 and amendments made thereunder;
(b) If so the type and quantity of wastes
5.(a) Total capital invested on the project:
(b) Year of commencement of production:
(c) Whether the industry works general/2 shifts/round the clock:
6.(a) List and quantum of products and by-products:
(b) List and quantum of raw material used:
7. Furnish a flow diagram of manufacturing process showing input and output in terms of products and waste generated including for captive power generation and demineralised water.

| | | |
|-----|--------|--|
| 21. | A 3100 | Waste paring and other waste of leather or of composition leather not suitable for the manufacture of leather articles containing hexavalent chromium compounds or biocides. |
| 22. | A 3110 | Fellmongery wastes containing hexavalent chromium compounds or biocides or infectious substances. |
| 23. | A 3150 | Waste halogenated organic solvents. |
| 24. | A 3180 | AC 120 Waste, substance and articles containing, consisting of or contaminated with polychlorinated biphenyls (PCB) and/or polychlorinated terphenyls. (PCT) and/or polychlorinated naphthalenes (PCN) and/or polybrominated biphenyls (PBB) or any other polybrominated analogues of these compounds |
| 25. | A 3190 | Waste tarry residues (excluding asphalt cements) arising from refining, distillation and pyrolytic treatment of organic materials) |
| 26. | A 4020 | Clinical and related wastes; that is wastes arising from medical, nursing, dental, veterinary, or similar practices and wastes generated in hospital or other facilities during the investigation or treatment of patients, or research projects. |
| 27. | A 4030 | Ad 020 Waste from the production, formulation and use of biocides and phyto-pharmaceuticals, including waste pesticides and herbicides which are off-specification, out-dated, and/or unfit for their originally intended use. |
| 28. | A 4050 | AD 040 Waste that contain, consist of, or are contaminated with any of the following: Inorganic cyanides, excepting precious metal bearing residues in solid form containing traces of inorganic cyanides. Organic cyanides. |
| 29. | A 4060 | Waste oil/water, hydrocarbons/water mixtures, emulsions |

PART B: SEWAGE AND TRADE EFFLUENT

8. Quantity and source of water for:
- Cooling m³/d
 - Process m³/d
 - Domestic use in m³/d
 - Others m³/d
9. Sewage and trade effluent discharge:
- quantum of discharge m³/d:
 - Is there any effluent treatment plant:
 - If yes, a brief description of unit operations with capacity:
 - Characteristics of final effluent:
 - pH
 - Suspended solids
 - Dissolved solids
 - Chemical Oxygen Demand (COD)
 - Biochemical Oxygen Demand [BoD⁵/20°C]/BoD³/27°C]
 - Oil and grease
 (additional parameters as specified by the concerned Pollution Control Board)
 - Mode of disposal and final discharge point:
 - (enclose map showing discharge point):
 - Parameters and Frequency of self monitoring:
 - [*] Read BOD (3 days at 27°C)

PART C STACK (CHIMNEY) AND VENT EMISSIONS

10. (a) Number of stacks and vents with height and dia (m):
- (b) Quality and quantity of stack emission from each of the above stacks-particulate matter and Sulphar dioxide (SO₂) (Additional parameters as specified by the concerned Pollution Control Board):
- (c) A brief account of the air pollution control unit to deal with the emission:
- (d) Parameters and Frequency of self monitoring:

PART D HAZARDOUS WASTE

11. Hazardous Wastes:
- Type of hazardous wastes generated as defined under the Hazardous Wastes (Management and Handling) Rules, 1989:
 - Quantum of hazardous waste generated:
 - Mode of storage within the plant, method of disposal and capacity:
 - Hazardous Chemicals (as defined under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989)
 - Whether any isolated storage is involved (if yes, attach details) Yes/No
 - PART E TREATMENT, STORAGE AND DISPOSAL FACILITY**
13. Detailed proposal of the facility (to be attached) to include:
- Location of site (provide map)
 - Name of waste processing technology
 - Details of processing technology

- Type and Quantity of waste to be processed per day
- Site clearance (from local authority, if any)
- Utilization programme for waste processed (Product Utilization)
- Method of disposal (details in brief be given)
- Quantity of waste to be disposed per day
- Nature and composition of waste
- Methodology and operational details of landfilling/incineration
- Measures to be taken for prevention and control of environmental pollution including treatment of leachates
- Investment on Project and expected returns
- Measures to be taken for safety of workers working in the plant

Place:

Date:

Signature:

Designation:

FORM 2

[Rules 3(c) and 5(5)]

[FORM FOR GRANT OF AUTHORISATION FOR OCCUPIER OR OPERATOR HANDLING HAZARDOUS WASTES]

- Number of authorisation and date of issue.....
-of.....is hereby granted an authorisation to operate a facility for collection, reception, treatment, storage, transport and disposal of hazardous waste on the premises situated at.....
- The authorisation is granted to operate a facility for collection, reception, treatment, storage, transport and disposal of hazardous wastes.
- The authorisation shall be in force for a period of.....years from the date of issue.
- The authorisation is subject to the conditions stated below and to such conditions as may be specified in the rules for the time being in force under the Environment (Protection) Act, 1986.

Date.....

Signature.....

Designation.....

Terms and conditions of authorisation:

- The authorisation shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made thereunder.
- The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the ²[State Pollution Control Board or Committee].
- The person authorised shall not rent, lend, sell, transfer or otherwise transport the hazardous wastes without obtaining prior permission of the ³[State Pollution Control Board or Committee].

1 Substituted by SO 24(E), w.e.f. 6-1-2000.

2 Substituted by SO 625(E), dt. 3-5-1996, w.e.f. 6-9-1996.

FORM 3
[Rule 9(1)]

FORMAT FOR MAINTAINING RECORDS OF HAZARDOUS WASTES AT THE FACILITY

1. Name and address of the occupier or operator of a facility
.....
2. Date of issuance of authorisation and its reference number
.....
3. Description of hazardous waste:

| <i>Physical form with description</i> | <i>Chemical form</i> | <i>Total volume and weight (in kg.)</i> |
|---------------------------------------|----------------------|---|
| | | |
| | | |

4. Description of storage and treatment of hazardous wastes:

| <i>Date</i> | <i>Method of storage of hazardous wastes</i> | <i>Date</i> | <i>Method of treatment of hazardous wastes</i> |
|-------------|--|-------------|--|
| | | | |
| | | | |

5. Details of transportation of hazardous waste:

| <i>Name and address of the consignee of the package</i> | <i>Mode of packing of the waste for transportation</i> | <i>Mode of transportation to site of disposal</i> | <i>Date of transportation</i> |
|---|--|---|-------------------------------|
| | | | |
| | | | |

4. Any unauthorised change in personnel, equipment or working conditions as mentioned in the application by the person authorised shall constitute a breach of the authorisation.
5. It is the duty of the authorised person to take prior permission of the ¹[State Pollution Control Board or Committee] to close down the facility.
6. An application for the renewal of an authorisation shall be made as laid down in rule 5(6)(ii).

FORM 4

[Refer rule 9(2)]

FORM FOR FILING RETURNS REGARDING HANDLING OF HAZARDOUS WASTES

[to be submitted to the State Pollution Control Board/Committee by 31st January of every year]

1. Name and address of the Occupier/Operator of Facility:
2. Categories of wastes generated and quantity (in metric tonnes):
3. Details of waste treatment operations:
4. Details of waste disposal operations:

| Sl. No. | Description of Hazardous Waste | | | | | | | | |
|---------|--|----------------------------|---------------|---|--|--|---|------------------|------------------|
| | Date of issuance of authorisation for the disposal of hazardous waste and its reference number | Physical form and contents | Chemical form | Total volume of the hazardous waste disposed with no. of packages | Mode of transportation to the site of disposal | Site of disposal (attach a sketch showing the location(s) of disposal) | Brief description of the method of disposal | Date of disposal | Remarks (if any) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | | | | | | | | |

5. Details of environmental surveillance:

| Date of other Measurement | Analysis of ground water samples | Analysis of soil samples | Analysis of air sampling | Analysis of any samples (give detail) |
|---------------------------|----------------------------------|--------------------------|--------------------------|---------------------------------------|
| | Location of Sampling | Depth of Data sampling | Location of sampling | Depth of Data sampling |
| | | | | |

Place :

Date :

Signature:

Designation:.....]

¹ Substituted by Hazardous Wastes (Management and Handling) Amdt. Rules, 2003, vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.

6. Details of disposal of hazardous waste:

| Date of disposal | Concentration of hazardous material in the final waste form | Site of disposal (identify the location on the relevant layout drawing for reference) | Method of disposal | Persons involved in disposal |
|------------------|---|---|--------------------|------------------------------|
| | | | | |

7. Data on environmental surveillance:

| Date of measurement | Analysis of ground water | | | Analysis of soil samples | | | Analysis of air sampling | | Analysis of any other samples (give details) |
|---------------------|--------------------------|-------------------|------|--------------------------|-------------------|------|--------------------------|------|--|
| | Location of sampling | Depth of sampling | Date | Location of sampling | Depth of sampling | Date | Location of sampling | Date | |
| | | | | | | | | | |

¹8. Details of the hazardous wastes reused and recycled

| Date | Total quantity of hazardous waste generated | Details of hazardous waste minimisation activity | Material received | Final quantity of waste generated | Net reduction in waste generation quantity and percentage |
|------|---|--|-------------------|-----------------------------------|---|
| | | | | | |

Place

Date

Signature

Designation]

Name and signature of head of facility

¹ Inserted by SO 24(E), w.e.f. 6-1-2000.

3. The material permitted shall be fully insured for transit as well as for any accidental occurrence and its cleanup operation.
4. The exported material shall be taken back if it creates a genuine Environmental hazard or shall take all such measures to treat and dispose in an environmentally benign manner upto the satisfaction of concerned SPCB. All such costs involved in such operation shall be borne by Exporter and/or Importer.

PART 2

(To be filled in by Importer)

1. Name and Address:
2. Whether authorisation is obtained in Form 2: on application made in Form 1 (enclose copy): Yes/No
3. Details of material to be imported

| S. No. | Particulars | Six digit Code No. | Purity expected | Quantity | Whether any special handling requirement? |
|--------|-------------|--------------------|-----------------|----------|---|
| | | | | | |

4. Whether you have received such imported hazardous wastes in the form of raw materials in the past and if yes give details

| S.No. | Name of Material | Country of Export | Year | Quantity in tones |
|-------|------------------|-------------------|------|-------------------|
| | | | | |

5. Whether the importer has:
 - (a) Adequate facility to handle imported hazardous waste in the form of his material if yes furnish details. Yes/No
 - (b) Adequate facility to handle the hazardous wastes in the form of his raw material by the use of such imported hazardous wastes in the form of his raw material Yes/No
 - (c) Requisite laboratory testing facility Yes/No
6. Break-up of the imported material
 - (a) the total quantity applied for T
 - (b) Out of (a) above, how much quantity after initial in-situ purification, will be available raw material T
 - (c) Out of (b) above, how much quantity will be converted to the useful product or co-product T
7. Means of Transport (Road, Rail, inland waterway, sea, air) including country of export, transit and import, also point of entry and exit where these have been designated.
8. Information on special handling requirements including emergency provisions in case of accident.

(Attach separate sheet)

9. Undertaking:

I hereby solemnly undertake that

1. The full consignment shall be cleared in one lot by arranging authorised transporter under my supervision with due prior intimation to the Board.

FORM 5

[Rule 10]

ACCIDENT REPORTING AND FOLLOW-UP

1. The date and time of the accident:
2. Sequence of events leading to accident:
3. The hazardous waste involved in accident:
4. The date for assessing the effects of the accident on health or the environment:
5. The emergency measures taken:
6. The steps taken to alleviate the effects of accidents:
7. The steps taken to prevent recurrence of such accidents:

[Place Date Signature Designation]

²[FORM 6

[Rule 13 (1)]

APPLICATION FOR IMPORTING HAZARDOUS/RECYCLABLE WASTES AS RAW MATERIALS

From:
To:
TO BE MAILED BY IMPORTER

The member Secretary,
State Pollution Control Board

Sir,

I/we apply for "No Objection: of authorisation under sub-rule (1) of Rule 13 of the Hazardous Wastes (Management & Handling) Rules, 1989, amended in 1999 for importing/exporting hazardous/recyclable to use as raw materials.

FOR OFFICE USE ONLY

1. Code No.
 2. Whether the unit is situated in a critically polluted area as identified by the Ministry of Environment and Forests
- TO BE FILLED IN BY APPLICANT

(To be filled by Exporter or a person authorized by the exporter)

PART 1

1. Name and Address of the Exporter
2. Details of material (hazardous wastes in the form of raw material) to be exported.

| S. No. | Particulars | Six digit Code No. * | Purity expected | Quantity | Whether any special handling requirement? |
|--------|-------------|----------------------|-----------------|----------|---|
| | | | | | |

1 Inserted by SO 24(E), w.e.f. 6-1-2000.

2 Substituted by SO 24(E), w.e.f. 6-1-2000.

| FOR USE BY COMPETENT AUTHORITIES | | | |
|---|--|-----------------|---|
| 23. | To be completed by competent authority of—import | | 24. Consent to the movement provided by the competent authority of (country): |
| | Notification received on: | Transit (Basel) | |
| | Acknowledgement sent on: | | Consent given on: |
| | | | Consent expires on: |
| | | | Specific conditions (1) : <input type="checkbox"/> Yes, see block 24 overleaf/annex <input type="checkbox"/> No |
| | Name of competent authority, stamp and/or signature: | | Name of competent authority, stamp and/or signature: |
| (1) Enter X in appropriate box (2) Attach list of more than one (3) Attach detailed list of multiple shipment (4) See codes on the reverse List of abbreviations used in the Movement Document | | | |

- R1 Use as a fuel (other than in direct incineration) or other means to generate energy
- R2 Solvent reclamation/regeneration
- R3 Recycling/reclamation of organic substances which are not used as solvents
- R4 Recycling/reclamation of metals and metal compounds
- R5 Recycling/reclamation of other inorganic materials
- R6 Regeneration of acids or bases
- R7 Recovery of components used for pollution abatement
- R8 Recovery of components from catalysts
- R9 Used oil-refining or other refuses of previously used oil
- R10 Land treatment resulting in benefit to agriculture or ecological improvement
- R11 Uses of residual materials obtained from any of the operations numbered R1 to R10
- R12 Exchange of wastes for submission to any of the operations numbered R1 to R11
- R13 Accumulation of material intended for any operation numbered R1 to R12

| | | | | |
|-----|---|-------------------|---|--|
| 8. | Waste generator(s) (Name, address (2) Contract person Tel No. Fax/Telex | | 12. (i) Designation and complete chemical composition of waste (attach details) (ii) special requirements handling | |
| | Site of generation & Process | | 13. Physical characteristics (4): | |
| 14. | Waste identification code | | 16. Y-number (4): | |
| | Basel No. | OECD No.: | 17. H-number (4): | |
| | UN No. | ITC (HS) | | |
| | Customs Code (H.S.) | Other (specify) | | |
| 15. | OECD Classification (1): amber <input type="checkbox"/> Red <input type="checkbox"/> and number | | 18. (i) identification N2 | |
| | Other <input type="checkbox"/> | | (ii) UN Class (4): | |
| | (attach details) | | UN shipping name: | |
| 19. | Concerned States, code number of competent authorities, and specific points of entry and exit: | | | |
| | State of export | States of transit | State of import | |
| 20. | Customs offices of entry and/or departure | | 21. Exporter's/Generator's declaration: | |
| | | | I certify that the information is complete and correct to my best knowledge. I also certify that legally-enforceable written contractual obligations have been entered into and that any applicable insurance or other financial guarantees are or shall be in force covering the transboundary movement. | |
| 22. | Number of annexes attached | Name: | Signature: | |
| | | Date: | | |

| | | | | |
|--|--|---|-----|---|
| | | 9 | H13 | Capable, by any means, after disposal of yielding another material e.g. leachate, which possesses any of the characteristic listed above. |
|--|--|---|-----|---|

FOR USE BY CUSTOMS OFFICES

| | | | | | | | |
|--|--|--|--|--|-----------|------------------|-----------|
| 25. Country of export/dispatch or customs office of exit | | | | 27. Stamps of customs offices of transit countries | | | |
| The waste described overleaf has left the country on | | | | Name of country: | | Name of country: | |
| | | | | Entry | Departure | Entry | Departure |
| Stamp: | | | | | | | |
| Signature: | | | | | | | |
| 26. Country of import/destination. The waste described overleaf has entered the Country on: Stamp Signature | | | | | | | |

MEANS OF TRANSPORT (Block 8-10) PACKAGING TYPES (BLOCK 16) H NUMBER AND UN CLASS (Block 17)

| R=Road | 1. Drum | UN Class | H.No. | Designation |
|-------------------------------------|------------------------|----------|-------|---|
| | 2. Wooden barrel | 1 | H1 | Explosive |
| T=Train/Rail | 3. Jerrican | 3 | H3 | Inflammable liquids |
| | 4. Box | 4.1 | H4.1 | Inflammable solids |
| S=Sea | 5. Bag | 4.2 | H4.2 | Substances or wastes liable to Air spontaneous combustion |
| | 6. Composite packaging | 4.3 | H4.3 | Substances or wastes which, in W contract with water emit |
| A=Air | 7. Pressure receptacle | | | inflammable gases |
| | 8. Bulk | 5.1 | H5.1 | Oxidizing |
| W=Inland Waterways | 9. Other (specify) | 5.2 | H5.2 | Organic peroxides |
| PHYSICAL CHARACTERISTICS (Block 12) | 6.1 | | H6.1 | Poisonous (acute) |
| 1. Powdery/powder | 5. Liquid | 6.2 | H6.2 | Infectious substances |
| 2. Solid | 6. Gaseous | 8 | H8 | Corrosives |
| 3. Viscous/paste | 7. Other (specify) | 9. | H10 | Liberation of toxic gases in contract with air or water |
| 4. Sludge | | 9 | H11 | Toxic (delayed or chronic) |
| | | 9 | H12 | Ecotoxic |

| | | | |
|---|-----------------|---|------------|
| 11. Designation of chemical composition of the waste | | 12. Physical characteristics(3): | |
| | | 13. Actual quantity | |
| | | Kg | Litre |
| 14. Waste identification Code | | 16. Packaging | |
| Balse No. | OECD No.: | Type (3) Number: | |
| UN No.: | ITC (HS) | 17. UN Classification: | |
| Customs code (H.S) | Other(specify): | UN Shipping name: | |
| | | UN Identification: | |
| 15. OECD Classification (2): amber bed and Number: | | UN Class (3): | |
| Other* | | H Number (3) Y.No. | |
| *(attach details) | | | |
| 18. Special handling requirements | | 20. Exporter's declaration: | |
| I certify that the information in blocks 1 to 19 above is complete and correct to my best knowledge. I also certify that legally-enforceable written contractual obligations have been entered into, that any applicable insurance or other financial guarantees are in force covering the transboundary movement applicable insurance or other financial guarantees are in force covering the transboundary movement and that all necessary authorizations have been received from the competent authorities of the State concerned. | | | |
| 19. Actual date of shipment | | Date: | Signature: |
| | | Name | |
| TO BE COMPLETED IMPORTER/RECYCLER | | | |
| 21. Shipment received by importer/Recycler | | 23. I certify that the Recycling of the waste described above has been completed. | |

FORM-7A
[See Rules 12(5) & 14(4)]
Transboundary Movement of Waste— MOVEMENT DOCUMENT

| | | | | | |
|---------------------------------------|--|---|--|--|--|
| 1. (i) Exporter (name, address): | | 3. Corresponding to Notification N ² | | 4. Serial Number of shipment | |
| Contract person: Tel : Fax/Telex: | | | | Government subject of (2) signal notification <input type="checkbox"/> general notification <input type="checkbox"/> | |
| | | (ii) Waste Generator (name, address) (1): | | 8. Disposer (name, address): | |
| | | Contact person: Tel : Fax /Telex: | | Contract (name, address): Tel: | |
| 2. Importer recycler (name, address): | | | | 9. Method(s) of recovery (4): | |
| Contact person: Tel.: Fax/Telex: | | | | R code: Technology employed: (Attach details if necessary) | |
| 5. 1st Carrier (Name, address): | | 6. 2nd Carrier (name, address) (4) | | 7. Last Carrier (name, address), | |
| | | Registration N ² | | Registration N ² | |
| | | Tel: Fax/Telex: Tel: | | Fax/Telex: Tel: | |
| 8. Identify of means of transport (3) | | 9. Identity of means of transport (3) | | 10. Identity of means of transport (3) | |
| Date of transfer: | | Date of transfer: | | Date of transfer: | |
| Signature of carrier's representative | | Signature of carrier's representative | | Signature of carrier's representative | |

- R8 Recovery of components from catalysts
- R9 Used oil-refining or other reuses of previously used oil
- R10 Land treatment resulting in benefit to agriculture or ecological improvement
- R11 Uses of residual materials obtained from any of the operations numbered R1 to R10
- R12 Exchange of wastes for submission to any of the operation numbered R1 to R11
- R13 Accumulation of material intended for any operation numbered R1 to R12

| Means of transport (Block 11) | Packaging types (Block 16) | H Number (Block 17) & UN CLASS (Block 18) | | |
|-------------------------------------|----------------------------|---|-------|--|
| | | UN Class | H.No. | Designation |
| R=Road | 1. Drum | 1 | H1 | Explosive |
| | 2. Wooden barrel | 1 | H1 | Explosive |
| T=Train/Rail | 3 Jerrican | 3 | H3 | Inflammable Liquids |
| | 4. Box | 4.1 | H4.1 | Inflammable solids |
| S=Sea | 5. Bag | 4.2 | H4.2 | Substances or wastes liable to spontaneous combustion |
| | 6. Composite packaging | 4.3 | H4.3 | Substances or wastes which, in contact with water emit inflammable gases |
| A=Air | 7. Pressure receptacle | | | |
| | 8. Bulk | 5.1 | H5.1 | Oxidizing |
| W=Inland Waterways | 9. Other (specify) | 5.2 | H5.2 | Organic peroxides |
| PHYSICAL CHARACTERISTICS (Block 12) | | 6.1 | H6.1 | Poisonous (acute) |
| 1. Powdery/powder | 5. Liquid | 6.2 | H6.2 | Infectious substances |

| | | | |
|-----------------------------------|--|--------------------|--|
| | Quantity received: Kg. Litres accepted | Date: | |
| | Date: | Name: | |
| | Name: Signature rejected (x) | | |
| 22. Shipment received at Recycler | Signature | | |
| | Quantity received: Kg. Litres accepted | Signature & stamp. | |
| | Quantity received Kg. Liters accepted | | |
| | Date: | | |
| | Name: Signature rejected (x) | | |

Approximate date of recycler

Method of recycling

(1) Attach list, of more than one (2) Enter X in appropriate box (3) See codes on the reverse (x) Immediately contact Competent Authority (4) If more than three carriers, attach information as required in blocks 6 and 11.

List of abbreviations used in the notification

Recovery of operations (Block 9)

- R1 Use as a fuel (other than in direct incineration) or other means to generate energy
- R2 Solvent reclamation/regeneration
- R3 Recycling/reclamation of organic substances which are not used as solvents
- R4 Recycling/reclamation of metals and metal compounds
- R5 Recycling/reclamation of other inorganic materials
- R6 Regeneration of acids or bases
- R7 Recovery of components used for pollution abatement

FORM 8
[Rule 7(3)]

MARKING OF HAZARDOUS WASTE CONTAINERS
HAZARDOUS WASTE
Handle with Care

Waste Category No Compatible Group
 Total Quantity Date of Storage
 Contents and State of the Waste:
 Sender's Name & Address Receiver's name and Address
 Phone Phone
 Telefax No. Telefax No.
 Telex No. Telex No.
 Contact Person Contact Person

In case of emergency please contact

Note : 1. Background colour of label-fluorescent yellow.

2. The word 'HAZARDOUS WASTES' & 'HANDLE WITH CARE' to be prominent and written in red

3. Label should be of non-washable material.

FORM 9

[Rule 7(4) & (5)]

HAZARDOUS WASTE MANIFEST

(Information of hazardous waste for disposal)

| | |
|--|---|
| 1. Occupier's name and mailing address: (including Phone No.) | 2. Occupier's Registration No. |
| 4. Transport's Name address Address: (including Phone No.) | 3. Manifest Document No. |
| 5. Type of Vehicle: Truck Tanker Special Vehicle | 6. Transporter's Registration No. |
| 7. Vehicle Registration No. | 9. Facility's Registration No. 10. Facility's Phone |
| 8. Designated Facility Name & Site Address: | 11. Waste Description: Solid Semi-Solid Sludge |
| 12. Total Quantity of Waste | 13. Consistency: Oily Tarry Slurry |

| | | | | |
|------------------|--------------------|---|-----|--|
| 2. Solid | 6. Gaseous | 8 | H8 | Corosives |
| 3. Viscous/paste | 7. Other (specify) | 9 | H10 | Liberation of toxic gases in contract with air or water |
| 4. Sludge | | 9 | H11 | Toxic (delayed or chronic) |
| | | 9 | H12 | Ecotoxic |
| | | 9 | H13 | Capable, by any means, after disposal of yielding another material e.g. leachate, which possesses any of the characteristics listed above. |

Y number (block 16) referred to categories of waste listed in Annex I and II of the Basel Convention, as well as more detailed information can be found in an instruction Manual available from the Secretariat of the Basel Convention.

25. SPECIFIC CONDITIONS OF CONSENTING TO THE MOVEMENT

FORM 11

(Refer rule 5(1)(2) and 19(6))

FORM OF APPLICATION FOR GRANT/RENEWAL OF REGISTRATION OF INDUSTRIAL UNIT'S POSSESSING ENVIRONMENTALLY SOUND MANAGEMENT FACILITIES FOR RECYCLING/RE-REFINING NON-FERROUS METAL WASTES/USED OIL/WASTE OIL*
(To be submitted to the Central Pollution Control Board in triplicate)

| | | |
|----|--|--|
| 1. | Name and Address of the unit | |
| 2. | Name of the occupier or owner of the unit with designation, Tel./Fax | |
| 3. | Date of commissioning of the unit | |
| 4. | No. of workers (including contract labourers) | |
| 5. | Consent Validity | Air (Prevention and Control of Pollution) Act, 1981 Valid upto Water (Prevention and Control of Pollution) Act, 1974 Valid upto |
| 6. | Authorisation under Rule 5 of the HW (M & H) Rules, 1989. | Valid up to |
| 7. | Product Manufactured during the last three years (Tonnes/Year) | |
| | Name | |
| | (a) | |
| | (b) | |
| | (c) | |
| 8. | Raw material consumption during last three years (Tonnes/year) | |
| | Name | |
| | (a) | |
| | (b) | |
| | (c) | |
| 9. | Manufacturing Process | Please attach manufacturing process flow diagram for each product(s) |

* Inserted by Hazardous Wastes (Management and Handling) Amdt. Rules, 2003, vide SO 593(E), dt. 20-5-2003, w.e.f. 23-5-2003.
Delete whichever is not applicable.

| | | |
|--|---------------------------|------------------------|
| 14. Transport Description of Waste | 15. Containers - Quantity | 16. Waste Category No. |
| | 17. Unit Wt/Vol. | |
| No. Type | | |
| 19. Special Handling Instructions & Additional Information: | | |
| 20. Occupier's certificate: I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labeled, and are in all respects in proper condition for transport by road according to applicable national government regulations. | | |
| Typed Name & Stamp | Signature | Month Day Year |
| 21. Transporter's Acknowledgement of Receipt of Materials | | |
| Typed Name & Stamp | Signature | Month Day Year |
| 22. Discrepancy Note Space | | |
| 23. Facility owner or Operator's Certification of Receipt of Hazardous Waste | | |
| Typed Name & Stamp | Signature | Month Day Year |

FORM 10
(Rule 7(7))

TRANSPORT EMERGENCY (TREM) CARD

1. Characteristics of Waste:

| S.No. | Type of Waste | Physical properties | Chemical Constituents | Exposure Hazards | First Aid Requirements |
|-------|---------------|---------------------|-----------------------|------------------|------------------------|
| | | | | | |

2. Procedure to be followed in case of fire:

3. Procedure to be followed in case of spillage/accident/explosion:

4. for expert services, please contact:

(i) Name & Address:

(ii) Telephone No.:

(Name and Signature of Occupier)

| | | |
|-----|---|---|
| | (I) Please furnish details of the disposal facilities Whether facilities provided are in compliance with the conditions laid down in the authorisation granted under rule 5 by the State Pollution Control Board | |
| | (III) Please attach analysis report of characterisation of hazardous waste generated (including leachate test if applicable) | |
| 17. | Details of waste proposed to be acquired through auction/negotiation/contract or import as the case may be for use as raw material. | 1. Name 2. Quantity required per year 3. Waste listing & No. in Annex-VIII (List A) / Annex IX (List B) of Basel Convention (BC) 4. Hazard Characteristic as per Annex III of (BC) |
| 18. | Occupational safety and Health aspects | Please provide details of facilities provided |
| 19. | Remarks (I) Whether industry has provided adequate pollution control system/equipment to meet the standards of emission/effluent. (II) Whether industry is in compliance with conditions laid down in the HW authorisation. (III) Whether HW collection and Treatment, Storage and Disposal Facility (TSDF) are operating satisfactorily (IV) Whether conditions exist or likely to exist of the material being handled/processed of posing immediate or delayed adverse impacts on the Environment. (V) Whether conditions exist or is likely to exist of the material being handled/processed by any means capable of yielding another material e.g., leachate which may possess eco-toxicity. | Yes/No Yes/No Yes/No Yes/No Yes/No |

| | | |
|-----|--|--|
| 10. | Water Consumption | Industrial m ³ / day Domestic m ³ / day |
| 11. | Water Cess paid up to | |
| 12. | Waste water generation | Industrial Domestic |
| | a. as per consent m ³ / day b. actual m ³ / day (average of last three months) | |
| 13. | Waste water treatment (please provide flow diagram of the treatment scheme) | Industrial Domestic |
| 14. | Waste water discharge | Quantity m ³ / day Location Analysis of treated waste water pH, BOD, COD, SS, O&G Any other |
| 15. | Air Pollution Control a. Please provide flow diagram for emission control system(s) installed for each process unit, utilities etc. b. Details of facilities provided control of fugitive emission due to material handling, process, utilities etc. Fuel consumption Stack emission monitoring results Ambient air quality Hazardous waste management | Sl. No. Name quantity D/M No. Stack Emission mg/Nm Attach to PM SO ₂ Metals (pb, Zn.) Sl. No. Location parameter mg/m SO ₂ , NO ₂ , SPM, pb, any others |
| 16. | a. Waste generation b. Details on collection, treatment and transport c. Disposal | Sl. No. Name Category Quantity (last 3 years) |

| | | |
|-----|---|--|
| 20. | Any other Information (I) (II) (III) | |
| 21. | List of enclosures as per rule 19(2) | |

Place : _____ Signature of applicant _____
 Date : _____ Designation: _____

FORM 12

[Refer rule 19(13)]

FORM FOR FILING RETURNS BY RECYCLERS/RE-REFINERS OF NON-FERROUS METAL WASTES/USED OIL/WASTE OIL*

[To be submitted by recyclers/re-refiners to State Pollution Control Board Committee by 31st January of every year]

| | | |
|----|--|---|
| 1. | Name and address of the recycler | |
| 2. | Name of the authorised person and full address with telephone and fax number | |
| 3. | Installed annual capacity to recycle non-ferrous metal wastes/used oil/waste oil (in MTA) | |
| 4. | Total quantity of non-ferrous metal wastes/used oil (in MTA) purchased/processed/sold during the period from October-March/April-September | (i) Quantity of wastes purchased from the manufacturers (ii) Quantity of wastes purchased from auctioneers— (iii) Quantity of wastes obtained from any other source— (iv) Quantity of wastes processed— (v) Quantity of wastes sold |
| 5. | Quantity and type material recovered from non-ferrous metal wastes/used oil/waste oil (in MTA) | |
| 6. | Quantity of recyclable materials sent back | (i) the manufacturers (ii) other agencies # |

* delete whichever is not applicable
 # enclose list of other agencies

Place : _____
 Date : _____

Signature _____
 Designation: _____

FORM 13

[Refer rule 20(5)]

FORM FOR FILING RETURNS OF AUCTION/SALE OF NON-FERROUS METAL WASTES/USED OIL/WASTE OIL*

[To be submitted by waste generators/auctioneers to the concerned State Pollution Control Board/Committee by 31st January of every year]

| | | |
|----|---|--|
| 1. | Name and address of the waste generator/auctioneer | |
| 2. | Total quantity of wastes auctioned/sold during the period | (i) Non-ferrous Metal Wastes [indicate type and quantity in metric tonnes alongwith the name(s)/address(es) of registered recycler(s)]; (ii) Used oil/waste oil [indicate type and quantity in metric tonnes alongwith the name(s)/address(es) of registered recycler(s)/re-refiner(s)] |

*delete whichever is not applicable

Signature: _____
 Designation: _____