

# Industry-wise Emission Limits under Environment (Protection) Rules, 1986

## Thermal Power Plants

As per amendments and emission norms:

- **Coal-based power plants:**
  - Below 210 MW: **350 mg/Nm<sup>3</sup> PM**
  - 210–500 MW: **150 mg/Nm<sup>3</sup> PM**
  - Above 500 MW: **50 mg/Nm<sup>3</sup>**
- **Gas-based plants:**
  - Above 400 MW: **NO<sub>x</sub> ≤50 ppm** (natural gas), **≤100 ppm** (naphtha)
  - 100–400 MW: **75 ppm** (nat gas), **100 ppm** (naphtha)
  - Below 100 MW: **100 ppm** for both

## Boilers (Steam Generation)

Particulate matter limits (corrected to 12% CO<sub>2</sub>):

- < 2 t/hr: **1200 mg/Nm<sup>3</sup>**
- 2–10 t/hr: **800 mg/Nm<sup>3</sup>**
- 10–15 t/hr: **600 mg/Nm<sup>3</sup>**
- ≥ 15 t/hr: **150 mg/Nm<sup>3</sup>**

## Organic Chemicals Manufacturing

Effluent standards (Schedule I):

- **pH:** 6.5–8.5
- **BOD:** ≤100 mg/L
- **Oil & Grease:** ≤10 mg/L

- **Nitrate-N:**  $\leq 10$  mg/L
- **Arsenic:**  $\leq 0.2$  mg/L
- **Cr<sup>6+</sup>:**  $\leq 0.1$  mg/L
- **Cr (total):**  $\leq 1.0$  mg/L
- **Lead:**  $\leq 0.1$  mg/L
- **Cyanide:**  $\leq 0.2$  mg/L
- **Zinc:**  $\leq 0.5$  mg/L
- **Mercury:**  $\leq 0.01$  mg/L
- **Copper/Nickel:**  $\leq 2.0$  mg/L
- **Phenolics:**  $\leq 5.0$  mg/L
- **Sulfide:**  $\leq 2.0$  mg/L
- **Bio-assay:**  $\geq 90\%$  fish survival

## Hazardous Waste Rules, 2008

### Petrochemical Industry

Petrochemical and oil refinery facilities generate wastes such as oily sludges, tar residues, spent catalysts, emulsions, and tank-bottom residues. Under Rule 8, generators may store up to **90 days**, but must secure SPCB authorization if storing more than **10 tonnes** at any time. All such waste must be tracked using **Form 13 manifest system** through transport to TSDF or cement kiln co-processing. Spent oil intended for reuse must meet Part A specifications:  $\leq 100$  ppm lead,  $\leq 5$  ppm arsenic,  $\leq 500$  ppm cadmium+chromium+nickel,  $\leq 6\%$  PAH, and  $\leq 2$  ppm PCBs; fuel derived from waste oil has additional limits like  $\leq 4.5\%$  sulfur and  $\leq 0.25\%$  sediment [Scribd+4Indian Kanoon+4Central Pollution Control Board+4](#). Unauthorized storage or disposal can attract fines up to ₹5 lakh plus imprisonment .

### Paint, Coatings & Dyes Industry

Paint and dye manufacturing produce sludge, off-spec paints, pigment residues, and solvent-contaminated rags. These are categorized under Schedule I and must be sent to authorized TSDFs. Storage is limited to **90 days** and **10 tonnes** without SPCB clearance. Transportation requires leak-proof containers, clear labeling, and Form 13 tracking. Fines range from ₹50,000 to ₹2 lakh for non-compliance .

### Pharmaceutical Industry

Pharma units produce spent solvents, process residue, off-spec products, and carbon/sludge. Common waste volumes: **10–4,090 tonnes/year** for solvents and residues in large units . Daily generation of residues above **2 tonnes** requires SPCB approval. Storage must not exceed **90 days** or **10 tonnes** without special permission. Solvent reuse or recovery must comply with co-processing or distillation norms. Failure to maintain records (Forms 3, 4) may result in ₹1–5 lakh fines and imprisonment [tnpcb.gov.in](http://tnpcb.gov.in).

### Textiles & Dyeing Industry

Textile units generate sludge laden with heavy metals (chromium, lead), dyes, solvents, and salts. Under Schedule I, sludge exceeding **200 kg/year** (inorganic dyes) or **50 kg/year** (organic dyes) qualifies as hazardous [eLaw](#). Effluent discharge must ensure chromium levels < 0.1 mg/L. Storage rules still cap at **90 days/10 tonnes**, with disposal only to SPCB-authorized TSDFs. Non-compliance fines up to ₹2 lakh plus license action [Environment Clearance+2tnpcb.gov.in+2Environment Clearance+2](#).

### Fertilizer & Agrochemical Industry

Waste includes phosphogypsum, spent catalyst residues, acidic sludge, NaSH salts, expired pesticides. Phosphogypsum generation beyond **10 tonnes/day** requires a waste management plan approved by SPCB. NaSH salts up to **50 tonnes/year** may be reused after approval . All hazardous waste must be stored ≤ 90 days/10 tonnes and transported via Form 13. Violations draw ₹1–5 lakh penalties plus remediation cost recovery .

### Metal Finishing / Electroplating Industry

Electroplating plants produce cyanide, acid/alkali sludge, and plating sludges. Sludge volumes above **500 kg/year** are regulated and need SPCB approval. Waste must be pH-neutralized

before disposal. Storage ≤ 90 days/10 tonnes with Form 13 transport documentation. Grievous violations can lead to ₹50 000 to ₹2 lakh fines .

### **Battery and Automobile Industry**

Lead-acid battery plants generate lead dust, spent batteries, and acid electrolytes. Spent batteries must be sent to authorized recyclers per Battery Rules. Storage caps are the same: **90 days/10 tonnes**. Lead-acid waste disposal without authorization can include fines up to ₹5 lakh and imprisonment .

### **Electronics & Electrical Industry**

E-waste processing generates hazardous residues with mercury, cadmium, lead, and PCBs. Beyond Electronics Waste Management Rules, residues fall under Hazardous Waste Rules. These must be stored ≤ 90 days/10 tonnes and handed only to SPCB-registered recyclers. Violations incur ₹1–2 lakh fines and possible license cancellation .

### **Chemicals & Agrochemicals Industry**

Hazardous chemicals used or produced—like cyanide wastes, solvents, expired pesticide formulations—are governed under both Hazardous Waste Rules and 1989 Manufacture Storage rules. Threshold quantities per chemical (e.g., arsenic trioxide 100 kg; beryllium compounds 10 kg) trigger stricter controls [clip.cpcb.gov.in+3Indian Kanoon+3latestlaws.com+3](http://clip.cpcb.gov.in+3Indian Kanoon+3latestlaws.com+3). Storage rules of **90 days/10 tonnes** apply. Disposal must follow approved routes: co-processing, incineration, TSDF; unauthorized dumping fines reach ₹2–5 lakh plus imprisonment .

### **Import/Export Prohibition**

Certain wastes—like mercury, beryllium, arsenic, selenium, hexavalent chromium, PCBs, asbestos—are banned from import/export under Basel/WHO lists . Violations lead to seizure, ₹5 lakh fines, and imprisonment.

# Water (Prevention and Control of Pollution) Act, 1974

## Consent Requirements (Section 25 & 26)

- **Industries must obtain prior consent** from the **State Pollution Control Board (SPCB)** before:
  - Establishing any outlet to discharge **sewage or trade effluent** into a stream, well, sewer, or on land.
  - Bringing into use any new or modified plant or process that may generate additional wastewater.
- **Consent to Establish (CTE)** is required **before construction**, and **Consent to Operate (CTO)** is required **before commissioning**.
- These consents define:
  - **Quantity and quality limits** for discharge
  - **Location of discharge point**
  - **Effluent treatment method**

## Prohibition on Discharge (Section 24)

- It is **strictly prohibited** for any industrial operator to **discharge polluting matter** into water bodies without the prior approval of the SPCB.
- Even indirect discharges (e.g., through land seepage or connected drains) are treated as offences.

## Monitoring and Sampling (Section 21)

- SPCB officials are empowered to:
  - **Inspect industry premises.**
  - **Take samples** from any outlet or effluent stream.
  - Analyze effluent to determine compliance.
- The samples must be collected in the presence of industry representatives and sealed as per legal procedure to hold evidentiary value.

### Penalties for Violations (Section 41)

- Operating without consent or violating discharge norms leads to:
  - **Imprisonment: Minimum 1 year and 6 months**, extendable to **6 years**.
  - **Fine:** As prescribed by the court (variable).
- **Ongoing Violation:** Additional **₹5,000 per day** for each day the violation continues.
- If the offence continues for **more than one year after conviction**:
  - **Imprisonment:** Not less than **2 years**, extendable to **7 years**.

### Closure and Service Disconnection (Section 33A)

- SPCB may **order closure** of the industry or **disconnection of water or electricity** if the industry:
  - Operates without consent
  - Violates effluent standards
  - Disregards directions of the Board

## Air (Prevention and Control of Pollution) Act, 1981

### Applicability in Declared Pollution Control Areas (Section 19)

- If an area is declared an **Air Pollution Control Area** by the State Government:
  - No industry can be established or operated there **without SPCB's consent**.

### Consent Requirement (Section 21)

- Industries must obtain **Consent to Establish and Operate** before releasing any emissions.
- SPCB may specify:
  - **Emission limits** for various pollutants (PM, SO<sub>2</sub>, NO<sub>x</sub>, etc.)
  - **Height, type, and location of chimneys**
  - **Emission control equipment** to be used

### Emission Control Obligations

- Emissions must not **exceed prescribed limits**, as set by the SPCB/CPCB.

- Industries are required to:
  - Install and maintain **pollution control devices** (e.g., scrubbers, ESPs, bag filters).
  - Regularly **monitor stack emissions** using CEMS (Continuous Emission Monitoring System), where applicable.
  - Maintain **logs and reports** of emissions, which are subject to audit.

#### **Penalties for Non-Compliance (Section 37)**

- Failure to obtain consent or violation of emission conditions leads to:
  - **Imprisonment:** Up to **3 months**
  - **Fine:** Up to **₹10,000**
  - **Both may apply**
- **Continuing Offence:** Additional fine of **₹5,000 per day** of continued violation.
- **After one year of continued offence:**
  - **Imprisonment:** Extendable to **7 years**

#### **Inspections and Monitoring (Section 24 & 25)**

- SPCB has the authority to:
  - **Inspect industrial premises and equipment**
  - **Verify the functioning of pollution control systems**
  - **Collect air samples** from emission points for analysis
- Industry must **cooperate fully** and provide **access to records**.

#### **Closure and Utility Disconnection (Section 31A)**

- SPCB can **order closure** of any industrial operation and **cut off electricity or water supply** if:
    - It operates without proper consent
    - Violates prescribed air emission standards
    - Ignores Board directives
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## **Additional Legal Responsibilities for Industries**

### **1. Accurate Self-Monitoring & Reporting**

- Submission of **environmental statements (Form V)** annually.
- Maintain and submit **emission/effluent monitoring reports** as per consent conditions.

### **2. Compliance with ETP and APC Systems**

- Industries must ensure **Effluent Treatment Plants (ETPs)** and **Air Pollution Control (APC) systems** are functional and maintained.
- Non-functional or bypassed systems are grounds for criminal action.

### **3. Hazardous Waste and Sludge Handling**

- Waste generated from pollution control systems (e.g., sludge from ETPs, ash from incinerators) must be **treated as hazardous waste** and disposed of as per **Hazardous Waste Rules**.

### **4. Recordkeeping and Display**

- Display environmental data outside the factory gate in local language and English.
- Maintain detailed **logbooks** of all pollution control devices.