



India's Cosmetic Manufacturing Industry and the Pollution Control Board: A Regulatory Gestalt

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ABSTRACT:

The cosmetic manufacturing industry of India is rapidly expanding, driven by rising consumer demand, formulation innovations, and globalization. However, India's Cosmetic Industry requires many approvals before it can fully commence. One of which is the approval from the Central Pollution Control Board. The Central Pollution Control Board engages in an essential regulatory role in mitigating the environmental impacts through frameworks such as Consent to Establish and Consent to Operate. This article meticulously examines the environmental regulations imposed on cosmetic manufacturers, the pollution index score-based classification of industry sectors, and the effluents and emissions treatment measures. It highlights recent regulatory developments, technological interventions for sustainability, and compliance challenges, offering recommendations for a more harmonized and environmentally conscious cosmetic industry in India.

Introduction

The cosmetic industry of India has been expanding steadily, with an expected market share to grow to USD 20 billion by 2025 with a CAGR of 25 (1). This growth has intensified environmental concerns, particularly water and air pollution from manufacturing plants. Before any cosmetic manufacturing plant gets approval from the Central Drugs Standard Control Organization (CDSCO), another body comes into the picture that is; The Central Pollution Control Board (CPCB), under the Ministry of Environment, Forest and Climate Change (MoEFCC) (2). The CPCB along with respective State Pollution Control Boards (SPCBs), has been endowed to ensure compliance with environmental standards by all industries, including cosmetics.

India's pollution control board

The CPCB was established in 1974 under the Water (Prevention and Control of Pollution) Act, subsequently strengthened by the Air (Prevention and Control of Pollution) Act, 1981, and the Environment (Protection) Act, 1986 (3). Under these acts, it has been made

mandatory for the industries to seek 2 types of environmental clearances:

- Consent to operate (CTO) and
- Consent to establish (CTE).

Over and above these the industries have to undergo periodic compliance monitoring and submit their yearly monitoring data which includes:

- Wastewater discharge parameters
- Air emission levels
- Hazardous waste management
- Usage of eco-friendly packaging materials to the respective SPCBs (4,5).

Key Rules Applicable to the Cosmetic Manufacturing Industry are:

- Hazardous Waste Management Rules, 2016
- Plastic Waste Management Rules, 2016 (Amended 2022)
- Biomedical Waste Management Rules, 2016 (for R&D



units)

- Effluent Treatment Requirements
- Air Emission Norms for Boilers, Solvent Use, and VOCs

Categories of the industries by CPCB

Earlier the sectors were divided into Green, Orange, and Red categories by the Ministry of Environment and Forest in 1989 for Doon Valley, Uttarakhand. The criteria for classification were primarily based on the quantity of industrial effluent, the quantity of fuel/coal, the number of employees, and the amount of waste generated. The concept of categorizing the sectors was eventually implemented in other parts of the country.

During the year 2016, in order to harmonize the criteria for categorization, CPCB developed an evaluating methodology to classify the industries. This methodology was based on the Pollution Index (PI) which was calculated based on the air pollution score, water pollution score, and hazardous waste generation score. During this harmonization, CPCB introduced one more “White” category as a new category for such sectors that are “practically non-polluting”.

Recently in January 2025, a separate category “Blue” was introduced for Essential Environmental Services (ESS) required for management of waste generated from domestic/household activities [6].

Category of the cosmetic industries [6]:

A total of 187 industries have been classified by the CPCB, of which the cosmetic industries are sub-categorized into the below 2 sectors:

- (i) Manufacturing of toothpaste and other cosmetic items
- (ii) Manufacturing of tooth powder, talcum powder

The former sector is classified into the Orange category while the latter one into the Green category.

The 3 functions/Pollutant score reported by the CPCB, based on which the Pollution Index (PI) is measured are described in Table No. 1 for the above 2 sectors of cosmetic industries.

Table No. 1: Pollutant score and sectors

Sector	Manufacturing of toothpaste and other cosmetic items	Manufacturing of tooth powder, talcum powder
Category	Orange	Green
Water Pollution Score	65	0
Air Pollution Score	50	25
Hazardous Waste Generation Score	0	0
Pollution Index	73.8	25

Common effluents generated by the cosmetic industries

Referring to Table 1, there is no generation of Hazardous Waste by any of the sectors of Cosmetic Industries.

Although the cosmetic industry may generate various pollutants including:

- Water effluents containing surfactants, oils, pigments, and microplastics.
- Air emissions from boilers, volatile solvents, and aerosol propellants.

- Solid waste like packaging, rejected batches, and chemical sludge.

Improper disposal or treatment of such waste can severely affect water bodies, soil, and air quality, necessitating regulatory oversight (7).

Below are the common measures taken by the cosmetic industries to control the effluents generated:

- (i) Treating water effluents:

The wastewater generated by the cosmetics industry usually has a high amount of chemical oxygen demand



(COD), suspended solids, oils, and fats (colorants, oils, and emulsions).

These could be treated by installing a normal Effluent Treatment Plant (ETP), containing Activated Carbon Filtration to separate fats and oils, a method of Coagulating-flocculating to agglomerate solids in suspension. Ultimately neutralizing the effluent water to normal pH before discarding into the sewage water or using the water for gardening.

If the industries do not have their ETPs installed, they can register with a SPCBs-approved vendor. These vendors collect the effluent wastewater and treat it at the Common Effluent Treatment Plants (CETPs) facilities of the government.

(ii) Treating Air emissions:

There is a trend in the cosmetic industries to install Heating, Ventilation, and Air Conditioning (HVAC) systems along with High-efficiency particulate air filters (HEPA). The HEPA filter in itself filters the air

containing all the particulate matter before releasing it into the atmosphere.

(iii) Solid wastes and Sludges from the ETP:

The solid wastes viz. discarded containers, liners, barrels, ETP sludges, used or spent oil can be collected and given to the Treatment, Storage, and Disposal Facilities (TSDF) accessible in the respective states (8,9).

Table No. 2 indicates an example of the common discharge specifications of wastewater from the daily care cosmetic industry, that are to be complied with before the wastewater is released from the ETPS. This is decided based on the base materials being used, the manufacturing processes of all the products, the finished products, and other process materials. These specifications are defined on a case-to-case basis by the SPCBs and are given to the manufacturer as a part of the CTO approvals (10).

Table No. 2: Example of Discharge Specification of the treated wastewater

Parameters	CPCB Norms
pH	6.5 to 8.5
Temperature	40°C
Color (Pt-Co Scale) in Units	NMT 100 Units
Suspended Solids	NMT 100 mg/L
Oil and Grease	NMT 10 mg/mL
Sulphides	NMT 2 mg/L
Ammonical Nitrogen	NMT 50 mg/L
BOD (5 Days at 20°C)	NMT 30 mg/L
Total dissolved solids	NMT 2100 mg/L
Sodium Absorption Ratio	NMT 26

The regulatory approval process

The government of India has implemented a single window system called the XGN (Xtended Green Node) portal for the submissions of any applications to the SPCBs. The states of Gujarat (11), Karnataka (12), and Madhya Pradesh (13) have so far implemented this online submission system, while all the other states are gradually in the process of implementing this online portal.

The first and foremost step is to make an application for Consent to Establish (CTE) under the Water and Air Acts to the respective SPCB. Before the receipt of the CTE a manufacturer in India cannot begin with the construction of their manufacturing plant.

Below is the list of documents required for the application of CTE:

1. Duly filled Application Form of concerned SPCB – (GPCB on XGN website)



2. Consent Fee Applicable (as required)
3. Signed Undertaking in the prescribed format
4. Site Plan or layout plan along with a roadmap
5. NOC from the local body
6. NOC from the fire department
7. Detailed Project Report with total investment/ CA Certificate
8. Details of Hazardous Waste
9. Details of the manufacturing process
10. Details of Manufacturing Equipment
11. Details of Raw Materials
12. List of Partners
13. Industry Registration Documents – SSI Certificate (Udhyam Registration)
14. ETP Flow diagram
15. Land documents such as rent /lease agreement or ownership proof with Property tax receipt (as applicable)
16. Daily Water Consumption
17. Fuel Details
18. Distance Certificate from Talati
19. Water balance in the region, water source, and required quantity
20. Any other Document specified in the Application Form

Once the CTE has been approved by the SPCBs the cosmetic manufacturers can begin with the construction work of the plant. The CTE is given for a term of 5 Years. Once the plant is ready the manufacturer has to apply for Consent to Operate (CTO) before commencing the operations of manufacturing the cosmetic products.

The list of documents required for the application of CTO is all similar to the ones required for CTE. Additionally, the following documents must be submitted:

1. Analytical report of Treated and untreated effluent (Water, Air, and Hazardous solid waste)
2. Details of water uses and water balance
3. Environmental Statement

While the approval of the CTO has been made, the cosmetic manufacturer can simultaneously apply to their respective State Licensing authority for the approval of the manufacturing license. As and when both approvals are received the cosmetic manufacturers can begin with their production (8,14,15).

The SPCB comes for an inspection of the site for each of the NOC applications before approval. Table No. 3 describes the inspection frequency for each category of the cosmetic industrial sector and the NOC term of the CTO (6).

Table No. 3: NOC Term of CTO and Inspection Frequency

Category	CTO NOC Term	Inspection frequency
Orange	10 Year	Once in One Year
Green	15 Year	Once in Two Year

During the term of CTO NOC, the cosmetic manufacturers have to submit an annual report to the SPCBs. These annual reports contain the yearly data on the effluent wastewater generated and other details of the handling of the discarded solid waste generated by the industry (8,15).

Any non-compliance can lead to revocation of consent and penalties under the Environment (Protection) Act, of 1986 (4,5).

Challenges and compliance issues

Despite the frameworks, several challenges persist:

- There is a lack of awareness in small and medium cosmetic enterprises, leading to a delay in market entry.
- Inconsistent enforcement across different states, as only a few states have implemented a harmonized online system, the others work conditionally.
- ETP (Effluent Treatment Plant) designs are Non-standardized.



- The use of eco-friendly ingredients and packaging is limited.

Initiatives and innovations in sustainable cosmetic manufacturing

To ensure sustainability, several companies are investing in:

- Zero Liquid Discharge (ZLD) systems (16)
- Green chemistry principles
- Biodegradable and recyclable packaging
- Life Cycle Assessment (LCA) tools

Government schemes like the ZED (Zero Effect, Zero Defect) initiative encourage industries to adopt clean technologies (17).

Recommendations and future directions

- Harmonization of environmental audits across states for consistency.
- Mandatory environmental training for compliance officers in cosmetic firms.
- Integration of EPR (Extended Producer Responsibility) in cosmetic packaging.
- R&D incentives for green product formulations and processes (18).

Conclusion

India's regulatory environment, which is headed by the CPSB and SPCBs, offers a fundamental framework for environmental governance in the cosmetic manufacturing sector. Pollution control has been greatly reinforced by the classification of industries and the use of CTE and CTO processing; however, uneven adoption of technology, inconsistent enforcement, and low awareness among SMEs continue to be problems.

Positively industrial trends toward recyclable packaging, green chemistry, and Zero Liquid Discharge systems point to a rising dedication to sustainability.

In the future, it will be crucial to strengthen the integration of circular economy concepts like Extended Producer Responsibility (EPR), mandate environmental training, and increase inter-state harmonization.

In order to achieve sustainable industrial growth with a small ecological footprint, manufacturers,

regulators, and policymakers must work together cooperatively.

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Conflict of interest

The authors declare that there is no conflict of interest.

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