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EDITORIAL ANALYSIS

Rein in Chemical Industry Pollution — Regulatory Gaps and Enforcement Failures

THE HINDU

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SUBJECTS COVERED

ENVIRONMENT

GS PAPERS

GS3

CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator •

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The Hindu 26 March 2026 GS3 Save

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INTERVIEW ANGLE

"India is the world's sixth-largest chemical producer, but its pollution regulation lags behind production growth. How should India modernise its chemical safety framework?"

WHY IN NEWS

Reports of toxic discharges from chemical manufacturing clusters in Gujarat, Maharashtra, and Andhra Pradesh have intensified calls for stronger regulation of India's rapidly growing chemicals sector, which contributes ~$220 billion to GDP but generates significant hazardous waste and effluent pollution.

The Editorial Argument

The Hindu editorial argues that India's chemicals industry operates in a regulatory vacuum — the country lacks a comprehensive chemicals management law, relies on fragmented effluent standards, and suffers from chronic enforcement failures at the SPCB level. The editorial calls for a unified Chemicals Safety Act aligned with global frameworks.

India's Chemical Industry — Scale

METRIC	DATA
Global rank	6th largest chemical producer; 3rd in Asia
Market size	~$220 billion (2025); projected $300 billion by 2030
Contribution to GDP	~7%
Employment	~5 million (direct and indirect)
Major clusters	Gujarat (Vapi, Ankleshwar), Maharashtra (Raigad, Thane), AP (Visakhapatnam), Tamil Nadu (Cuddalore)
Hazardous waste generated	~7.9 million tonnes/year (CPCB 2023)

Regulatory Framework — The Gaps

India does not have a single comprehensive chemicals management law. Regulation is spread across multiple statutes:

LAW/RULE	SCOPE	GAP
Environment Protection Act, 1986	Umbrella environmental law; empowers rule-making	No specific chemical safety provisions
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	Hazardous waste handling, storage, transport, disposal	Weak enforcement; illegal dumping widespread
Manufacture, Storage and Import of Hazardous Chemical Rules, 1989	On-site/off-site emergency plans	Outdated chemical list; not aligned with GHS
Water (Prevention and Control of Pollution) Act, 1974	Effluent discharge standards	SPCBs understaffed; Consent to Operate (CTO) routinely issued without inspection
Air (Prevention and Control of Pollution) Act, 1981	Air emission standards	Industrial emission monitoring is sporadic

The Enforcement Deficit

- **CPCB** (Central Pollution Control Board) sets standards but has no direct enforcement power over industries — this lies with **SPCBs** (State Pollution Control Boards)
- SPCBs are chronically understaffed: national average of ~1 inspector per 500 industries

- **Consent to Operate (CTO):** Many SPCBs issue CTOs based on self-reported data, not independent inspection
- **Online monitoring:** Continuous Emission/Effluent Monitoring Systems (CEMS/CEQMS) mandated for 17 categories of grossly polluting industries, but compliance is estimated at <40%
- **Penalties:** Environmental fines under EPA 1986 were Rs 1 lakh (increased to Rs 5 crore under 2023 amendment) but rarely imposed

Industrial Categorisation

CPCB classifies industries into four colour categories based on pollution potential:

CATEGORY	POLLUTION INDEX	EXAMPLES
Red	PI > 60	Chemicals, petrochemicals, pharmaceuticals, dyes, pesticides
Orange	PI 41-59	Food processing, textiles, auto parts
Green	PI 21-40	Paper products, electrical components
White	PI ≤ 20	Flour mills, ice factories, electronics assembly

Most chemical industries fall under the **Red category**, requiring stricter CTO conditions, annual environmental audits, and real-time effluent monitoring.

The Planetary Boundaries Connection

The editorial invokes the **planetary boundaries framework** (Johan Rockstrom, Stockholm Resilience Centre, 2009): the boundary for "novel entities" (synthetic chemicals, plastics, endocrine disruptors) has been **breached** as of 2022. Over 350,000 synthetic chemicals are registered globally, but fewer than 5% have been assessed for environmental and health safety.

International Comparison

COUNTRY	CHEMICAL SAFETY LAW	KEY FEATURE
EU	REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals)	Burden of proof on manufacturers; 23,000+ substances registered
US	Toxic Substances Control Act (TSCA, amended 2016)	EPA evaluates and restricts chemicals
China	Measures for Environmental Management of New Chemical Substances (Order 12)	Pre-manufacture registration required
India	No comprehensive chemicals law	Fragmented; no pre-manufacture safety assessment

Policy Recommendations

1. **Chemicals Safety Act:** Enact a unified law requiring pre-manufacture safety assessment for new chemicals — shift burden of proof from regulators to manufacturers
2. **National Chemical Inventory:** Create a digital registry of all chemicals manufactured, imported, and used in India
3. **SPCB reform:** Increase inspector-to-industry ratio; mandate third-party audits; digitise CTO process
4. **GHS alignment:** Update India's chemical classification to the Globally Harmonised System (GHS) for labelling and safety data sheets

UPSC RELEVANCE

CPCB/SPCB structure, Red/Orange/Green/White classification, EPA 1986, Hazardous Waste Rules, REACH (EU), planetary boundaries

Environmental pollution — industrial regulation, chemical safety, enforcement gaps, international frameworks

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INDIA'S CHEMICAL INDUSTRY:

Global rank: 6th largest; market: ~$220 billion

Hazardous waste: ~7.9 million tonnes/year (CPCB 2023)

Major clusters: Vapi, Ankleshwar (Gujarat); Raigad (Maharashtra); Visakhapatnam (AP)

POLLUTION CONTROL FRAMEWORK:

CPCB: Central Pollution Control Board (under MoEFCC); sets standards

SPCBs: State boards; enforcement authority; ~1 inspector per 500 industries

EPA 1986: Umbrella law; penalties increased to Rs 5 crore (2023 amendment)

CTO: Consent to Operate — required for all polluting industries

CEMS/CEQMS: Real-time monitoring; mandated for 17 categories; compliance <40%

INDUSTRIAL CLASSIFICATION:

Red (PI >60): Most polluting — chemicals, pharmaceuticals, dyes

Orange (41-59): Moderate — food processing, textiles

Green (21-40): Low — paper, electrical

White (≤20): Non-polluting — flour mills, ice factories

OTHER RELEVANT FACTS:

REACH (EU): World's most comprehensive chemicals law; 23,000+ substances registered

Planetary boundaries: "Novel entities" boundary breached (2022)

Bhopal Gas Tragedy (1984): World's worst industrial disaster; Union Carbide; MIC gas

National Green Tribunal (NGT): Adjudicates environmental disputes (est. 2010)

GHS: Globally Harmonised System for chemical classification and labelling

Sources: The Hindu, CPCB, MoEFCC

CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator

linkedin.com/in/epicbharat

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