BP302T · B.PHARM THEORY

BP302T Environmental Sciences

Unit V — Government Policies & Compliance

Pills & Python Notes

From-zero teaching standard: every technical term is defined before use.

Syllabus coverage: Unit V (3 hours).

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Chapter 5 — Unit V: Government Policies, Compliance, and Practical Exposure

5.1 Learning objectives

After studying this chapter, you will be able to:

1. Describe the Environment (Protection) Act, 1986 and the Water (Prevention and Control of Pollution) Act.
2. Explain the role of the National Green Tribunal (NGT), CPCB and SPCBs.
3. Describe government initiatives: Swachh Bharat Abhiyan, Namami Gange Programme, Jal Jeevan Mission.
4. Explain ISO-14000 series and its benefits for pharma.
5. List what to observe during practical exposure (plant/ETP visit) for environmental compliance.

5.2 Definitions (start from zero)

- **Environmental law:** Rules made by the government that everyone — including factories — must follow to protect air, water and land; breaking them brings punishment.
- **Umbrella legislation:** One broad law that gives the government wide powers to make many specific rules under it (the Environment (Protection) Act, 1986 is India's umbrella environment law).
- **Consent to establish / operate:** Permission from the State Pollution Control Board — first to build a factory, then to run it — granted only if pollution control arrangements are satisfactory.
- **NGT (National Green Tribunal):** A special court-like body that hears environmental cases quickly.
- **ISO-14000:** A family of international standards for managing a company's environmental responsibilities (ISO 14001 is the certifiable one for Environmental Management Systems).

5.3 Terminology you must know

- **CPCB:** Central Pollution Control Board — national body for standards and coordination.
- **SPCB:** State Pollution Control Board — state body giving consents and enforcing in its state.
- **Effluent standards:** Legal limits on what a factory's wastewater may contain.
- **Emission standards:** Legal limits on what a chimney/vehicle may release into air.
- **EMS (Environmental Management System):** A company's organised system to manage its environmental duties — plan, do, check, act.
- **PDCA:** Plan–Do–Check–Act — the continuous-improvement cycle behind ISO 14001.
- **Manifest:** The tracking document accompanying hazardous waste from factory to disposal facility.

5.4 Explanations

5.4.1 Environment (Protection) Act, 1986

Technical concept: India's umbrella environmental legislation, enacted after the Bhopal gas tragedy (1984), empowering the Central Government to protect and improve the environment and to make rules on all aspects of pollution. **Simple explanation:** After the Bhopal tragedy showed India needed one strong law, the 1986 Act gave the Central Government a "master key" — power to set standards, order closure of polluting units, and make specific rules (like waste management rules) under it. **Example:** The Biomedical Waste Management Rules and hazardous waste rules are all made under this umbrella Act. **Key takeaway:** One parent Act, many rule-children — the legal backbone of Indian environmental protection. (For exact sections and current amendments, always refer to the latest official notifications.)

5.4.2 Water (Prevention and Control of Pollution) Act

Technical concept: The law that created the Pollution Control Boards and requires industries to obtain consent before discharging effluents; sets effluent standards and penalties. **Simple explanation:** This Act says: no factory may pour wastewater into rivers without the State Board's permission ("consent"), and the wastewater must meet fixed cleanliness standards — break this and face closure or prosecution. **Example:** A pharma unit applies for "consent to operate" from its SPCB, which inspects its ETP and effluent quality before granting/renewing permission. **Flowchart (draw):** "Apply to SPCB → inspection of ETP & records → consent granted with conditions → regular monitoring → renewal; violation → notice/closure/prosecution". **Key takeaway:** The Water Act = Boards + consents + standards + punishment. (A related Air (Prevention and Control of Pollution) Act, 1981 similarly covers air emissions and extends the Boards' role to air.)

5.4.3 NGT, CPCB and SPCBs

Technical concept: NGT (established 2010) gives speedy environmental justice; CPCB lays down national standards and coordinates; SPCBs implement through consents, monitoring and enforcement in each state. **Simple explanation:** Think of a cricket setup — CPCB writes the rulebook, SPCBs are the on-field umpires in each state, and NGT is the tribunal that quickly settles disputes and punishes offenders. **Example:** Citizens affected by a polluting unit can approach the NGT for quick relief instead of waiting years in ordinary courts; the SPCB inspects the unit and reports. **Key takeaway:** CPCB = standards, SPCB = state enforcement, NGT = fast environmental justice.

5.4.4 Government initiatives

Swachh Bharat Abhiyan (launched 2014): National cleanliness mission — toilets, solid waste management, clean streets and public places; pharma relevance: clean premises, proper waste handling. **Namami Gange Programme:** Flagship mission to clean and rejuvenate the Ganga — sewage treatment plants, industrial effluent monitoring, river-surface cleaning; pharma relevance: no untreated effluent into the Ganga basin. **Jal Jeevan Mission (launched 2019):** Providing tap water to rural households with quality surveillance; pharma relevance: protecting water sources from industrial contamination keeps drinking water safe. **Key takeaway:** Three missions, one message — clean surroundings, clean rivers, clean drinking water; industry must do its part.

5.4.5 ISO-14000 series

Technical concept: International standards for Environmental Management Systems; ISO 14001 specifies EMS requirements a company can be certified against, built on the PDCA cycle. **Simple explanation:** ISO 14001 is like a "fitness certificate" for a company's green habits — the company writes an environment policy, sets targets (less waste, less energy), trains staff, checks progress and improves continuously; an external auditor then certifies it. **Example:** A pharma exporter gets ISO 14001 certified — global buyers trust its environmental discipline, and the PDCA discipline itself cuts waste and cost. **Diagram (draw):** PDCA wheel — Plan (policy, targets) → Do (implement, train) → Check (monitor, audit) → Act (correct, improve) → back to Plan. **Key takeaway:** ISO 14001 = organised, audited, continuously improving environmental management — good for compliance, reputation and business.

5.4.6 Practical exposure — what to observe on a plant/ETP visit

Checklist to carry: (1) ETP walkthrough — stages in order, operator logbook, treated-water quality records; (2) Waste storage yard — segregated, labelled, covered hazardous waste area with manifest records; (3) Colour-coded biomedical bins (in hospital visits); (4) Chimney/stack and ambient air monitoring points; (5) Water purification plant — RO/UV/distillation train and loop; (6) Green belt around the factory; (7) Consent copies and compliance files; (8) Safety gear and spill-control kits. **Key takeaway:** A good pharmacist "reads" a factory like a prescription — every tank, bin and record tells whether the unit respects the environment.

5.5 Classifications

Environmental laws (key): Environment (Protection) Act 1986 (umbrella); Water Act 1974 (boards, consents, effluent standards); Air Act 1981 (emissions, board powers for air). **Regulatory bodies:** CPCB (national standards/coordination), SPCB (state consent/enforcement), NGT (speedy adjudication). **Government initiatives:** Swachh Bharat (cleanliness), Namami Gange (river rejuvenation), Jal Jeevan (rural tap water). **ISO-14000 family:** ISO 14001 (EMS requirements — certifiable), plus supporting standards for auditing, labelling and life-cycle assessment.

5.6 Mechanisms / processes

- **Consent mechanism:** Application → SPCB scrutiny/inspection → consent with conditions (validity period) → compliance monitoring → renewal or refusal.
- **Enforcement chain:** Violation detected → show-cause notice → opportunity to comply → closure direction/prosecution under the Acts → appeal to NGT.
- **PDCA cycle:** Plan environmental objectives → Do implement and train → Check through monitoring and internal audit → Act on findings and improve → repeat.

5.7 Diagrams (describe for drawing)

1. **Legal pyramid:** Top — Environment (Protection) Act 1986 (umbrella) → middle — Water Act, Air Act, waste management rules → base — CPCB/SPCB standards, consents, NGT orders.
2. **Consent flowchart** as in 5.4.2.
3. **PDCA wheel** as in 5.4.5.
4. **Regulatory map:** Centre — pharma factory; arrows to CPCB (standards), SPCB (consent/inspection), NGT (disputes), TSDF/CBMWTF (waste destination).

5.8 Flowcharts

Compliance journey of a pharma unit: Obtain consent to establish → build ETP/waste systems → obtain consent to operate → segregate & treat waste daily → maintain manifests & records → face SPCB inspections → renew consent → continuous improvement (ISO 14001 PDCA).

5.9 Infographic concept box

"Know Your Green Guardians" — five badges: 1986 Act (umbrella shield), Water Act (droplet + board), NGT (gavel, "fast justice since 2010"), CPCB/SPCB (rulebook + umpire), ISO 14001 (certificate wheel PDCA); missions strip below: Swachh Bharat (broom), Namami Gange (river), Jal Jeevan (tap); footer: "Law + missions + management = compliance culture."

5.10 Tables

Table 5.1 — Key laws at a glance

Law	Year	Core idea
Environment (Protection) Act	1986	Umbrella law; Central Govt. powers, standards, rules
Water (Prevention and Control of Pollution) Act	1974	Boards, consent system, effluent standards
Air (Prevention and Control of Pollution) Act	1981	Emission control; Boards' air powers

Table 5.2 — Bodies and roles

Body	Role
CPCB	National standards, guidelines, coordination
SPCB	State consents, inspection, enforcement
NGT (est. 2010)	Speedy adjudication of environmental disputes

Table 5.3 — Government initiatives

Initiative	Focus
Swachh Bharat Abhiyan (2014)	Cleanliness, sanitation, solid waste management
Namami Gange Programme	Ganga cleaning — STPs, effluent control
Jal Jeevan Mission (2019)	Tap water for rural homes with quality checks

5.11 Examples

1. A pharma unit frames its SPCB "consent to operate" certificate in the admin office — compliance made visible.
2. An SPCB inspector checks ETP logbooks and takes an effluent sample for analysis.
3. A village gets its first tap connection under Jal Jeevan Mission — protected from upstream pollution by strict effluent control.
4. A pharma exporter wins a global tender partly because of ISO 14001 certification.
5. During Namami Gange monitoring, a tannery cluster (not pharma, but same basin discipline) is ordered to install ETPs — showing basin-level enforcement.

5.12 Analogies

- **The 1986 Act is an umbrella:** One big umbrella (the Act) shelters many smaller rules (waste rules, standards) — all stay dry under it.
- **Consent is a driving licence:** You need a licence to drive (consent to operate); break traffic rules and it gets suspended — same for factories.
- **ISO 14001 PDCA is a fitness routine:** Plan diet (targets), do exercise (implement), check weight (audit), act on results — repeat forever.

5.13 Pharmacy relevance

- No pharma unit runs without SPCB consents — pharmacists handle applications, inspections and renewals.
- Waste manifests, ETP records and training files are legal documents — the pharmacist ensures they are audit-ready.
- ISO 14001 certification opens export markets — pharmacists lead EMS implementation in plants.
- Community pharmacists support Swachh Bharat through clean premises and waste discipline.

5.14 India context

- The 1986 Act was born from the Bhopal gas tragedy — India's resolve that industry must never again harm at that scale.
- NGT benches across India have ordered closure/compensation against polluting units — speedy justice in action.
- Namami Gange and Jal Jeevan show the government's scale of ambition — industry compliance is the other half of the partnership.

5.15 Key points

1. Environment (Protection) Act, 1986 = umbrella law after Bhopal; enables standards and rules.
2. Water Act, 1974 = Boards + consent system + effluent standards (+ Air Act, 1981 for emissions).
3. CPCB sets standards; SPCB grants consent and enforces; NGT (2010) gives fast justice.
4. Missions: Swachh Bharat (cleanliness), Namami Gange (river), Jal Jeevan (tap water).
5. ISO 14001 = certifiable EMS on the PDCA cycle — compliance + reputation + savings.
6. Practical exposure: observe ETP, waste yard, bins, records, consents, green belt.

5.16 Common confusions

- **CPCB vs SPCB vs NGT:** CPCB = national standards; SPCB = state permission/enforcement; NGT = court-like speedy justice — three different jobs.
- **Consent to establish vs operate:** Establish = permission to build; operate = permission to run — both needed, in that order.
- **Act vs Rules:** Act = the law passed by Parliament; Rules = detailed procedures made under the Act (e.g., BMW Rules under the 1986 Act).
- **ISO 14000 vs ISO 14001:** 14000 = the family; 14001 = the specific certifiable EMS standard.

5.17 Common mistakes

1. Operating or expanding a unit without valid consent — a punishable offence.
2. Treating ETP records as "just paperwork" — they are legal evidence.
3. Confusing NGT with an ordinary civil court — it is a specialised fast-track environmental tribunal.
4. Thinking ISO 14001 is a one-time certificate — it needs continuous PDCA and surveillance audits.
5. Assuming government missions are "government's job only" — industry compliance is half the mission.

5.18 Mnemonics

- **Laws:** "**1986 — Umbrella; 1974 — Water; 1981 — Air**" → "**86 Umbrella, 74 Water, 81 Air** (countdown 86→74→81)".
- **Bodies:** "**C**entral writes, **S**tate enforces, **N**GT judges fast" → "**C-S-N: Create, Supervise, Nail offenders**".
- **Missions:** "**S**wachh (clean), **G**ange (river), **J**al (water)" → "**SGJ — Surroundings, Ganga, Jal**".

5.19 Exam summary

India's environmental governance rests on the Environment (Protection) Act, 1986 — the umbrella law born after Bhopal — and the Water (Prevention and Control of Pollution) Act, 1974 (with the Air Act, 1981), which created the Pollution Control Boards and the consent system for industries. CPCB sets national standards and guidelines, SPCBs grant consents and enforce them in each state, and the National Green Tribunal (2010) delivers speedy environmental justice. Flagship missions — Swachh Bharat Abhiyan (cleanliness), Namami Gange (river rejuvenation) and Jal Jeevan Mission (rural tap water) — need industry's compliance partnership. ISO 14001 gives companies a certifiable Environmental Management System on the Plan–Do–Check–Act cycle. Practical exposure means observing ETPs, waste yards, segregation bins, monitoring points, records and consents during plant visits.

5.20 One-minute revision

1986 Act = umbrella (post-Bhopal). Water Act 1974 = boards + consent. CPCB writes rules, SPCB enforces in state, NGT judges fast (2010). Missions: Swachh-clean, Gange-river, Jal-taps. ISO 14001 = EMS certificate on PDCA wheel. Plant visit: ETP, bins, waste yard, records, consent, green belt.

5.21 Exam questions

Short/long questions:

1. Describe the salient features of the Environment (Protection) Act, 1986.
2. Explain the consent mechanism under the Water (Prevention and Control of Pollution) Act.
3. Write notes on: (a) NGT (b) CPCB (c) SPCB.
4. Describe any two government initiatives for environmental protection and their pharma relevance.
5. Explain ISO 14001 and the PDCA cycle with a diagram.

MCQs:

1. The Environment (Protection) Act was enacted in: (a) 1974 (b) 1981 (c) 1986 (d) 2010 — **Ans: (c)**
2. NGT was established in: (a) 1986 (b) 2000 (c) 2010 (d) 2019 — **Ans: (c)**
3. Consent to operate is granted by: (a) CPCB (b) SPCB (c) NGT (d) ISO — **Ans: (b)**
4. ISO 14001 is based on the: (a) ABC cycle (b) PDCA cycle (c) ETP cycle (d) water cycle — **Ans: (b)**
5. Jal Jeevan Mission aims at: (a) river cleaning (b) rural tap water (c) air quality (d) noise control — **Ans: (b)**

Viva questions:

1. Why is the 1986 Act called an umbrella legislation?
2. What is the difference between consent to establish and consent to operate?
3. Name the three flagship missions and one line on each.
4. What does PDCA stand for?
5. List four things to observe during an ETP visit.

Application-based questions:

1. A new pharma unit is being set up in your state. List the environmental permissions and documents it needs before starting production.
2. During an SPCB inspection, the ETP logbook is blank for a week. Analyse the legal risk and advise the management.
3. Your college plans an industrial visit to a pharma ETP. Prepare a one-page observation checklist for students.

5.22 References

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2. Rajagopalan, R. *Environmental Studies*. Oxford University Press.
3. Joseph, B. *Environmental Studies*. Tata McGraw Hill.