Environment & Ecology · GS - III

Discuss the public health and environmental implications of mercury contamination in consumer products. How can India strengthen the regulation of hazardous chemicals in cosmetics?

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 27/11/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Mercury toxicity, heavy metal contamination, consumer safety, Minamata Convention, cosmetic regulation, environmental pollution, surveillance, public health governance

Model Answer

The detection of mercury in skin-lightening creams in Kerala highlights the risks associated with hazardous chemicals in unregulated consumer products. Mercury is a toxic heavy metal that can cause serious health problems even when exposure occurs through everyday products.

Public health implications

1. **Renal damage:** Inorganic mercury compounds can accumulate in the kidneys, potentially causing proteinuria, impaired renal function and, in severe cases, kidney failure.
2. **Neurological effects:** Prolonged exposure may affect memory, concentration, coordination and nervous system functioning.
3. **Vulnerable populations:** Pregnant women and children require particular protection because mercury exposure can affect foetal and early neurological development.
4. **Delayed diagnosis:** Consumers may continue using contaminated products without recognising the source of their symptoms.

Environmental consequences

Mercury released during manufacturing, disposal or wastewater discharge can contaminate soil and aquatic ecosystems. Microorganisms can convert certain forms of mercury into methylmercury, which bioaccumulates in aquatic food chains and exposes humans through contaminated fish.

Strengthening regulatory responses

1. **Product surveillance:** Regular laboratory testing and market inspections should identify prohibited mercury concentrations in cosmetics.
2. **Supply-chain accountability:** Manufacturers, importers and sellers must be held responsible for ingredient disclosure, labelling and compliance.
3. **Consumer awareness:** Public campaigns should discourage the use of unlabelled skin-lightening products.
4. **Health monitoring:** Hospitals and public health authorities should improve the identification and reporting of heavy-metal poisoning.

India's obligations under the Minamata Convention on Mercury reinforce the need to control mercury-related health and environmental risks.

Effective regulation must combine scientific testing, consumer protection, enforcement and environmental monitoring to prevent avoidable toxic exposure.

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