Mercury in cosmetics and the health risks

Mains: *GS II | Health*

Why in News?

A teenager in Kerala's Malappuram district developed membranous nephropathy, a severe kidney disorder, following prolonged use of a fairness cream that reportedly tested at 12,500 ppm of mercury.

What is the Malappuram case?

- The case has brought renewed scrutiny to the widespread circulation of unregulated skin-lightening creams sold through social media pages, messaging apps, informal markets, and cross-border smuggling networks.
- India's Cosmetics Rules, 2020 restrict unintentional mercury in most finished cosmetics to **1 part per million (ppm).**
- India ratified the **Minamata Convention on Mercury** in 2018, cheap, unlabelled, or mislabelled creams continue to reach consumers by promising rapid skin lightening.

How mercury works in skin-Lightening creams and its health imapcts?

- In skin-lightening formulations, inorganic mercury compounds (such as ammoniated mercury, mercurous chloride, or calomel) inhibit **tyrosinase**, the key enzyme required to produce **melanin** the pigment that gives skin its colour.
- Because melanin production drops quickly, blemishes appear to fade within days, encouraging continued nightly use even as toxic metal accumulates in the body.
- **Severe kidney damage (Nephrotoxicity) -** Absorbed through the skin, mercury accumulates in the kidneys and damages their filtering units (glomeruli), triggering **membranous nephropathy** and nephrotic syndrome marked by heavy protein loss in urine, facial and leg swelling, and low blood pressure.
- **Neurological and systemic toxicity-** Chronic exposure affects the central and peripheral nervous systems, causing headaches, irritability, fatigue, memory impairment, tremors, and numbness or tingling in limbs.
- **Dermatological harm-** Repeated application can cause rashes, uneven pigmentation, scarring, and when combined with undeclared potent steroids skin thinning and heightened vulnerability to infections.
- **Secondary exposure to family members -** Mercury can transfer to infants, pregnant women, and household members through direct skin contact, shared towels, or bedding, posing heightened risks to developing nervous systems.

What are the regulatory, international, and social dimensions?

Dimension	Existing framework and ground reality

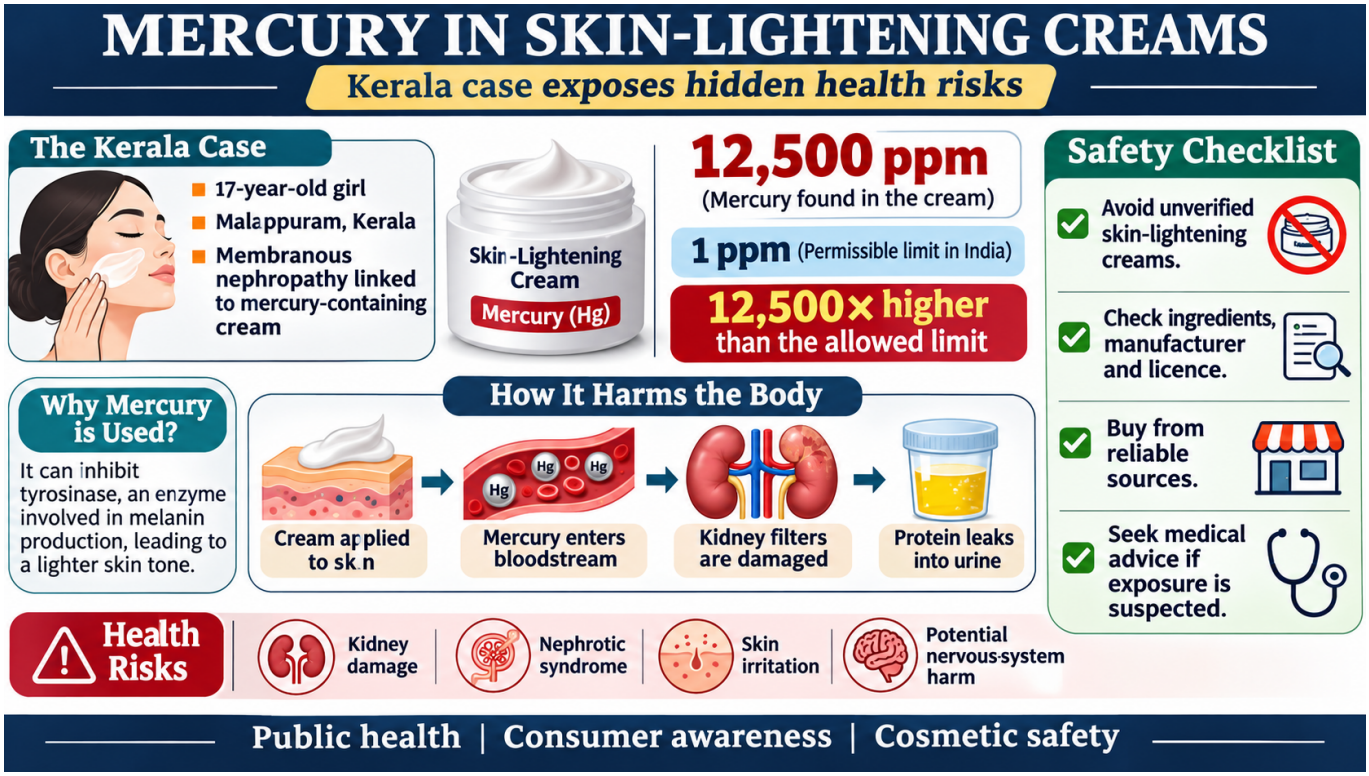
Domestic Legal Framework	Governed by the **Drugs and Cosmetics Act, 1940** and the **Cosmetics Rules, 2020.** It caps unintentional trace mercury in finished cosmetics at **1 ppm** (with specific rules for eye-area preservatives) and mandate full ingredient disclosure, batch numbers, and manufacturer/importer details; criminal liability also arises under the **Bharatiya Nyaya Sanhita (BNS)** for selling noxious products and cheating.
International Treaty Obligations	Under the **Minamata Convention on Mercury** (ratified by India in **2018**), Parties are legally obligated to phase out the manufacture, import, and export of mercury-added cosmetics exceeding 1 ppm.
Digital Commerce and Influencer Economy	Direct-to-consumer sales via Instagram reels, WhatsApp numbers, and third-party e-commerce listings often bypass traditional retail checks, while paid or promotional influencer endorsements lend false credibility to unverified products.
Sociological Drivers: Colourism	Deep-rooted social bias equating fair skin with beauty, marriage prospects, and social status sustains strong consumer demand for quick-fix whitening products despite known health hazards.

What are the key challenges in curbing toxic cosmetics?

- **Fragmented enforcement across online -** State drug control departments struggle to track small unlicensed manufacturing units, smuggled foreign creams, and sellers operating through ephemeral social media handles without invoices or traceable addresses.
- **Deceptive labelling and hidden adulterants-** Many hazardous creams either omit ingredient lists altogether or market themselves as "herbal" (claiming extracts like turmeric or sandalwood) while concealing mercury and steroids.
- **Regulatory gaps -** Clear due-diligence obligations for digital intermediaries and social media influencers promoting health or cosmetic claims remain weakly enforced on the ground.
- **Delayed clinical diagnosis -** Early symptoms such as fatigue, mild swelling, or frothy urine are often overlooked until significant renal or neurological injury has already occurred.

What is the way forward?

- Empower the Central Drugs Standard Control Organisation (CDSCO) and State Drugs Control Departments with expanded laboratory testing, regular market raids, and customs vigilance against smuggled cosmetics.
- Require online marketplaces and social media advertisers to verify CDSCO registration, manufacturer credentials, and complete ingredient disclosures before listing or promoting cosmetics, alongside strict penalties under the Consumer Protection Act for misleading endorsements.
- Implement recommendations by expert panels under the Drugs Controller General of India (DCGI) to eliminate remaining exemptions for mercury in cosmetic formulations in line with Minamata Convention goals.
- Run sustained awareness campaigns educating youth and families on reading ingredient labels, recognizing warning signs of kidney toxicity, and rejecting harmful fairness norms in favour of evidence-based dermatological care.



Reference

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