Heavy Metals Pollution in the Cauvery River

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Researchers from Tamil Nadhave reported alarming levels of heavy metal pollution in the Cauvery River and its fish species, raising concerns over aquatic ecosystem health and food safety.

About Heavy Metals

The term “heavy metal” refers to metallic elements with high density and toxicity even at low concentrations.

Examples: Mercury (Hg), Cadmium (Cd), Arsenic (As), Chromium (Cr), Thallium (Tl), and Lead (Pb).

Naturally occurring components of the Earth’s crust, but can enter the environment through anthropogenic activities.

Sources of Heavy Metal Contamination

Industrial discharge: From tanneries, electroplating, mining, and textile units.

Agricultural runoff: Use of chemical fertilizers and pesticides.

Urban wastewater: Improper disposal of sewage and e-waste.

Atmospheric deposition: Acid rain and combustion emissions.

Bioaccumulation and Biomagnification

Bioaccumulation: Heavy metals accumulate in organisms over time faster than they are metabolized or excreted.

Biomagnification: Their concentration increases progressively up the food chain, posing risk to predatory fish, birds, and humans.

Health Impacts

Lead (Pb): Neurological damage, developmental issues in children.

Mercury (Hg): Affects brain and nervous system (Minamata disease).

Cadmium (Cd): Kidney damage and skeletal deformities (Itai-Itai disease).

Arsenic (As): Skin lesions, cancers, and cardiovascular disorders.

Environmental and Policy Concerns

Contamination threatens Cauvery basin biodiversity and livelihoods dependent on fishing.

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Reflects poor industrial effluent management and lack of real-time monitoring systems in Indian rivers.

Calls for strict enforcement under:

oWater (Prevention and Control of Pollution) Act, 1974

oEnvironment (Protection) Act, 1986

oNational Water Quality Monitoring Programme (NWQMP)