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Heavy Metals Contaminating India's Rivers

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Why in News

Recently, the **Central Water Commission (CWC)** has reported that the samples from **two-thirds of the water quality stations** spanning India's major rivers are contaminated by **one or more heavy metals, exceeding safe limits** set by the **Bureau of Indian Standards**.

- The samples from only **one-third** of water quality stations were **safe** whereas **65%** were **polluted** by **heavy metals**.

Heavy metals are naturally occurring elements that have a high atomic weight and a density of at least 5 times greater than that of water.

- The exercise was **limited to surface water** and **did not cover groundwater** contamination.
- The **presence of metals** in drinking water to **some extent** is **unavoidable** and certain metals, in **trace amounts**, are required for **good health**. However, when present above safe limits, they are associated with a range of disorders.

Long-term exposure to the heavy metals may result in physical, muscular, and neurological degenerative processes that mimic Alzheimer's disease, Parkinson's disease, muscular dystrophy and multiple sclerosis.

River	Chromium	Lead	Iron
Ganga	Exceeds		Exceeds
Yamuna			Exceeds
Brahmaputra			Exceeds
Ramganga		Exceeds	
Rapti	Exceeds		Exceeds
Narmada			Exceeds
Godavari			Exceeds

Key Points

- **Iron** emerged as the **most common contaminant** with **above safe limits** across the country.
- **Arsenic and zinc** are the two toxic metals whose concentration is always found within the limits.

Arsenic contamination is a major environmental issue that affects **groundwater**.

- The other **major contaminants** found in the samples were **lead, nickel, chromium, cadmium and copper**.
- The contamination of water sites depends on the **season**. As the **varied presence of contaminants** is found in **different seasons**. Thus, the water samples were collected in **three different** seasons: **Non-Monsoon, and Monsoon**.
 - **Non-Monsoon Period:** Lead, cadmium, nickel, chromium and copper contamination were more common in this period.
 - **Monsoon Period:** Iron, lead, chromium and copper exceeded 'tolerance limits' in this period most of the time.

Reasons for Contamination of Surface Water

- The main sources of heavy metal pollution are **mining**, milling, plating and surface finishing industries that discharge a variety of toxic metals into the environment.
- The population growth and rise in agricultural and industrial activities are also responsible for contamination of surface water.

Source: TH