Syllabus subtopic: Conservation, environmental pollution and degradation, environmental impact assessment.

Prelims focus: about heavy metals, Central water commission, Bureau of Indian Standards

Mains focus: impact of water pollution on human health, govt. efforts to check pollution

News: Samples taken from two-thirds of the water quality stations spanning India’s major rivers showed contamination by one or more heavy metals, exceeding safe limits set by the Bureau of Indian Standards (BIS).

About the findings of the report

The findings are part of a report, which is the third edition of an exercise conducted by the Central Water Commission (CWC) from May 2014 to April 2018.

Samples from only one-third of water quality stations were safe. The rest, or 287 (65%) of the 442 sampled, were polluted by heavy metals. Samples from 101 stations had contamination by two metals, six stations saw contamination by three metals.

Iron emerged as the most common contaminant with 156 of the sampled sites registering levels of the metal above safe limits. None of the sites registered arsenic levels above the safe limit.

“Arsenic and zinc are the two toxic metals whose concentration was always obtained within the limits throughout the study period,” the report noted.

Not all the rivers are equally sampled. Several rivers have only been sampled at a single site whereas others such as the Ganga, the Yamuna and the Godavari are sampled at multiple sites. Marked variation was found in contamination levels depending on the season.

Samples were collected in three different seasons: pre-monsoon, monsoon and post-monsoon.

Sources and impact of heavy metals contaminated 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 presence of metals in drinking water is to some extent unavoidable and certain metals, in trace amounts, required for good health. However, when present above safe limits, they are associated with a range of disorders.
Long-term exposure to the abovementioned heavy metals may result in slowly progressing physical, muscular, and neurological degenerative processes that mimic Alzheimer’s disease, Parkinson’s disease, muscular dystrophy and multiple sclerosis.

Other heavy metals found

The other major contaminants found in the samples were lead, nickel, chromium, cadmium and copper. The study spanned 67 rivers in 20 river basins. Lead, cadmium, nickel, chromium and copper contamination were more common in non-monsoon periods while iron, lead, chromium and copper exceeded ‘tolerance limits’ in monsoon periods most of the time.

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About Bureau of Indian Standards (BIS)

1. The Bureau of Indian Standards (BIS) is the national Standards Body of India working under the aegis of Ministry of Consumer Affairs, Food & Public Distribution.
2. It is established by the Bureau of Indian Standards Act, 1986.
3. The Minister in charge of the Ministry or Department having administrative control of the BIS is the ex-officio President of the BIS.
4. Composition: As a corporate body, it has 25 members drawn from Central or State Governments, industry, scientific and research institutions, and consumer organisations.
5. It also works as WTO-TBT (Technical Barriers to Trade Agreement) enquiry point for India.

About Central Water Commission (CWC)

• CWC is apex Technical Organization of India in the field of Water Resources.

• It is presently functioning as an attached office of Union Ministry of Water Resources, River Development and Ganga Rejuvenation.

• It is charged with the general responsibilities of initiating and coordinating schemes of control, utilization and conservation of water resources throughout the country.

• These schemes are meant for purpose of Flood Control, Irrigation, Navigation, Drinking
Water Supply and Water Power Development.

- It also undertakes the investigations, construction and execution of any such schemes as required.

- The work of the Commission is divided among 3 wings namely:
  1. River Management Wing (RM),
  2. Designs and Research Wing (D&R) and
  3. Water Planning and Projects Wing (WP&P).

Heavy metals