



Special Properties of River Ganga

A study commissioned by the Union Water Resources Ministry to probe the “**unique properties**” of the **Ganga** found that the river water contains a significantly **higher proportion of organisms with antibacterial properties**.

- Other Indian rivers also contain these organisms but the Ganga, particularly in its upper Himalayan stretches, has more of them.
- The study, ‘**Assessment of Water Quality and Sediment To Understand Special Properties of River Ganga,**’ began in **2016** and was conducted by the **Nagpur-based National Environmental Engineering and Research Institute (NEERI), a Council of Scientific and Industrial Research (CSIR) lab.**
- As part of the assessment, **five pathogenic species of bacteria (Escherichia, Enterobacter, Salmonella, Shigella, Vibrio)** were selected and isolated from the Ganga, Yamuna and the Narmada and their numbers **compared with the bacteriophages** present in the river water.
 - Because **bacteriophages are a kind of virus that kill bacteria**, they are **frequently found in proximity to each other.**
 - In the river Ganga, the **bacteriophages were detected to be approximately 3 times more** in proportion than bacterial isolates.
 - These bacteriophages hold great potential as an **antibacterial pharmaceutical.**

Other Findings

- The water quality at most locations in the **River remains below the BIS Drinking Water Quality Standards.**
- Heavy metals like **chromium, aluminium, manganese, arsenic, chromium and lead** were found above the Drinking Water Quality Standards at select locations.
- Organic contamination, mostly from **domestic sewage** were found.
- The overall water quality **remains below the drinking water standards** for chemical parameters but also pollution due to discharge of domestic sewage warranting immediate attention in controlling sewage and waste disposal even from villages and towns besides cities.
- **Microbiological parameters viz., total coliforms, faecal coliforms and E. Coli** also show an increasing trend in terms of degree of contamination.
- Major causes of finding **pharmaceutical and hormones in River water** are sewage/industrial wastewater discharge and anthropogenic activities.
- **Presence of high organic (disposal of ritualistic material and offering such as flower, milk etc.)** and inorganic (such as agricultural and industrial flow containing phosphorus, nitrogen and micro-nutrients) pollutants and disposal of sewage support the growth of planktons in river Ganga. Thus, disposal of **ritualistic material must be prevented from entering the river.**