Title : Evaluating Long-Term Public Health Risks from the Yamuna River Pollution in Delhi

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Abstract : Delhi, a mega-city, has faced serious pollution issues for decades. This is due to rapid urban growth, industrial development, and poor sewage treatment. The pollution in Delhi is particularly severe. This ongoing environmental neglect poses a major health risk to the city's residents, yet there has been no thorough long-term assessment.

This study aims to gather and review historical water quality data from the Central Pollution Control Board (CPCB) and the Delhi Pollution Control Committee (DPCC) from 2015 to 2025. We want to evaluate the overall environmental risk and its potential health effects. Our research looks into the link between high levels of pollutants and reported health problems in riverside communities. We highlight the gap between policy initiatives and actual results.

Our method includes a systematic review of available water quality data, focusing on key factors like Biochemical Oxygen Demand (BOD), Faecal Coliform (FC), and Dissolved Oxygen (DO) at important monitoring sites such as Palla, Wazirabad, and ITO Bridge. We conduct a correlation analysis between pollution levels and public health data. This includes records of waterborne diseases in impacted areas, allowing us to identify clear trends and effects.

The compiled historical data shows consistently high pollution levels in the Delhi section of the Yamuna River. For example, DPCC data from July 2025 indicated FC levels at ITO Bridge reached 9,200,000 MPN/100 ml, far above the safe bathing standard of 2,500 MPN/100 ml. CPCB data from 2021 recorded a maximum BOD value of 127 mg/L at Asgarpur, which is much higher than the safe limit of less than 3 mg/L. At the same time, dissolved oxygen levels are critically low or nonexistent in the most polluted areas.

Our analysis also points out a strong connection between high pollution periods and seasonal outbreaks of waterborne diseases in communities that depend on the river. The gap between Delhi’s sewage generation, around 3,600 MLD in 2024, and its treatment capacity, which was 2,574 MLD utilized in 2024, is crucial. Only 14 out of 37 sewage treatment plants meet the required standards.

The long-term pollution of the Yamuna River in Delhi represents a serious environmental and public health crisis tied to ongoing governance and infrastructure problems. Our findings highlight the ongoing public health risk from untreated pollutants and reveal the failures of past conservation efforts. To tackle this issue, we need a new, multi-faceted approach. This should focus on improving sewage infrastructure, enforcing stricter industrial regulations, and ensuring ecological flow. This study offers important, data-driven insights for reassessing urban environmental policies in Asian mega-cities, with the goal of protecting public health and promoting sustainable development.