# India Employs Geo-Tubes to Clean Up Ganga River

By GNA Editor

In a massive clean-up effort, the Prayagraj Municipal Corporation, in collaboration with Uttar Pradesh Jal Nigam, has treated and released an astounding 3,660 million litres per day (MLD) of water into the Ganga. Over the past 35 days, wastewater from 23 untapped drains has been purified, ensuring cleaner river water for millions of pilgrims attending Mahakumbh-2025.

Officials say that geo-tube technology has played a pivotal role in cleaning waste from the 23 untapped drains of Prayagraj city, ensuring good quality water in the Ganga for pilgrims' bathing.

From January 1 to February 4, approximately 3,660 MLD of water has been treated and released into the Ganga. The waste extracted during the treatment process is being collected in geo-tubes, which will be emptied and processed into compost by April, once the four-month treatment cycle is complete, officials explained.

In adherence to the directives of the state government, water from all 23 untapped drains in the city is being treated. A temporary geo-tube technology-based treatment plant has been installed to help restore the Ganga's water to its pristine and uninterrupted flow, meeting all cleanliness standards.

"Every day, 100 to 130 million liters of water are treated using geo-tube technology before being released into the Ganga," said Prayagraj municipal commissioner Chandra Mohan Garg.

A geo-tube-based treatment plant has been set up to treat wastewater from these 23 untapped drains in the city. Before the start of Mahakumbh-2025, the state government had issued a directive that no drain water should enter the Ganga without being treated. In line with this, temporary treatment plants have been installed at nine sites, from where the waste is channeled to the geo-tube-based treatment plant set up at Rajapur, explained Prafull Kumar Singh, assistant engineer of PMC.

**What is Geo-tube Technology?**

Geo-tube technology is a modern solution for sewage water treatment. "Geo-tubes are made of geotextile fibres and threads, measuring 25 meters in length and 3 meters in width," explained Singh.

The new geo-tube technology reduces the Biological Oxygen Demand (BOD) level by 40-50% and total suspended solids (TSS) by approximately 80%. The treated water is further purified using hydrogen peroxide and ozonization, which eliminates all fecal bacteria. The purified water is then released into the Ganga.

After tapping, pumps are installed to mix a polymer flocculant and Polyaluminium Chloride (PAC)—a chemical used to treat water—and the water is then directed into 25-meter-long geo-tubes. The chemicals cause the impurities in the water to flocculate and settle in the tubes, while the purified water filters out through the pores. Workers manually agitate the tubes with sticks to ensure proper filtration. The filtered water is then sent to a stall cavitation tank, where hydrogen peroxide is added for further purification.

This treatment plant uses ozonisation instead of chlorination, as high levels of chlorine in treated water are harmful to aquatic life. Ozonisation eliminates all fecal bacteria, and the treated water is then safely released into the river. All parameters are meticulously followed to ensure no harm is caused to the environment, Singh added.

Mechanical engineer in charge of the project, Rajendra Saini, said that ozonisation is used to disinfect and purify the water. This process involves using ozone gas (O3) to clean the water. The water is released into an open pond to increase its oxygen content before the foam is separated.

"*This modern technology reduces the BOD level by 30% and TSS by 80% within the geo-tubes. Hydrogen peroxide and ozonisation ensure the water is completely purified before being released into the river. The entire process is monitored online 24/7. The plant has been operating at full capacity since January 1 2025*," he added.


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