

Close Window



Treating waste water for reuse How we can and why we must

Isher J Ahluwalia , Ranesh Nair

Posted online: Apr 28, 2010 at 2045 hrs

Water availability per capita in India is reaching critical levels, and with a much faster pace of urbanisation expected in the coming decades, treatment of waste water for returning to rivers and reuse in industry assumes great importance. Navi Mumbai has shown the way.

Today the population of Navi Mumbai stands at 1.2 million, and is expected to double by 2031. As sewage in the city is projected to touch 425 million litres per day (mld), there is urgent need for planning to meet the challenge of treating the growing waste water. In responding to the challenge, the Navi Mumbai Municipal Corporation (NMMC) holds out an excellent example for other cities in India.

Navi Mumbai was conceived as a counter-magnet city to Greater Mumbai by the Government of Maharashtra in the late 1960s. Land was converted from agricultural to non-agricultural use and developed by the City and Industrial Development Corporation (CIDCO) around the 39 villages which remained under the control of Gram Panchayats. In 1992, NMMC was established with an area of 108 sq km, including the five nodes developed by CIDCO and 29 out of the 39 villages.

The village lands which covered about 20 per cent of the area under the Corporation were bereft of any civic amenities. Open defecation was the dominant practice. Sewerage lines were almost non-existent as the network covered only the nodal areas. There were only a few public toilets on village lands. Even in the developed nodes of Navi Mumbai, the old sewerage treatment plants were equipped only with pre-treatment facility as secondary treatment was not envisaged during the installation of these plants.

The partially treated as well as the untreated sewage was typically released into the Thane creek at a number of locations, mainly through storm water drains. This added to the enormous challenge posed by the industrial effluents, which also found their way into the Thane creek, given the location of a large industrial belt in the area. As and when the sewage ended up in the ground water, it further contributed to the spread of diseases like gastroenteritis, hepatitis, asthma and allergy. All in all, it was a huge health hazard with bacteria, viruses, parasites and toxic chemicals playing havoc with the environment.

In the two-year period between 2006 and 2008, the NMMC completed three Sewerage Treatment Plants (STPs) using the latest technology with biological treatment (Sequencing Batch Reactor based C-Tech technology) for treating waste water, using Rs 200 crore out of its own revenue surpluses. Two of the plants with a capacity of 100 mld each are located at Vashi and Nerul while the third is at Airoli (80 mld). The quality of the treated water from these STPs is better than the norms prescribed by the Maharashtra Pollution Control Board. The Indian Institute of Technology, Roorkee, conducted a performance evaluation of the STP at Nerul in 2008 and concluded that this plant is producing treated water which not only completely meets the Indian standards, but almost fulfils US EPA & California water recycling requirements for non-potable reuse standards.

The state-of-the-art technology used for sewage water treatment provides high treatment efficiency in a process that takes place in a single basin within which all biological treatment steps take place sequentially. It uses 50 per cent less land and consumes 50 per cent less power than conventional technologies. The use of complete computer controls and automation through SCADA (Supervisory Control and Data Acquisition) ensures that the sensors read precisely the level of impurities in the water and trigger the system to provide the right amount of oxygen for treatment, an additional advantage being that the system does not require constant operator attention.

The operation and maintenance of the three STPs has been outsourced to three different private companies for a period of three years, at a cost of around 1 per cent of the total project cost annually, and covered as part of the main contract. The operation and maintenance cost of Rs 1.5 per cubic metre is much lower than the amount that would be received by selling the treated sewage water. This provides an avenue for generating revenue for the NMMC, as more and more water is treated in the years to come.

Indeed, the Corporation has ventured forth on an integrated plan which will cover the entire municipal area with treatment plants using new technology, and will also put in place the network of pipes to achieve 100 per cent coverage. Since the developed nodes are already fully covered by a sewerage network of a 306 km long sewerage line connected to seven sewerage treatment plants, the city-wide sanitation strategy now calls for extending the network to the areas not so far developed. The integrated plan is being funded by JNNURM at a cost of Rs 353 crore and is expected to be completed by the end of 2011.

The increased spending on waste water treatment has gone hand in hand with an aggressive campaign on the part of the Corporation to spread awareness about the importance of sanitation. From organising street plays on hygiene and sanitation to distribution of pamphlets with basic information and using electronic media to get the message

across through local TV channels to the city dwellers, the Corporation has been pro-active in preparing the citizens for demanding better amenities.

The NMMC has also built close to 350 low-maintenance toilets. The cleaning, operation and maintenance of the public toilet blocks has been outsourced to eleven NGOs for a period of 30 years. All public toilets are sewerred, and Navi Mumbai is a city free of open defecation. Vijay Nahata, Municipal Commissioner of NMMC, proudly points out that the Corporation has been conferred with the 'Best City Award For Improvement In Waste Water and Sanitation Services' by the Government of India for 2009-10.

If Navi Mumbai can do it, so must our other cities.

Isher Judge Ahluwalia is the chair of Icrier and chair of the high powered expert committee on urban infrastructure. Ranesh Nair is a consultant to the committee. Views are personal

This is the 4th in a monthly series on urban infrastructure issues postcardsofchange@expressindia.com