An assessment of removal efficiency for the bacterial pathogens in Mysore urban water treatment system, Karnataka, India—A case study

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ABSTRACT

The present study mainly aims to determine whether the water treatment process is microbiologically feasible to reduce the microbial load and safe for consumption. The work was focused on four water treatment plants (WTP’s) supplying drinking water to Mysore urban city (Karnataka, India). A total of 144 samples were collected and analyzed during three seasons (December 2011 to August 2013) for microbiological and physico-chemical parameters. Water samples were collected from different stages of treatment such as raw water, stage-1 (coagulation/flocculation/sedimentation), stage-2 (filtration), and finally water from four WTP’s. In this study most probable number method to assess the microbiological water quality and heterotrophic plate count (HPC) was used to assess microbial load reduction in different stages of treatment. The result of the study indicates that treated water samples pH values were within the permissible range of World Health Organization (WHO). The reduction of turbidity for treated water samples were in the range of 0.6–1.3 NTU. The average residual chlorine level for treated water ranges from 0.5 to 0.8 mg/l. The results of HPC in raw water were moderately high during monsoon season compared to other seasons for all WTP’s. The treatment plants showed that there were not much variation in raw water and stage-1 water (coagulation/flocculation/sedimentation). The significant level of reduction occurs in stage-2 (filtration). The final water was clear due to the application of chlorination process. For all seasons the MPN count of treated water was zero. The treated water values are within permissible limit recommended by WHO. In Mysore city, all the four treatment plants use the same method of treatment and same level of reduction, which occurred in terms of microbial load.

Keywords: Coliforms; MPN; Water treatment plants; Escherichia coli; Salmonella; Shigella; Yersinia

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