Quality of drinking water in Mafikeng, South Africa

Suma George Mulamattathil
University of Limpopo, South Africa

The quality of water, whether used for drinking, domestic purposes, food production or recreational purposes has an important impact on health. Bacteria, inorganic, organic and water soluble radioactive substances are considered as the major water pollutants contributing to the deterioration of water quality and responsible for various public health problems. Mafikeng, the capital of the North West Province, receives water from two sources and the abstraction site of one source is down-stream from the domestic wastewater treatment plant which receives treated effluent. The health risk associated with this practice have long been recognised. This study was designed to assess the quality of drinking water in Mafikeng by combining physico-chemical and bacterial analysis. The results revealed that the physico-chemical quality of the water was generally acceptable. What was of concern is the microbial quality of the water. Faecal coliforms (FC), total coliforms (TC), heterotrophic bacteria and *Pseudomonas spp.* were present in some of the treated water samples. Antibiotic susceptibility of these isolates were tested against 11 antibiotics of clinical interest and the most prevalent antibiotic resistance phenotype observed was KF-AP-C-E-OT-TM-A. Virulence gene determinants for the confirmed *Pseudomonas* species were detected by amplifying the *exoA*, *exoS* and *exoT* genes. The isolates were found to harbour virulence gene determinants indicating that they have the potential to cause diseases in humans. The most significant finding of this study is that all drinking water samples were positive for HPC and virulent *Pseudomonas spp.* (>100/100 ml).

suma@mulamattathil.com