Membrane Technologies for Supply of Healthy Water

Duke M.C.

Institute for Sustainable Industries and Liveable Cities, Victoria University, Melbourne, Australia
Mikel.Duke@vu.edu.au

All people have the right to access clean drinking water for their good health and well-being. In order to raise the quality of available water coming often from groundwater or surface/rain water to a suitable standard, a technology is usually required. Such technologies include filtration, coagulation, chemical adjustment, bioreactions and disinfection. Despite the widespread use of the technologies having varying levels of sophistication, serious health issues in communities attributed to exposure to poor quality water persist. This can stem from increased contamination of previously clean sources or turning to impaired water because of increased demand on clean water sources as a result of drought or population intensification. Membrane technology is well known for its high effectiveness to clean impaired water by remove particles (including pathogens) as well as salt (desalination) and organic contaminants. But compared to other treatment technologies, membrane processes are only recently becoming more affordable and less complex to operate. Research at Victoria University has focused on applications of reliable and durable membrane technology to provide potable water for remote and urban communities directly from sources including municipal wastewater and rainwater. The membranes effectively remove critical contaminants such as pathogens, salts, heavy metals and organic pollutants. The membranes working together with other technologies such as disinfection (e.g. ozone, UV or chlorine), lead to a reliable 'fit for purpose' solution that produces potable water that is acceptable for consumption by the local community. This research will be presented together in the context of local issues attributed to water in Sri Lanka such as the emergence of chronic kidney disease, which has been correlated to water supply in rural areas. Also, the relatively recent action from urban and rural water and sanitation projects will be raised, as well as installation of membrane reverse osmosis plants, to reduce exposure of contaminated water and provision of clean drinking water to the community.