

Ngángá, V.G., Kariuki, F.W. and Kotut, K. 2012. A Comparison of the physico-chemical and bacteriological quality of greywater from water deficient households in Homabay Town and Githurai Estates in Kenya. *The Open Environmental Engineering Journal*, 5: 110-118.

Abstract

Greywater, the untreated household wastewater that has not been contaminated by toilet waste, has been touted as a reliable all year-round source of water, especially in water scarce areas. Although it is commonly reused in water scarce urban and peri-urban settlements in Kenya, information on its bacteriological and physico-chemical properties is generally limited. The present study sought to compare the physico-chemical and bacteriological quality of kitchen and laundry greywater from an urban (Githurai) and peri-urban settlement (Homabay). Compared to the source water, kitchen and laundry greywater at the two sites had higher electrical conductivity (EC) and salinity, depressed dissolved oxygen (DO) levels and a wide pH range. Although significant differences in EC, DO and salinity of greywater from kitchen and laundry were noted ($P < 0.05$), the two sites differed significantly only in DO ($P = 0.002$). Total coliforms (TC) and fecal coliforms (FC) were also higher in greywater than in source water. The greywater types differed in TC ($P = 0.003$) while the two sites differed in both TC and FC ($P \leq 0.03$). High loads of TC and FC suggest possible fecal contamination of greywater. This coupled with the occasional presence of *Salmonella*, *Shigella* and *Vibrio cholerae* means that reuse of untreated greywater is not safe in both sites, and should be treated before use. Owing to the differences in the quality of the different types of greywater as well as the sites investigated, the design of greywater treatment technologies should consider both type and source.