Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu

"Gheorghe Asachi" Technical University of Iasi, Romania

MICROBIAL QUALITY ASSESSMENT OF GREYWATER SOURCES TO REUSE FOR DIFFERENT PURPOSES

Samir Radwan[1*], Eman Ashour[2]

[1]Agricultural Microbiology Department, Agricultural and Biological Research Division, National Research Centre, Dokki, Cairo, Egypt
[2]Department of Microbiology, Faculty of Agriculture, Mansoura University, Mansoura, Egypt

Abstract

Water shortage is one of the most worrisome issues around the globe, especially with the increase in the human population. Nowadays, attention has been drawn towards the reuse of greywater because of its large volume and low contaminants. In the present research, greywater samples were collected from different sources including; households, restaurants, mosques, laundries, guest houses and sport clubs in Mansoura city, Egypt. The counts of total coliforms, *Escherichia coli*, *Enterococcus* sp., *Pseudomonas aeruginosa*, *Staphylococcus* sp. and *Salmonella & Shigella* sp. were detected. The results indicated that there were variations in counts of bacterial content in greywater samples collected from different sources and sampling time. Tap water samples generally did not contain any microbial content under this study. However, greywater samples contain high counts of tested bacterial content under different sources, except laundry samples. In addition, restaurant and household samples always contained higher counts of bacterial content compared to the other samples under various locations. On the other hand, the counts of bacterial content were always higher in July samples, while was lower in January samples as compared to the other months. It could be stated that, such greywater contains significant levels of total coliforms and *E. coli* in most tested sources which determine its uses. Counts of *E. coli* in greywater collected from restaurant was the highest risk (531 CFU/100 ml), while in laundry recorded the lowest risk (24 CFU/100 ml). Overall, the study can help strategy makers in formulating biological' guidelines for reuse of greywater and the needed designs for greywater treatment technologies.

Keywords: colilert technique, *Enterococcus*, *Escherichia coli*, greywater, total coliforms

Received: June, 2019; Revised final: December, 2019; Accepted: January, 2020

[*] Authors to whom all correspondence should be addressed: e-mail: smradwan@yahoo.com; Phone: +201069878499; Fax: +20233370931