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## Microbial pollutants in stagnant water in an informal settlement in the Western Cape, South Africa

Arnelia N Pause, Qenehelo A Leuta and James P Odendaal

Cape Peninsula University of Technology, South Africa

Inadequate sanitation and poor drainage in informal settlements result in greywater being stagnant at the base of communal taps. This water could potentially cause health problems to those who come in contact with it. This study is aimed at determining microbial pollutant levels in stagnant greywater in the RR Section of Khayelitsha, Western Cape, South Africa. Sampling of stagnant greywater was conducted twice monthly (January to May 2013) from the base of six communal taps. Enumeration techniques employed included the Most Probable Number (MPN), Heterotrophic Plate Count (HPC) and Flow Cytometric (FCM) techniques. Identification techniques utilised included the API 20E, RapID™ ONE and BBL Crystal™ Gram Positive (GP) Identification (ID) systems. The highest MPN, faecal coliform and *E. coli* counts were  $1.6 \times 10^8$  microorganisms/100mℓ (Sites A, B; weeks 3 and 5),  $4.7 \times 10^6$  microorganisms/100mℓ (Site B; week 5) and  $1.8 \times 10^6$  microorganisms/100mℓ [Site A (week 5); Site F (week 5)], respectively. The highest total FCM count was  $3.4 \times 10^7$  microorganisms/mℓ (Site A, week 5). The FCM technique showed significantly ( $p < 0.05$ ) higher counts than both the MPN and HPC techniques. The most common microorganisms isolated included *Escherichia coli*, *Klebsiella pneumoniae*, *Klebsiella oxytoca*, *Acinetobacter baumannii*/calcoaceticus, *Enterobacter cloacae*, *Corynebacterium* species and *Bacillus cereus*. The presence of these microorganisms in addition to significantly high microbial counts obtained, raises major health concerns as these organisms present in high numbers may lead to serious waterborne diseases, especially in informal settlements where population densities are extremely high.

### Biography

Arnelia Pause obtained her PhD from the Cape Peninsula University of Technology, Cape Town, South Africa in 2009. She is currently a lecturer in the Department of Environmental and Occupational Studies and is one of the co-pi of the Bioresource Engineering Research Group (BioERG) at the Cape Peninsula University of Technology. She has published 9 peer-reviewed accredited scientific publications as both main and co-author and is supervising several Masters students. Dr. Pause has successfully graduated two Masters Students.

[paulsea@cput.ac.za](mailto:paulsea@cput.ac.za)

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