



Tropentag, September 17-19, 2014, Prague, Czech Republic

“Bridging the gap between increasing knowledge and decreasing resources”

Water Resources Saving: A Possibly Contribution from a Greywater Collection, Treatment and Reuse

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Abstract

Greywater is the wastewater produced by showers, bath, basins, kitchen sink and laundry and comprises 50 to 80 % of total domestic wastewater. Greywater composition varies depending on many factors, such as: residents behaviour and activities, products used, income, age and others. Greywater reuse could be an important practice because contributes to reduce the wastewater production in cities and the demand for potable water. From a public health perspective raw greywater may be contaminated with pathogens, traces of heavy metals and micropollutants. Therefore the treatment is an essential step before the reuse. Currently there is a lack of scientific studies with the aim of evaluate the performance of treatment with moving bed biofilm reactor for greywater. The objective of this study was to evaluate the technical feasibility of a greywater collection and treatment system in order to locally reuse for non-potable purposes. The specific objectives were: to characterise and to monitor an experimental system of greywater treatment; to analyse the greywater quality from the different sources, and to indicate the potential uses for treated water. The greywater sources in this study were: 4 showers, 2 washbasins and 1 washing machine situated in a building at the University of Sao Paulo. Outside the building were installed a pilot system for treatment of synthetic greywater, including: tanks for segregated wastewater collection; pretreatment with fine screen; equalisation basin; pumps, aerobic bioreactor and settling tank. The Results showed a higher greywater production in washing machine (44%), followed by showers (42%) and washing basin (14%). In our research the COD: N: P ratio was 100:6.77:1.02 which indicates higher nutrient concentration in greywater than in the research mentioned above. The study should be conclude in the next couple months and at this moment it 's not possible to evaluate the performance of bioreactor, but our hope is that, in the end, the final effluent quality will reach a high quality providing possibilities of water reuse locally for of non-potable purposes, such as toilet flushing.

Keywords: Pollution, resources, wastewater, water reuse