

Abstract of Main Thesis

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Potential and prospects for greywater reclamation and reuse in peri-urban areas of Bangkok

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Abstract on the Content of the Applicant's Thesis

Addressing the issues of water shortage and non-appropriate sanitation in peri-urban areas of Bangkok, greywater treatment would be growing interest. Thus, this paper was designed to clarify the possibilities of greywater reclamation and reuse. The first stage was to investigate their possibilities under the certain conditions. Quantitative and qualitative data were mainly collected throughout questionnaire and wastewater sampling. The wastewater was already reused in 42% of households. A higher percentage of households accepted the use of treated greywater than treated blackwater (>80% vs 50%). The greywater performed a good biodegradation and high concentration of anionic surfactant (MBAS). In second stage, the detergents (liquid soap, shampoo, liquid dish and powdered laundry) were analyzed in regards to the quality of greywater to develop the reclamation and reuse system. Based on the daily uses of these detergents and their share factors, the daily MBAS and LAS discharge loadings were estimated to be 4.44 g/p/d and 3.08 g/p/d, respectively. The liquid dish and powdered laundry detergents were main pollutant loadings. The decrease in the surfactant concentrations measured in drainages and canals suggested that biological treatment was applicable for greywater containing surfactants. The final stage of the study was to investigate the treatability greywater using a biofilm process at laboratory scale with and without aeration and different HRT to remove surfactants (MBAS and LAS). The aerobic system was more preferred for greywater treatment than anaerobic system. The MBAS removal by the sludge accumulation, estimated by measuring the sludge production rate, was trivial. It was suggested that the removal of MBAS was primarily a result of biological degradation. The poly-P in detergents was hydrolyzed during the treatment process. A decrease in phosphorus addition in detergent is recommended. With regard to the finding results, the research demonstrated that there is possibility of greywater reclamation and reuse.