

# Reuse of Light Greywater for Flushing Household Toilets in Kuwait

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## Abstract

This paper presents the findings from a study carried out for the first time in Kuwait to assess the potential for reusing treated light greywater for flushing toilets. The study took place in a threefloor building located in the Ardiya district of Kuwait. Light greywater streams were separated from toilet wastewater streams during construction. The plumbing system was also modified so that all toilet flush tanks receive their water from the reservoir of treated greywater located on the roof of the building. The measurements of the various uses of potable water in the building were transferred wirelessly through data loggers to the Kuwait Institute for Scientific Research (KISR). The pilot treatment plant installed on the roof of the building is composed of sand filters, carbon filters, an ultraviolet (UV) column, and a chlorination unit. The results of the laboratory analysis of the samples collected before and after treatment indicated that the water used to flush the toilets was on average of high quality (pH=5.9, TDS = 152 mg/l, Cl = 29.5 mg/l, NO<sub>3</sub> ≤ 0.002 mg/l). There were no complaints from the residents concerning the water used for flushing the toilets. Currently, the research focuses on assessing the water savings achieved from the reuse of grey water for toilet flushing.

**Keywords:** Wastewater; Treatment; Recycling; Water Savings; Economic Feasibility.