Evaluation of Washing Performance of Household Wastewater Purified by Advanced Oxidation Process

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Abstract : Stressing the importance of water conservation, emphasizing the need for efficient management of household water, and underlining the significance of alternative solutions are important. In this context, advanced solutions based on technologies such as the advanced oxidation process have emerged as promising methods for treating household wastewater. Evaluating household water usage holds critical importance for the sustainability of water resources. Researchers and experts are examining various technological approaches to effectively treat and reclaim water for reuse. In this framework, the advanced oxidation process has proven to be an effective method for the removal of various organic and inorganic pollutants in the treatment of household wastewater. In this study, performance will be evaluated by comparing it with the reference case. This international criterion simulates the washing of home textile products, determining various performance parameters. The specially designed stain strips, including sebum, carbon black, blood, cocoa, and red wine, used in experiments, represent various household stains. These stain types were carefully selected to represent challenging stain scenarios, ensuring a realistic assessment of washing performance. Experiments conducted under different temperatures and program conditions successfully demonstrate the practical applicability of the advanced oxidation process for treating household wastewater. It is important to note that both adherence to standards and the use of real-life stain types contribute to the broad applicability of the findings. In conclusion, this study strongly supports the effectiveness of treating household wastewater with the advanced oxidation process in terms of washing performance under both standard and practical application conditions. The study underlines the importance of alternative solutions for sustainable water resource management and highlights the potential of the advanced oxidation process in the treatment of household water, contributing significantly to optimizing water usage and developing sustainable water management solutions.

Keywords : advanced oxidation process, household water usage, household appliance waste water, modelling, water reuse **Conference Title :** ICWWCSFO 2024 : International Conference on Wastewater, Water Cycle, Sedimentation, Filtration and Oxidation

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