

## Assessment of Advanced Oxidation Process Applicability for Household Appliances Wastewater Treatment

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**Abstract :** Water scarcity is an inevitable problem affecting more and more people day by day. It is a worldwide crisis and a consequence of rapid population growth, urbanization and overexploitation. Thus, the solutions providing the reclamation of the wastewater are the desired approach. Wastewater contains various substances such as organic, soaps and detergents, solvents, biological substances, and inorganic substances. The physical properties of the wastewater differs regarding to its origin such as commercial, domestic or hospital usage. Thus, the treatment strategy of this type of wastewater is should be comprehensively investigated and properly treated. The advanced oxidation process comes up as a hopeful method associated with the formation of reactive hydroxyl radicals that are highly reactive to oxidize of organic pollutants. This process has a priority on other methods such as coagulation, flocculation, sedimentation and filtration since it was not cause any undesirable by-products. In the present study, it was aimed to investigate the applicability of advanced oxidation process for the treatment of household appliances wastewater. For this purpose, the laboratory studies providing the effectively addressing of the formed radicals to organic pollutants were carried out. Then the effect of process parameters were comprehensively studied by using response surface methodology, Box-Behnken experimental design. The final chemical oxygen demand (COD) was the main output to evaluate the optimum point providing the expected COD removal. The linear alkyl benzene sulfonate (LAS), total dissolved solids (TDS) and color were measured for the optimum point providing the expected COD removal. Finally, present study pointed out that advanced oxidation process might be efficiently preferred to treat of the household appliances wastewater and the optimum process parameters provided that expected removal of COD.

**Keywords :** advanced oxidation process, household appliances wastewater, modelling, water reuse

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