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Purification Of Wastewater Contaminated With Organic Molecules By Liquid-Liquid Extraction Process: Case Of Aniline

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The industry uses toxic organic compounds that pollute the waste water, sometimes with large flows. Aniline is an important source of pollution, and is essentially the result of industrial waste, such as polymers, insecticides, dyes etc.

Research done on the destruction of organic pollutants in aqueous-phase is mostly interested to effective and not expensive process; the method of liquid-liquid extraction showed large depollution capacities of wastewater containing organic molecules.

This work focuses on the recovery of aniline by the process of liquid-liquid extraction, using Chloroform and Dichloromethane as solvents and Cyclohexane as diluent. An experimental parametric study was conducted to determine the optimum conditions for a better extraction.

The results have shown that over 92% of aniline can be extracted by the use of Chloroform as a solvent in the following optimal conditions: solvent concentration = 4M, $V_{agi} = 300$ rev / min, contact time = 15 min, ratio O/ aq = 30/20, settling time = 30 min and initial solute concentration = 600 ppm.

Finally, the experimental results have been projected theoretically by calculating the partitioning coefficient and material balances necessary to verify the number of stages and compare the practice fractions with those theoretical.