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Coagulation and nano-filtration: A hybrid system for the removal of lower molecular weight organic compounds (LMWOC)

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ABSTRACT

The removal of lower molecular weight organic compounds (LMWOC) from water is of increasing concern. While, nano-filtration (NF) is a good option, it removes only a fraction of the LMWOC. In this paper, NF experiments were conducted to remove oxalic acid and diuron in combination with coagulation using poly-aluminum chloride (PAC) as the coagulant. The results showed that this hybrid treatment system was effective in removing oxalic acid where almost a 100% removal efficiency of oxalic acid was achieved. However, using PAC as coagulant to remove diuron from water was not effective. In order to improve the removal efficiency of diuron, 0.02 M NaCl was added to diuron and a 40% increase in the removal of diuron was achieved. Higher removal of diuron was achieved when the solution was treated with reverse osmosis (RO) when compared to the nano-filtration.

Keywords: Coagulation; Diuron; Low molecular weight organic substances (LMWOC); Nano-filtration; Poly-aluminum chloride; Reverse osmosis (RO)

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