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**Strategies for reducing cost by using solar photo-Fenton treatment
combined with nanofiltration to remove microcontaminants in real
municipal effluents: toxicity and economic assessment**

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Abstract

This study shows solar photo-Fenton combined with nanofiltration (NF) to treat microcontaminants (MCs) in actual MWTP effluents. Photo-Fenton was operated at circumneutral pH using (S,S)-Ethylenediamine-N,N'-disuccinic acid trisodium salt (EDDS) as the iron complexing agent (Fe:EDDS in a molar ratio of 1:2) and compared with classical photo-Fenton at pH 3. Starting H₂O₂ concentration was 50 mg/L and Fe was 0.1 mM or 0.2 mM. MC degradation was over 90% in all cases and 35 different MCs were monitored by Liquid Chromatography -Mass spectrometry enabling the two processes to be compared under real conditions. NF pretreatment enabled photocatalysis to be run at lower flow rates and with higher starting concentrations reducing the surface area of solar collectors and reagents needed. Acute and chronic toxicity tests were also carried out before and at the end of each treatment evaluated and it seemed clear that MC degradation did not produce intermediates with any

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