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Abstract

The ozone degradation of 2,4-dichlorophenol (2,4-DCP), as toxic model pollutant in wastewater, is investigated in the presence of readily biodegradable substrates. Since a successful treatment does not only depend on the elimination of the toxic compound, a proper assessment of the residual toxicity and/or biodegradability of the ozonated wastewater is necessary. Respirometry is used to evaluate the biodegradation efficiency and microbial activity of both non-acclimated and pre-exposed biomass.

Ozone pre-treatment results in a decrease in 2,4-DCP and an increase in chloride concentration. The release of chloride is inversely proportional to the degradation of 2,4-DCP, implying the dechlorination of the aromatic ring as a first reaction step in its decomposition. Furthermore, the degradation of 2,4-DCP is described by pseudo first-order kinetics. The degradation rate decreases when