



Divergence Between Respirometry and Physicochemical Methods in the Fractionation of the Chemical Oxygen Demand in Municipal Wastewater

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Abstract:

For activated sludge modeling purposes, the methods used to evaluate the readily biodegradable chemical oxygen demand (RBCOD) in the influents are by biological or via physicochemical assays. However, there has not been sufficient wide comparison between these methods. The main goal of this study was to investigate the performance of the main chemical oxygen demand (COD) fractionation protocols, considering a representative wastewater in the context of tropical and developing countries. Different physicochemical characterization procedures, respirometric tests, and chemical analyses were performed. The fate of the soluble COD in the aeration tanks was studied. The results of the study showed that a marked difference may exist, in municipal wastewaters, between the estimates of the RBCOD fractions measured by respirometry and by any of the physicochemical methods. The evaluated influent showed a rather large fraction of COD that was passing the filters without being rapidly biodegradable, but which was removed quickly by enmeshment in the bioflocs. The consequences of such divergences and behavior are discussed.

Keywords: ASM1; calibration; characterization; chemical oxygen demand fractionation; colloids; filtration; modeling; readily biodegradable; respirometry

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