

Bio foam Formation and Defoamation in Global Wastewater Treatment Systems

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Abstract—Municipal wastewater treatment is largely facilitated by activated sludge (AS) systems, which are crucial in the wastewater treatment industry due to their ability to reduce biological- and chemical- oxygen demand (BOD/COD). They are similarly efficient in facilitating nitrification and sequential denitrification. However, major challenges associated with lipids (fats, oil, grease (FOG)) containing wastewater arise, with foaming being a focus of this review, as it deteriorates the efficiency of the AS systems. Many strategies are employed for foam reduction in AS systems whereby proliferation of foam-forming microorganisms can be challenging. In order to understand foam formation, foam prevention and deterioration including destabilization, a multidisciplinary approach is required, in which some bioprocess aspects such as destabilization kinetics should be quantified. This work focuses on biological foam formation, its source in wastewater treatment, defoamation strategies, biofoam destabilization kinetics as well as factors affecting foam stability.

Keywords— Chemical- oxygen, Wastewater, AS systems and Defoamation strategies

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