

The Effectiveness of Sulfate Reducing Bacteria in Minimizing Methane and Sludge Production from Palm Oil Mill Effluent (POME)

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Abstract : Palm oil industry is a major revenue earner in Malaysia, despite the growth of the industry is synonymous with a massive production of agro-industrial wastewater. Through the oil extraction processes, palm oil mill effluent (POME) contributes to the largest liquid wastes generated. Due to the high amount of organic compound, POME can cause inland water pollution if discharged untreated into the water course as well as affect the aquatic ecosystem. For more than 20 years, Malaysia adopted the conventional biological treatment known as lagoon system that apply biological treatment. Besides having difficulties in complying with the standard, a large build up area is needed and retention time is higher. Although anaerobic digester is more favorable, this process comes along with enormous volumes of sludge and methane gas, demanding attention from the mill operators. In order to reduce the sludge production, denitrifiers are to be removed first. Sulfate reducing bacteria has shown the capability to inhibit the growth of methanogens. This is expected to substantially reduce both the sludge and methane production in anaerobic digesters. In this paper, the effectiveness of sulfate reducing bacteria in minimizing sludge and methane will be examined.

Keywords : methane reduction, palm oil mill effluent, sludge minimization, sulfate reducing bacteria, sulfate reduction

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