



A study of palm oil mill processing and environmental assessment of palm oil mill effluent treatment

Azam Akhbari^{1†}, Prashad Kumaran Kutty², Onn Chiu Chuen¹, Shaliza Ibrahim^{1,3†}

¹Department of Civil Engineering, Faculty of Engineering, University of Malaya, Kuala Lumpur 50603, Malaysia

²Jugra Palm Oil Mill Sdn Bhd, Lot 340 Jalan Tok Mujir, Sungai Buaya, 42700 Banting, Selangor, Malaysia

³Institute of Ocean and Earth Sciences (IOES), University of Malaya, Kuala Lumpur 50603, Malaysia

Abstract

This work discusses the palm oil mill processing carried out at Jugra Palm Oil Mill Sdn Bhd, situated at Selangor, Malaysia with the capacity of 45-t fresh fruit bunch (FFB)/h. Typically, oil palm residues and palm oil mill effluent (POME) from FFB are generated while processing. Prior to discharge, POME should be preceded by facts of pollutants in the effluent. As such, the performances of anaerobic and aerobic ponds were assessed in this study to determine temperature, pH, biological oxygen demand (BOD), sludge volume index (SVI), and dissolved oxygen (DO). From the experiments, mesophilic temperature due to better process stability was applied in anaerobic ponds. The pH results displayed a fluctuating trend between lower control limit and upper control limit, and, the pH value increased from one pond to another. The final discharge BOD and SVI appeared to be lower than 100 mg/L and 10 mL/L indicating low degree of pollution and good settling ability for biomass/solid. DO seemed normal as it was mostly below 2 mg/L. The experimental outcomes revealed the effective treatability of POME in adherence to the standard regulation, which is the priority for protecting the environment to achieve sustainable enhancement within this industry domain.

Keywords: Anaerobic digestion, Fresh fruit bunch, Palm oil mill effluent



This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>)

which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received December 27, 2018 Accepted March 7, 2019

[†] Corresponding Author

E-mail: aazam.akhbari@yahoo.com, shaliza@um.edu.my

Tel: +603-7967-4643