

Possibility study for water reutilization of the biodiesel refinery in Thailand

Kesirine Jinda^{1,2}, Wasinee Keesoon^{1,3} and Pannipha Dokmaingam^{1*}

Abstract

The specific characteristic of wastewater from the palm oil refinery is the oil contamination. The optimum condition of oil-water separation was studied under various operations. Increasing of the wastewater treatment system efficiency with the suitable operation of an oil scum skimmer regard to the suitable effluent quality for utilization. In recent times, water reutilization has applied for water management planning in various organization. The possibility of water reutilization planning was evaluated under various factors. Furthermore, the questionnaire was developed to survey the attitude about water reutilization. This is an important parameter for design the suitable water reutilization option. In this study, it was found that the oil-water separation should be operated under the pH 4.0-5.9 with retention time around 4-5 days. This was an optimum condition for oil scum skimmer pretreatment. The treated wastewater quality was calculated to find the alternative reutilize options. This was investigated with the user acceptance for water reutilization application. It was found that around 90 percent of respondent agreed with applying of water reutilization in the company. This would be investigated with water quality, water volume, and economic factor. The evaluated result presented that the treated water could be reutilized or reused for combine activity option. This option can be reduced 433.97 baht/day from the conventional cost of water supply operation in the company.

Keywords : Palm oil refinery, Oil-water separation, Oil scum skimmer, Treated water quality, Reused water attitude

¹ School of Health Science, Mae Fah Luang University, Chiang Rai, 57100, Thailand.

² School of Environment, Resources and Development, Asian Institute of Technology, Pathumthani 12120, Thailand.

³ Trang latex company limited, Khaokhao, huaiyot district , Trang 92130, Thailand.

* Corresponding author, E-mail: pannipha.dok@mfu.ac.th Received 5 September 2016, Accepted 2 February 2017