

THE INFLUENCE OF PALM SHELL BIOFILTER APPLICATION TO DEGRADING ORGANIC POLLUTANT IN TOFU AND FERMENTED SOYBEAN CAKE WASTE INDUSTRY (Budijono and M. Hasbi)

ABSTRACT

The objective of this study is to assess the influence of palm shell biofilter application in degrading organic pollutant in fermented soybean cake waste industry at aerobic system. This study was carried out in fermented soybean cake industry at Tampan region, Pekanbaru. The total amount of wastewater that produced from one small industry fermented soybean cake is around 2 m³/day, and now is collected in wastewater drainage. Wastewater treatment of aerobic system. Basically this wastewater treatment relies on bacteria in degrading pollutants. The use of palm shell is to increase specific surface of media for attaching bacteria. The system consist of one reactor that is made of 5 mm glass, and the volume reactor 140 liter. The reactor was equipped with one circulating pump and blower in the aerobic zone. It took 30 days for seeding microorganism. The reactor were run in four different resident time, namely 4 hours, 3 hours, 2 hours and 1 hour. The raw water used in this experiment is waste water from tofu and fermented soybean cake industries that have organic compound around 594.08 – 1276.64 mg/l. The water for physical and chemical analysis is sampled daily. It took from raw water and aerobic column of reactor. The results from 192 physical and chemical parameters from 24 water samples showed that the palm shell biofilter gives a little influence to degrade organic pollutant. The efficiency process in decreasing organic compound value around 6.47 – 16.48%, TSS 32.47 – 97.19%, TDS 7.89 – 19.25%, ammonia 0.66 – 2.75%, total phosphate 1.76 – 5.13%, and nitrate 3.24 – 6.99%.

Key words : Biofilter, Biofilm, Wastewater Treatment, Aerobic Reactor, Organic Waste, Waste of Tofu and Fermented Soybean Cake Industry.