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Phytoremediation Aeration System by Using Water Lettuce (Pistia Stratiotes I) Based on Zero Waste to Reduce the Impact of Industrial Liquid Waste in Jember, Indonesia

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Abstract : Tofu industry is one of the local food industry which is can being competitive industry in the ASEAN Economic Community (AEC). However, a lot of tofu entrepreneurs just thinking how to produce good quality product without considering the impact of environmental conditions from the production process. Production of tofu per day requires a number of 15 kg with liquid waste generated is 652.5 liters. That liquid waste is discharged directly into waterways, whereas tofu liquid waste contains organic compounds that quickly unraveled, so it can pollute waterways. In addition, tofu liquid waste is high in Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solid (TSS), nitrogen and phosphorus. This research is aim to create a method of handling liquid waste effectively and efficiently by using water lettuce. The method is done by observation and experiment by using phytoremediation method in the tofu liquid waste using water lettuce and adding aeration to reduce the concentration of contaminants. The results of the research analyzed the waste quality standard parameters based on SNI (National Standardization Agency of Indonesia). The efficiency concentration and parameters average of tofu liquid waste are obtained pH 3,42% (from 4,0 to be 3,3), COD 76,13% (from 3579 ppm to be 854 ppm), BOD 55 % (from 11600 ppm to be 5242 ppm), TSS 93,6% (from 3174 ppm to be 203 ppm), turbidity is 64,8% (from 977 NTU to be 1013 NTU), and temperature 36oC (from 45oC to be 40oC). The efficiency of these parameters indicates a safe value for the effluent to be channeled in waterways. Water lettuce and tofu liquid waste phytoremediation result will be used as biogas as renewable energy.

Keywords : aeration, phytoremediation, water letuce, tofu liquid waste
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