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Farmers’ and academia’s views”

## Water consumption and wastewater produced in tofu industry: evidence from Indonesia

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### Abstract

In the small, medium, and large-scale tofu industry, large amounts of water are consumed during the processing, which produces large quantities of wastewater and negatively affects the environment. Even though, there is existing legislation in the form of the Regulation of the Governor of Lampung Province 2006 stating the quality standard of tofu waste water is pH 6–9, TSS 60 mg/L, BOD<sub>5</sub> 75 mg/L, COD 200 mg/L); the common practice is that tofu wastewater is directly disposed of without any pre-treatment first. This practice causes odor and pollutes water bodies around the industry to settlements far from industrial areas. The process of making tofu consists of soaking, soybean grinding, boiling, filtering, acidification, molding, and packaging, of the whole process, only molding and packing do not need the water. This study aims to determine how much water is consumed during processing production and the wastewater generated in the tofu industry. The data collection was conducted via semi-structured interviews and questionnaire surveys with 40 owners of small and medium-scale tofu industries in Gunung Sulah District, Bandar Lampung City, Lampung Province, Indonesia, in December 2020. The data were analysed using a mass balance to determine how much wastewater was generated. The results show that the water consumption for processing production in the tofu industry is 25.18 L/kg of soybean, and the wastewater produced is 14.59 L/kg. Hence, approximately 54.31 % of wastewater is generated from the water consumed. Furthermore, tofu wastewater has a high potential to be used as a feedstock for biogas generation because it has a high organic content such as COD 12,400 mg/L, TS 3800 mg/L, TSS 1188.25 mg/L, alkalinity 280 mg/L, VFA 1500 mg/L and pH 5.17. This study provides a preliminary result for the subsequent study to use tofu wastewater as a biogas feedstock to make the tofu industry a green circular industry with more environmentally friendly and sustainable features.

**Keywords:** Biogas, tofu industry, wastewater, water consumption