

The Quantity, Quality, and Treatment of Wastewater from the Tofu Industry in Giriharja, Sumedang, West Java, Indonesia

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Keywords: tofu industry, wastewater, whey, non-whey, anaerobic wastewater treatment plants

Consumption of tofu in Indonesia is steadily increasing as tofu is a relatively cheap source of protein that is easy to find and to make. The fact that untreated wastewater from tofu production can be broken down easily has a negative impact on the environment. An observation had been done in a village called Giriharja as one of the tofu production centers located in Sumedang Regency, West Java, Indonesia. In Giriharja, there are 9 small scale tofu industries with five of it produce white tofu and four produce yellow tofu.

From observations, tofu production process begins with soaking 10.62 L of soybeans for \pm 2 hours, rinsing the soaked soybeans, grinding the soybeans into soybean porridge, boiling the porridge, filtering the cooked porridge to get the soybean milk, adding coagulant to soybean milk, and pressing the coagulated curd as tofu. Until this point, it produces white tofu. The yellow tofu will be made by cooking the cutting white tofu in a solution of water, salt and grinded turmeric. The white tofu pieces will turn to yellow color just on surface area due to the turmeric yellow color, then it will be cooled down on clean water and packed.

The average production of white tofu per day requires in total 1.05 tons soybean, while for yellow tofu it requires 0.98 tons. It could be measured for 2 tons tofu production capacity per day it consumed 64 m³ of clean water, and produces 62 m³ of wastewater.

In the study, observation on tofu wastewater based on the predicted organic contents could be divided into two types, namely whey and non-whey. Whey wastewater comes from the coagulation process and pressing the tofu. Non-whey wastewater comes from remaining soaking water from soaking soybeans, turmeric containing cooking water, and cooling water. Wastewater characteristics were measured by turbidity, pH, TDS, TS, VS, COD and BOD₅. The results showed that both types of wastewater did not meet the quality standards set by the Indonesian Ministry of Environment (2014). The whey wastewater will be treated by the anaerobic Wastewater Treatment Plants (WWTP), while non-whey wastewater will be dumped directly into the sewer. Whey that goes into the Anaerobic WWTP inlet in average reaches 20 m³/day and produces biogas 700 m³/day. Biogas will be distributed to 87 households in Giriharja.

Reference

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Sanitation Value Chain Vol. 5 (1) p.048, 2021
Published by Research Institute for Humanity and Nature
<https://doi.org/10.34416/svc.00051>