



The Effects of Temperature-pH on Biochemical Degradation at Leachate Treatment in Anaerobic Bioreactor

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Abstract: Leachate is liquid waste resulting from physical, biological, and chemical decomposition of waste landfill. Leachate containing biodegradable and non-biodegradable substrates, in the form of complex dissolved organic and inorganic. Anaerobic treatment in principle is using anaerobic bacteria to degrade soluble organic material into biogas. Anaerobic treatment is highly sensitive to waste water, temperature and pH compositions. This study used anaerobic bioreactor with volume of 160 L, the ratio of leachate:biogas was 70:30. Seeding, acclimatization and leachate treatment was performed at temperature of 35°C and 45°C with pH ambient, 7.2 and 8.0. Microorganism used came from cow rumen, with ratio of rumen: leachate was 1:3. Analysis and test of pH, biogas pressure, COD, BOD, and VFA were performed every two days. Decrease in COD and BOD was affected by temperature and pH. VFA concentration was affected by temperature and pH. The higher the temperature-pH the higher VFA concentration obtained.

Keywords: anaerobic bioreactor, leachate, pH, temperature.

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