Study New Way to Convert Household Waste Into Biogas

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Abstract

Anaerobic digestion process is one of the alternative methods to convert organic waste into methane gas which is a fuel and energy source. Activities of various kinds of microorganisms are the main factor for anaerobic digestion which produces methane gas. Therefore, in this study a modified Anaerobic Baffled Reactor with working volume of 50 liters was designed to identify the microorganisms through biogas production. The mixture of 75% Household waste and 25% sewage sludge was used as substrate.

Observations on microorganisms in the Anaerobic Baffled Reactor showed that there exists a small amount of protozoa (5%) and fungi (2%) in the system, but almost 93% of the microorganism population consists of bacteria. It is definitely clear that bacteria are responsible for anaerobic biodegradation of Household waste. Results show that in the acidification zone of the Anaerobic Baffled Reactor (front compartments of reactor) fast growing bacteria capable of growth at high substrate levels and reduced pH was dominant. A shift to slower growing scavenging bacteria that grow better at higher pH was occurring towards the end of the reactor. Due to the ability of activity in acetate environment the percentages of Methanococcus, Methanosarcina and Methanotrix were higher than other kinds of methane former in the system.

Keywords: Household waste, Anaerobic Digestion, Microbiological Examinations, Biogas .

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