Sustainable Energy and Water Purification from the Oxidation of Anaerobic Bacteria, Part Two

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The purpose of this project was to determine the most efficient material used in a microbial fuel cell (MFC) for the maximum production of electricity. Also, if a septic system additive would boost electrical production. The level of water purification during the bacterial oxidation process was also measured. The researcher hypothesized that the treated sewer waste water with the septic system additive will have the highest electrical output and that the oxidation process will have the highest purification level in the compost manure. Research included several scholarly articles and studies that indicated that MFC's are most effective when used with sewer treatment plants for water purification with a bonus of electrical production to help offset high energy costs. Also the most effective bacteria belong to the Preteobacteria, Geobacter and Sherwanell families. The sample materials tested include benthic mud, compost manure, and treated sewer waste water. A septic system additive was added to one of each of the samples in 3 sets of fuel cells. Electrical output was measured daily in millivolts, current was measured in amps for 30 days. After 30 days a portion from the pre/post oxidation samples were tested for water purification. The data partially supported the hypothesis in that the highest purification level occurred in the compost manure; however, the treated sewer waste water had the lowest electrical output. The addition of a septic sewer additive was only effective on the treated sewer waster water, but had very little effect on the benthic mud and compost manure electrical output.

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