Mud Energy: Single Chamber Sediment Microbial Fuel Cells

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This project was done for the purpose of identifying the best source of sediment for a sediment microbial fuel cell. The initial idea was to determine which source of sediment generated the most volts within 22 days. Experimentation showed that the two sediments both generated similar amounts of voltage. Anaerobic bacteria in the sediments form a bio-film around the anode and cathode, thus transferring electrons making it possible to collect energy or voltage from the microbial fuel cell. Sediments were obtained form the following areas: river sediment from the Virgin River, next to Virgin Utah, and lake sediment from Quail Lake in UT. Results of experiment led to believe that the river and lake had no significant difference. Decreases in voltage over time was to believed to be caused by evaporation, 2 cups of water were added to each microbial fuel cell. Adding water had a positive effect on some and a negative effect on others negative affect was due to the water being poured directly over the cathode and destroying parts of the bio-film that had formed. This project demonstrates that river sediment and lake sediment are successful in a single chambered sediment microbial fuel cell. Scientists could use this information to further the research on using microbial fuel cells as waste water treatment plants in cites and towns.

Awards Won: