

## **Factors that influence methanogenic activities in a low sulfate oil-producing facility**

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Molecular analysis of a low sulfate oil bearing environment was carried out using 16S rRNA gene sequencing technique and the effects of some environmental factors like pH, temperature, salinity on methane production and corrosion rates were determined. Pyrosequenced data revealed dominance of hydrogenotrophic (*Methanobacterium*) and Methylophilic (*Methanohalobium*) in samples. Results showed that samples had their optimal temperature for maximum methane production at 35–40°C and higher temperature (55°C) was inhibitory to methane production. Methanogens in samples produced methane over a wide pH range but the pH optima for maximum methane production ranged between 6 and 7. Sodium chloride was tolerated better at lower concentrations (< 200 mM), higher concentrations (>300 mM) drastically inhibited methane formation, an indication that the methanogens involved are not halophytes. Because different methanogens require different substrates and reacts to changes in environmental conditions, environmental factors may indirectly control the diversity and activity of methanogens in low sulfate oil bearing environments.