AN UPDATED OVERVIEW ON BIOCORROSION PROBLEMS IN WATER INJECTION SYSTEMS FOR OIL RECOVERY. NEW ADVANCES IN MONITORING, TREATMENT AND PREVENTION.

Héctor A.Videla[1]

Abstract:

Oil industry is severely affected by biocorrosion and biofouling problems in its different stages of oil recovery, processing, transport and storage. It is widely recognized that biocorrosion and reservoir souring is directly linked to the settlement of sulfate reducing bacteria (SRB) biofilms in different parts of the oil recovery system. The present knowledge about biocorrosion prevention and treatment with different biocide strategies and their environmental impact are critically analyzed and illustrated with practical cases.
New advances in monitoring, treatment and prevention techniques are also presented. Among the former, electrochemical sensors able to monitor biofilms on metal surfaces in real time and the use of molecular techniques to determine real problematic bacteria are specially highlighted. A promisory control strategy like the use of biocompetitive exclusion (BC) that favor the growth of competing bacteria populations (namely nitrate reducing bacteria) with SRB, is suggested as a proven biotechnology to control SRB and hydrogen sulfide production in oil fields.

Key-word: sulfate-reducing bacteria, nitrate-reducing bacteria, water injection, hydrogen sulfide, biocorrosion, souring, monitoring.

[1] Doctor - INIFTA-Universidad Tecnológica Nacional, Regional La Plata. 1900. La Plata, Argentina.