

A Review on Microbial Enhanced Oil Recovery and Controlling Its Produced Hydrogen Sulfide Effects on Reservoir and Transporting Pipelines

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Abstract : Using viable microbial cultures within hydrocarbon reservoirs so as to the enhancement of oil recovery through metabolic activities is exactly what we recognize as microbial enhanced oil recovery (MEOR). In similar to many other processes in industries, there are some cons and pros following with MEOR. The creation of sulfides such as hydrogen sulfide as a result of injecting the sulfate-containing seawater into hydrocarbon reservoirs in order to maintain the required reservoir pressure leads to production and growth of sulfate reducing bacteria (SRB) approximately near the injection wells, turning the reservoir into sour; however, SRB is not considered as the only microbial process stimulating the formation of sulfides. Along with SRB, thermochemical sulfate reduction or thermal redox reaction (TSR) is also known to be highly effective at resulting in having extremely concentrated zones of H_2S in the reservoir fluids eligible to cause corrosion. Owing to extent of the topic, more information on the formation of H_2S is going to be put finger on. Besides, confronting the undesirable production of sulfide species in the reservoirs can lead to serious operational, environmental, and financial problems, in particular the transporting pipelines. Consequently, conjuring up reservoir souring control strategies on the way production of oil and gas is the only way to prevent possible damages in terms of environment, finance, and manpower which requires determining the compound's reactivity, origin, and partitioning behavior. This article is going to provide a comprehensive review of progress made in this field and the possible advent of new strategies in this technologically advanced world of the petroleum industry.

Keywords : corrosion, hydrogen sulfide, NRB, reservoir souring, SRB

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