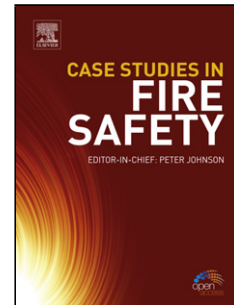


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Corrosion inhibition and anti-bacterial efficacy of benzalkonium chloride in artificial CO₂-saturated oilfield produced water

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Abstract: Corrosion inhibition by benzalkonium chloride (BKC) against anaerobic CO₂ corrosion and microbiologically influenced corrosion was studied using surface analysis, weight loss and electrochemical measurements. Results showed that the minimal bactericidal concentration of BKC against *Desulfotomaculum nigrificans* (*D. nigrificans*) was 40 mg L⁻¹. While at this concentration the planktonic *D. nigrificans* cell count could recover after 21-day incubation, it resulted in 4 log reduction in sessile *D. nigrificans* cell count. When 80 mg L⁻¹ BKC was used, both planktonic and sessile *D. nigrificans* became undetectable. It was found that at these concentrations, BKC reduced both uniform corrosion and pitting corrosion.

Key words: A. carbon steel; B. SEM; B. XPS; C. Microbiological corrosion

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