

عنوان مقاله:

Evaluation of non- oxidizing biocides to obtain the consumption of suitable biocide in the cooling tower of Bandar Imam Petrochemical Company

محل انتشار:

بیستمین کنگره بین المللی میکروب شناسی ایران (سال: 1398)

تعداد صفحات اصل مقاله: 1

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خلاصه مقاله:

Introduction and Objectives: Cooling towers provide a unique environment for the proliferation of micro-organisms, including aerobic and anaerobic bacteria, algae, and fungi. In many petrochemical industries chlorine and its derivatives, as well as non-oxidizing biocide as supplementary biocide, are deployed to prevent or inhibit microbial growth. In vitro experiments were undertaken to evaluate the efficacy of chlorine, isothiazoline, quaternary ammonium, and synergistic blend compared to each other. **Materials and Methods:** Microbicides were evaluated against sulfate-reducing bacteria, heterotrophic bacteria, algae, and fungi isolated from the cooling tower system under sterile condition. The five non- oxidizing biocides with commercial names ISO1, ISO2, QA1, QA2, SY and chlorine as oxidizing biocide were tested. Antibacterial activity was assessed based on International Standard Test Methods. **Results:** The results show that all the non- oxidizing biocides were more efficient for the sulfate-reducing and heterotrophic bacteria, throughout 2 experiments, after 3 and 24 hours. Biocides QA1, QA2 and ISO1 resulted in the destruction of fungi, and only biocide ISO1 was shows efficient on elimination of algae. **Conclusion:** The final results show that percent kill of biocide ISO1 as supplementary biocide along with chlorine injection has been the higher effect against microorganism, in compared with the other biocides. Many parameters may influence the efficacy of biocides, such as application method of biocide, contact time, target microorganisms, leakage of pollutants (e.g. hydrocarbon and ammonia) and environmental conditions (e.g. pH and water temperature). The choice for a desirable biocide can be helping to improve and prevent biological corrosion in the industrial cooling towers systems

کلمات کلیدی:

Evaluation, biocide, cooling tower

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<https://civilica.com/doc/987324>



