

TITLE: MICROORGANISM APPLIED TO REMOVE BTEX: A BIORREMEDATION PROCESS

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ABSTRACT:

Aromatic compounds are widely used in the chemical and petrochemical industries, the most used being benzene, toluene, ethylbenzene and xylene (known as BTEX). Contamination of these compounds causes serious health damage, which can affect the central nervous system, as well as being carcinogenic. Among the different methods of decontamination, there is bioremediation, in which components of microbial origin are used to minimize or decontaminate contaminated areas, called biosurfactants. Bioremediation has been applied as a sustainable alternative for the treatment of areas contaminated by oil and its derivatives, allowing a lower cost and also for its characteristic of not leaving residues. For these reasons, the objective of this work was the microorganism applied for the removal of petrochemical agents. The standard culture of *Bacillus subtilis* was developed in the laboratory using the Tryptone Soy Broth (TSB) culture medium. The growth culture was conducted in a shaker at 150 rpm / 35 ° C / 24 hours, 48, 72 and 96 hours / pH 7. The bioremediation was analyzed with controlled contamination using gasoline and diesel oil in both water and soil. Production capacity and bioremediation were observed through Fourier Transform Infrared Spectroscopy (FTIR) and Gas Chromatography. The results showed the degradation of gasoline and diesel oil in liquid medium, and the concomitant production of the biosurfactant through FTIR, we observed the ability of the microorganism to degrade the compounds and produce surfactin. Soil analysis shows that the microorganism is capable of degrading BTEX. Bioremediation can be an efficient, economical and versatile alternative for the treatment of BTEX in impacted environments. The results showed that microorganisms can control or degrade pollutants and restore ecological balance.

Keywords: Bioremediation. Biodegradation. Aromatic solvents. Petroleum hydrocarbons - BTEX. Treatment of contaminated areas.

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