Effect of Surfactants on Mineralization of Phenanthrene under Thermophilic Conditions. (S03-fang121629-Oral)

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Abstract:

The effect of synthetic- and bio-surfactants on solubilization and mineralization of phenanthrene (PHE) in a series of batch solution studies under thermophilic conditions was investigated. Tween 80, Triton X 100, and biosurfactants produced from isolate P-CG3 and Pseudomonas aeruginosa ATCC 9027 were used in this work. Surfactants effectively enhanced the solubility of PHE, however, its mineralization was substantially inhibited at thermophilic conditions. Mineralization of PHE diminished with increasing surfactant concentrations below CMCs, but was completely inhibited for all four tested surfactants when > = their respective CMC. The growth test suggested that Tween 80 and biosurfactants was degradable, but did not significantly influence biodegradation of PHE. Because of the hydrophobic property of the isolated PHE-degrading bacterial strain, mineralization inhibition of PHE by surfactants was most likely due to the reduction of direct contact between bacterial cells and PHE.

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