

Biodegradation of diesel/biodiesel blends in saturated sand microcosms.

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Streszczenie

The aim of the study was to evaluate the biodegradation extent of both aromatic and aliphatic hydrocarbon fractions in saturated sandy microcosm spiked with diesel/biodiesel blends (D, B10, B20, B30, B40, B50, B60, B70, B80, B90 and B100, where D is commercial petroleum diesel fuel and B is commercial biodiesel blend) augmented with a bacterial consortium of petroleum degraders. The biodegradation kinetics for blends were evaluated based on measuring the amount of emitted CO₂ after 578 days. Subsequently, the residual aromatic and aliphatic fractions were separated and determined by employing GC-FID and GC × GC-TOF-MS. Additionally, the influence of biodiesel-amendment on the community dynamics was assessed based on the results of real-time PCR analyzes. Our results suggest that the biodegradation extents of both aliphatic and aromatic hydrocarbon were uninfluenced by the addition of biodiesel, regardless of the concentration used. This observation leads to the conclusion that blending with biodiesel does not impact the long-term biodegradation of specific diesel oil fractions.

Słowa kluczowe

Biodegradation, Biodiesel, Diesel fuel, Hydrocarbon fractions, Community dynamics

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