



## **Enzyme enhanced remediation of jet fuel-contaminated porous media**

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Jet fuel may be released in the environment either by in-flight fuel jettisoning (fuel dumping) or accidentally from spills and leaks, and eventually can reach subsurface formations where it can remain as long-term source of pollution. Remediation of aquifers contaminated by jet fuels is not a trivial task. This experimental study examined the effectiveness of a water-soluble, DNA-protein-based biodegradable non-living catalyst, with commercial name GreenZyme<sup>®</sup> for the remediation of water saturated porous media polluted with jet fuel (JP-5). Also for comparison purposes, the commercial surfactant sodium dodecyl sulfate (SDS) was used. Bench scale experiments were conducted in a glass column packed with glass beads. The migration of JP-5 in the glass column under various conditions, with and without the presence of GreenZyme<sup>®</sup> was monitored by a well-established photographic method. Digital photographs of the packed column were captured under fluorescent lighting. The fluorescent intensity of JP-5 dyed with Red Oil O within the column was analyzed using the Matlab Image Processing Toolbox. The color intensities were converted to concentrations via appropriate calibration curves. The experimental results suggested that GreenZyme<sup>®</sup> was an efficient biosurfactant capable of enhancing significantly the migration of JP-5 in the glass column, which performed considerably better than SDS under the experimental conditions of this study.