

PW24 Weathered biodiesel oil analysis

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Identification, photooxidation, biodegradation, diagnostic ratios.

Identify biodiesel oil constituents; compare their rate of degradation and find their spill sources

This work includes identifying the constituents of different biodiesel oils and investigating their rate of degradation in the environment, after spills under different climate conditions. Two techniques have been used for the analysis; they are Gas Chromatography – Mass Spectrometry (GC-MS) and Fourier Transform – Infrared Spectroscopy (FT-IR) analysis. This thesis also discusses the possibility of oil source identification by calculating a range of diagnostic ratios of common spill components. The relative stability of oil components were also accomplished through comparison of their percentage of depletion under the same environmental conditions. A set of experiments obtained under controlled weather showed that the two major phenomena - photooxidation and biodegradation - involved in the cleaning and removal of vegetable oils are complementary.