

*IASH 2007, the 10th International Conference on
Stability, Handling and Use of Liquid Fuels
Tucson, Arizona
October 7-11, 2007*

RENEWABLE DIESEL FUEL

Frederick J. Cornforth and Joseph Kaufman
Fuels and Regulatory Affairs, ConocoPhillips, Bartlesville, Oklahoma

George Parks
Advanced Hydrocarbon Fuels Research and Development, ConocoPhillips, Bartlesville, Oklahoma

Renewable Diesel is the name given an attractive fuel that moves co-processed hydrotreated biological fats or oils directly through the refinery into the transportation fuels pool, displacing the need for an equal amount of imported crude oil or expanding the available diesel pool without added crude oil imports.

Renewable diesel is a clean burning all hydrocarbon ultra low sulfur diesel (ULSD) virtually indistinguishable from conventional crude oil derived ULSD. It will have more cleaner-burning paraffinic hydrocarbons and fewer aromatic hydrocarbons than the base oil with which it was co-processed. Hydroprocessing converts the triglycerides, which compose fats or oils, into the same molecules that are already in the diesel fuel. The process thermally depolymerizes the triglyceride, and then stabilizes the products, eliminating any carbon-carbon double bonds inherited from the fat or oil.

Renewable diesel is an eco-friendly fuel that supports the agricultural community while significantly reducing green house gasses. Engine tests have demonstrated reduced regulated NO_x, CO, NMHC, and PM relative to the conventional ULSD with which it was coprocessed. Furthermore, well-to-wheels analysis of the CO₂ emitted over the full life cycle of renewable diesel indicate that renewable diesel fuel will reduce GHG CO₂ by over 55% relative to conventional diesel. All groups that have calculated these life-cycle emissions for both renewable diesel and biodiesel from the same biological source agree that renewable diesel may outperform biodiesel in this regard.