

Physicochemical assessment of biodiesel vehicle fuel exhaust emissions and the effect of new emission control devices: The EMITTED Study

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The Exhaust Measurement and Inhalation Toxicology Testing for Emerging Diesel Fuels (EMITTED) study aims to address the effects of diesel emission control technology on the toxicologically relevant characteristics of exhaust, through the characterization of the physical and chemical properties of biodiesel exhaust.

A comprehensive measurement system was developed for an off-road diesel engine. In this system, measurements are taken upstream and downstream of a separated diesel oxidation catalyst and diesel particulate filter to isolate their individual effects on the physicochemical characteristics of the exhaust. Exhaust is characterized in three ways: (1) real-time particulate measurements, (2) real-time gaseous measurements, and (3) offline particulate measurements from samples collected onto filters. A comparison between two particle sizing instruments, the Engine Exhaust Particle Sizer (EEPS) and Fast Mobility Particle Sizer (FMPS) is also shown.