



Using Gasoline, Diesel, and Compressed Natural Gas (CNG) Vehicles, Characterize the Significance of Lube Oil in PM Formation

Contract#: 500-06-043

Contractor: California Air Resources Board

Contract Amount: \$100,000

Contract Term: June 2007 to December 2010

Match Funding: \$254,652 (DOE/NREL), \$100,000 (SCAQMD)

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Commission Project Manager: Tony Tully

The Issue

Engine-lubricating oil is a significant contributor to the formation of mobile source particulate matter (PM) emissions, including ambient fine emissions. Exposure to ambient fine PM has been associated with a wide range of PM-related human health effects in general populations, including the aggravation of heart and lung disease and premature mortality. Directly emitted PM from mobile source vehicles may be the most significant single contributor to ambient fine PM levels. Controlling PM has become a significant barrier to deploying beneficial alternative fuel technologies.

Project Description

The purpose of this research is to:

- Determine, to what extent, lube oil affects PM emissions while under various operating conditions, including varied duty cycle and temperature changes.
- Determine what lubricant properties influence PM formation.
- Determine if a lubricant be formulated to reduce PM emissions.

Understanding the formation characteristics of PM emissions from natural gas vehicles will help in the development of PM mitigation technologies. This in turn will reduce deployment barriers and help to expand the availability of vehicles capable of using alternative fuels.

PIER Program Objectives and Anticipated Benefits for California

This project will develop and help bring to market advanced transportation technologies that reduce air pollution and greenhouse gas emissions beyond applicable standards, and that benefit natural gas ratepayers (Public Resources Code 25620.1.[b] [1], Chapter 512, Statutes of 2006) by reducing health and environmental impacts from air pollution, and greenhouse gas emissions related to natural gas use.

Contact

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