**COMPERATIVE ANALYSIS OF PARTICULATE EMISSION FROM DIESEL ENGINE USING DIESEL AND BIODIESEL BLENDS**

**By**

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India is looking at renewable alternative fuel sources to reduce its dependence on foreign oil. As India imports 70% of the oil it uses, it has been hit hard by increasing costs and uncertainty. It has already been proved that biodiesel is one of the potential alternative fuels that are derived by the transesterification of non-edible vegetable oil.

This study was set out to characterize particulate emissions from a mid-sized diesel engine in terms fo metals, benzenz soluble fraction and gaseous emission using diesel and 20% blend of Biodiesel (B20) made from *Jatropha curcus* oil. It was also intended to identify the sources of metals in exhaust particulates. The characteristics and composition of Diesel Particulae Matter (DPM) vary with engine operating conditions/loads.

To characterize emission, a transportation engine (Mahindra MDI 3000) was operated at idling, 25%, 50%, 75% and 100% engine load conditions, and the particulate samples were collected using a partial flow dilution tunnel.

It was found that as the load increased from idling to full load, the metal content in Biodiesel exhaust is lower compared to diesel exhaust. This reduction was mainly because of low metal content in Biodiesel. However benzene soluble fraction has increased in Biodiesel generated particulate, compared to diesel generated particulate.

It was also found that the concentration of carbon monoxide (CO), total hydrocarbon (THC) in exhaust emission is less for Biodiesel while nitrogen oxide (NOx) is more in exhaust emission as compared to diesel. It was attributed to the oxygenated character of Biodiesel.

Scanning Electron Microscope gives the morphology of the particulate emitted from the diesel engine using diesel and biodiesel as a fuel. EDAX gives the elemental analysis of the different elements in the particulate exhaust.