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**Vehicle Tank Fuel Weathering In Simulated Urban Driving**

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**ABSTRACT:**

The Environmental Protection Agency published a paper in November of 1985 ("Study of Gasoline Volatility and Hydrocarbon Emissions from Motor Vehicles," EPA-AA-SDSB-85-5) suggesting that the evaporative emission test fuel be modified to reflect current "in-use" fuel characteristics. It was shown that higher evaporative emissions resulted from current vehicles when tested on higher RVP fuels.

Vehicle tank fuel volatility decreases as the lighter ends in the fuel evaporate. As fuel is used in vehicle operation, the remainder in the tank becomes less volatile. The evaporative emission test procedure specifies that the test be conducted with the tank at 40% of capacity. At this level, one would expect the fuel to have "weathered" and be of less volatility than originally dispensed. This factor was not included in the EPA data.

General Motors conducted a test program to measure the fuel weathering, or decrease in volatility experienced under appropriate conditions, for vehicle types that are expected to dominate future production. Four vehicle/engine combinations were tested on two fuels in the GM Proving Ground's Environmental Chamber. The fuels used were 11.8 and 10.4 psi RVP. The average decrease in RVP from the "as-dispensed" level to the 40% level was 1.1 and 1.4 psi respectively.