

May 4, 2007

Mr. Jaime Pagan
Energy Strategies Group
US Environmental Protection Agency
D243-01
Research Triangle Park, NC 27711

RE: Hydrocarbon Metric Recommendation for Spark-ignition engine NSPS

Dear Mr. Pagan:

In EMA's initial comments on the proposed spark-ignition (SI) engine NSPS rule published in June, 2006, and in subsequent meetings between EMA and EPA, I have indicated that EMA does not believe that the non-methane hydrocarbon (NMHC) metric to control and measure hydrocarbon emissions from SI engines is appropriate. The primary reasons for this position is the difficulty and cost of NMHC measurement in the field, the variability of the amount of ethane in natural gas fuels, and measurement uncertainties regarding non-reactive hydrocarbons.

After considering a number of options and alternatives, EMA recommends the following metric and test methods to replace the NMHC standard in the final rule.

Metric:

EMA supports the use of Non-Aldehyde Volatile Organic Compounds (VOC) as the metric for measuring hydrocarbon emissions from gaseous-fueled spark-ignited engines. The definition in 40 CFR 51.100(s) with the addition of the aldehyde exclusion should be used as the definition of VOC since it excludes methane, ethane, and other non-reactive hydrocarbons.

Measurement Methods

The following methods should be referenced to measure VOC emissions from stationary gaseous-fueled engines:

40 CFR 60 App A Method 25(a) modified to use a methane cutter as described in 40 CFR 1065.265.

40 CFR 60 App A Method 18 as an alternate and to exclude ethane if needed to meet the standards.

40 CFR 63 App A Method 320 as an alternate method.

Rationale: The VOC definition in 40 CFR 51.100(s) excludes methane, ethane, and other non-reactive hydrocarbons from the definition of VOCs. EMA recommends that the metric used in the SI NSPS be specifically defined to exclude aldehydes from the definition of VOCs from stationary SI engines. The rationale for excluding aldehydes is that the NMHC data provided to EPA by EMA members during the development of the NSPS, and which formed the basis of the proposed NMHC standards in the draft rule, did not include aldehydes. Secondly, aldehydes are already regulated under the NESHAP rule applicable to stationary reciprocating engines and there is no need to “double count” aldehydes by including them in the VOC definition. Aldehydes will be reduced through any necessary hydrocarbon control technology.

Regarding the testing methods, the traditional VOC measurement method (Method 25) is very complex when used to measure non-methane hydrocarbons and is not a good field measurement method for emissions from stationary engines. It also is relatively expensive. Method 25a is a better, more robust, and less expensive method that can be used both in the laboratory by engine manufacturers and in the field by owners and operators. However, Method 25a does not exclude methane which is an important component of the gaseous fuels used in stationary engines and also can be found in engine exhaust. Since methane is excluded from the definition of VOC because it is not reactive in the atmosphere to form ozone, we need to add a procedure for excluding methane from the VOC emissions measurement. Fortunately, EPA approved methods for mobile source engines in 40 CFR Part 1065 include a procedure to exclude methane by adding a methane cutter to the VOC measurement method. EPA needs to add reference to the procedure to exclude methane in 40 CFR 1065.265 to the reference to Method 25a as an approved method for measuring VOCs from stationary engines.

Even with the methane cutter, the VOC measurement still includes ethane and other components. It is not clear to EMA how much ethane there is in US natural gas fuels, but there is speculation that ethane content may be substantial in certain areas of the U.S. as natural gas supply diversifies. Consequently, we believe that owners and operators should be allowed to use Method 18 or Method 320 if needed to determine and then exclude ethane, or other excluded compounds in the definition of VOC, from the VOC measurement. If an owner or operator uses Method 25(a) to measure VOCs and the results exceed the emissions limits, then Method 18 or Method 320 could be used to determine the ethane content and subtract that from the total VOC measurement to obtain a more accurate measurement of VOCs. This two step process will keep costs down and only require the use of a more accurate VOC measurement method when needed to meet the emission standard.

Emissions Standards

Using the above methods, EMA believes that the emissions standards for NMHC proposed in the draft rule are still appropriate. That is, the standards of 1.0 g/bhp-hr in January 2008 and 0.7 g/bhp-hr in 2010 and 2011 should be achievable for a VOC standard. (NOTE: The use of Method 25a using a FID with normal calibration captures only a portion of the aldehyde emissions from engine exhaust. This was the method used by engine manufacturers when developing the data submitted to EPA on NMHC on possible emissions standards in the NSPS. Consequently, aldehydes are included in VOCs and EPA should requires a calibration of the FID or revision of the test method that would result in increased aldehyde measurement efficiency,

EMA believes it would be necessary to set higher VOC emissions limits. However, engine manufacturers currently do not have data to recommend what the alternative emissions standard may be.)

EMA believes that revising the hydrocarbon metric from NMHC to non-aldehyde VOC and using the above referenced methods will satisfactorily resolve the hydrocarbon measurement issues with the draft SI NSPS engine regulation. Moreover, it provides a cost effective method to determine compliance that can be used both in the engine laboratory and in the field.

Please do not hesitate to call if you have any questions on the above recommendation.

Very truly yours,

Joseph L. Suchecki

Joseph L. Suchecki
Director, Public Affairs