



Memorandum

To: Ethanol Producers
From: Kristy Moore, Director of Technical Services
Re: Significance of Silicon in Fuel Ethanol
Date: March 16, 2009

At least three petroleum refiners have recently found organic silicon compounds present in the parts per million range in fuel ethanol. The silicon contamination found in both the denatured and undenatured ethanol samples has been traced to decomposition products of polydimethylsiloxane, a common component of anti-foaming agents. While antifoam agents have been successfully used by the ethanol industry for many years, it is unclear what process changes have been made recently to cause the concern. Non silicon based antifoams are available and have been used effectively in ethanol processes. However due to the seriousness of the concern, this memo intends to alert the industry to investigate the use of silicon based products in the production process and take the necessary steps to eliminate the source of any amount of silicon in finished fuel ethanol.

Silicon, even at low part per million levels, will result in failure of the oxygen sensor and loss of closed-loop feedback to the engine control module resulting in an inoperable vehicle. The failure can occur in less than one tank full of silicon contaminated fuel. No detectable level of silicon is acceptable in fuel.

Efforts are afoot to include a cautionary note in the ASTM standard specification, D 4806 Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel. The proposed note will caution ethanol producers that anti-foaming agents containing silicon shall not be added to ethanol intended for use in spark ignition engines.

If you should have any questions, please don't hesitate to contact me at (309) 830-6154 or by email kmoore@ethanolrfa.org.