



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

800 Independence Ave., S.W.  
Washington, D.C. 20591

SEP 26 2000

Ms. Barbara Cunningham  
Office of Program Management and Evaluation  
Environmental Protection Agency  
1200 Pennsylvania Avenue, NW.  
Washington, DC 20460

Dear Ms. Cunningham:

The Federal Aviation Administration (FAA) would like to take this opportunity to provide the Environmental Protection Agency (EPA) with information related to ongoing fuels research being conducted by the FAA in cooperation with industry. The FAA William J. Hughes Technical Center is currently conducting research and testing that will lead to the development of a replacement for leaded aviation gasoline (AvGas).

Earlier this year the EPA published an Advanced Notice of Proposed Rulemaking (FR March 24, 2000, Docket No. OPPTS-62164), which indicated EPA's intent to eliminate or limit the use of methyl tertiary butyl ether (MTBE) as a fuel additive and to consider other ethers for this action as well. The FAA requests that the EPA not take action to ban or limit the use of ethyl tertiary butyl ether (ETBE) in aviation gasoline. Fuel formulations composed of ETBE have shown the most promise as alternatives to 100LL leaded AvGas for use in general aviation aircraft. These findings represent almost ten years of research and development, largely driven by concerns about the environmental and health effects that may be associated with leaded fuels. The aviation community is also concerned about the long-term availability of tetraethyl lead, since most refiners have stopped producing lead additives.

The FAA and industry associations have been working to develop and certify an unleaded fuel that can be used as a direct replacement for 100LL AvGas. Research on alcohols and ethers that are blended with petroleum based products and other additives have demonstrated the most promise for use in high compression engines used in many aircraft powered by piston engines. Research tasks that need to be conducted on potential replacements to 100LL AvGas include the following:

- octane ratings and fleet requirements
- rate of consumption
- stoichiometry
- vapor lock
- exhaust emissions
- materials compatibility
- engine knock and detection
- engine life and component wear
- flight testing
- documentation of final specifications

A committee under the Coordinating Research Council, Inc. (CRC) has developed a matrix of fuel formulations that they consider promising for further testing and evaluation. ETBE has advantages of octane boost, vapor pressure, heat value, air to fuel stoichiometry, and volatility. ETBE is derived from ethanol feedstock, which is considered a renewable biofuel. ETBE exhibits higher energy density, better corrosion protection, lower miscibility with water, and better resistance to vapor lock than fuels composed of mostly ethanol.

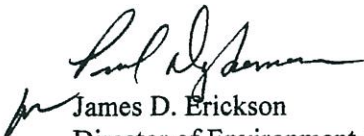
Identification of these candidate fuels for additional testing and possible certification represents nearly ten years of research and development. These efforts were originally undertaken to eliminate the environmental and health risks that may be associated with leaded fuels without compromising operational safety. The aviation community is now concerned about the long-term availability of tetraethyl lead as well, since most refiners have stopped producing lead additives.

Eliminating or limiting the use of ETBE for AvGas would not significantly effect the overall goal of protecting water supplies from contamination. General aviation consumes no more than 320 million gallons per year of 100LL, which is less than 0.8 percent of the estimated 41.5 billion gallons of reformulated MTBE gasoline that was otherwise sold in the United States throughout 1998. There is far less distribution, storage, handling and end users of AvGas than compared with that of reformulated MTBE gasoline, making the probability of contamination from an aviation source far less than that of other sources.

The FAA will continue to work cooperatively with industry and the EPA to find suitable alternatives to leaded fuels through ongoing research and certification programs. ETBE fuel blends show the most promise for a direct replacement to 100LL and should not be eliminated as viable options for the aviation community.

We trust that this information will be beneficial to the EPA as you consider actions to address any fuel additives other than MTBE. If you or your staff would like to meet with FAA to further discuss this important matter please contact Mr. Warren Gillette of my staff on telephone number (202) 267-8367.

Sincerely,



James D. Erickson  
Director of Environment and Energy

bcc: Earl Lawrence, Experimental Aircraft Association  
Mark Rumizen, FAA  
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