

growth. Under such an environment, rather than a policy of end-use controls, the petroleum industry feels assured that it can meet the challenges that lie ahead. This is a belief apparently shared by the Department of the Interior which said in its "appraisal" last year—

The data developed by this study reveal an industry that is healthy and vigorous and capable of meeting the requirements that will be placed upon it in the foreseeable future * * *. It is evident that the petroleum industry has the financial and technological capability to accomplish it.

Question 2: Realistically, what are the near term prospects for an economically competitive replacement for tetraethyl lead in gasoline?

Answer: On a realistic basis, the prospects for the discovery of an economically competitive replacement for lead antiknock compounds are very slim.

An extensive search for such a compound has been carried out on a multimillion-dollar-per-year scale by the antiknock manufacturers, petroleum refiners, and chemical companies since World War I. To date, this vast research effort has not produced a suitable alternative antiknock compound. The major technical requirements for such a compound are formidable. They are:

1. High antiknock effectiveness in a broad range of hydrocarbon types under a wide variety of engine operating conditions.
2. High solubility in a wide range of hydrocarbon types.
3. Negligible solubility in water which is present to some degree in all fuel systems.
4. Volatility characteristics permitting relatively uniform distribution to the various cylinders of the internal combustion engine.
5. Sufficient chemical stability to permit normal handling and storage both in the concentrated form and when blended with gasoline.
6. The ability to be consumed in typical engines without causing significant engine durability problems.

Research for new antiknocks will, of course, continue. As new chemistry develops through basic research in universities, industry, and Government laboratories the new chemical compounds resulting from such research will be investigated as possible antiknocks. But, based on the present state of the art, the chances appear to be poor for a near term replacement for lead antiknocks.

Question 3: How does the present crude oil import policy affect the sulfur content of fuels for sale in the United States?

Answer: If the present crude oil import policy were relaxed, U.S. refiners would probably process more crude oil from the Middle East and from South America. Since these imported crudes generally contain a higher sulfur content and are heavier than domestic crudes, increased volumes of residual fuel with a higher sulfur content would be produced. It should be noted that among the imported crudes, Venezuela crudes contain somewhat less sulfur than Eastern Hemisphere production although they are generally higher than U.S. crudes. North African crudes are relatively low in sulfur, and to the extent they might be brought to the U.S. east coast refineries, they would tend to drop the sulfur content of residual fuels.