

ETHYL CORPORATION

INTER-OFFICE CORRESPONDENCE

TO	Dr. R. A. Kehoe	ADDRESS	Cincinnati
FROM	Harold J. Gibson	ADDRESS	Detroit
SUBJECT	Esso Request for Lead Alkyl <u>Estimate</u>	DATE	August 24, 1956

Enclosed herewith is a copy of a letter directed to Frank Cheely at Baton Rouge requesting an estimate of the cost of manufacture of a mixture of lead alkyls which will be appreciably more volatile than is tetraethyllead. I think the letter is largely self-explanatory. When Wayne Warren and I talked to Dr. Sweeney and his people on August 3, they had not yet seen your letter to Dr. Eckhart, hence I read them the most pertinent paragraphs. Dr. Sweeney said that in due time your letter to Dr. Eckhart would arrive at his desk. As a result of their request, I have gone ahead and asked Mr. Cheely to make the requested economic study. I think it is quite likely that the cost figures that he will supply will be so high that Esso will have no further interest. However, I wanted to tell you of this so that you would be up-to-date.



Harold J. Gibson

HJG/dl
Enc.

CONFIDENTIAL

Mr. J. F. Cheely

Baton Rouge

Harold J. Gibson

Detroit

Cost of Mixture of Lead Alkyls

August 24, 1956

About mid-July Bynum Turner and Dr. W. J. Sweeney of Esso Research and Engineering Company conferred on a problem which Esso's foreign affiliates are experiencing in the road performance of their current commercial gasolines. Esso considers this problem to be of such a confidential nature that Dr. Sweeney requested Bynum to sign a secrecy agreement before he would reveal the nature of the problem to Bynum. This Bynum did. I give you this background so that you will understand that Esso considers the problem discussed herein to be of great importance to them, and has requested that it be held in the utmost confidence. The conference mentioned above was followed up by another which Wayne Warren and I attended on Friday, August 3. At this time we were given the complete background to Esso's problem and discussed means of helping them to alleviate the situation. This request for an economic analysis is one that was requested by the Esso people.

Esso's problem in Europe comes about as a result of the composition of their gasoline and their particular refining situation. Without giving you all of the details, it can be stated that Esso has found that lead alkyls more volatile than TEL provide a partial solution to their road antiknock performance problem. Their data would indicate that in the most critical automobiles, the more volatile the lead alkyl, the greater the improvement in road performance. One of the questions which they were anxious to discuss with Wayne Warren and myself was the possibility of manufacture for them of one of the alkyls more volatile than tetraethyllead. Their Dr. Eckhart had also contacted Dr. Kehoe relative to the medical problems involved. During our discussion I emphasized to them Dr. Kehoe's views on the toxicity of the more volatile alkyls and the manufacturing hazards involved in general. I told them that the last time that we had looked at the mixed lead alkyls as possible antiknock compounds, we had used a mixture designated as MA-250 which we had considered to be a reasonable compromise between desirable volatility characteristics, inherent antiknock effectiveness, and toxicity. They requested a sample of this material for road antiknock evaluations, and this has been supplied to them. They then asked us to

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make an economic evaluation of the cost of manufacturing for them a mixture such as that which I described to be the composition of MA-250. I told them that our last appraisal had indicated that lead in such a mixture would be much more expensive than is tetraethyllead. The increase in cost would result from such items as increased hazards, greatly reduced plant capacity, and the necessity of stripping out the tetramethyllead. However, I told Dr. Sweeney that if he would supply me with his best estimate of gasoline requirements and lead concentrations in the marketing area in which they are concerned, I would ask you to give us a reasonably accurate cost of such a lead alkyl mixture. We should appreciate having this estimate at your earliest convenience.

The lead alkyl mixture designated as MA-250 had an approximate composition as follows:

tetraethyllead	30%
methyl triethyl	42%
dimethyl diethyl	22%
trimethylethyl	5%
tetramethyllead	1%

It was, of course, made by a redistribution reaction, and the tetramethyllead had been stripped from the resulting product to reduce its over-all volatility and improve its effectiveness. The exact quantities of lead in such a mixture required are a little hazy, but it appears that if you would give us estimates based on 50,000, 100,000, 150,000, and 200,000 lbs. a day of lead as this alkyl mixture, we would be able to give the Jersey people a definitive answer. The maximum figure, that is, 200,000 lbs. a day, is predicated on their estimate of total gasoline consumption in 1959. The lower figure is predicated on approximately one-third of the total gasoline presently being consumed in the affected area using the more volatile mixture.

If further information is required, please advise.

Harold J. Gibson

HJG/dl

CC: Dr. R. Kehoe
M. A. Remondino

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