

LEAD INDUSTRIES ASSOCIATION

480 LEXINGTON AVENUE

NEW YORK 17, N. Y.

TETRAETHYL LEAD

NOT FOR PUBLICATION

Joseph A. Costello, Vice President

Ethyl Corporation

In 1934 the tetraethyl lead industry consumed 1,200 tons of lead metal. The Bureau of Mines report for 1949 showed that the consumption rate had increased to 94,644 tons. I believe it is safe to say that this large increase in lead utilization has put the tetraethyl lead business in a position of some importance and concern to the miners, smelters and marketers of metallic lead. Because of this belief, it seemed to me that I might take a few minutes to tell you something about our industry - what makes it tick - upon what it depends for its industrial well-being - and what we see for its future.

I am sure that everyone present knows that TEL is the active ingredient in antiknock compound used in almost all motor fuel on the North American Continent, as well as in a great part of the motor fuels sold throughout the world. The function of an antiknock compound in motor fuel is to improve its ability to burn smoothly under high pressure in the present-day high compression, high output internal combustion engines. The only effective antiknock compounds presently in use contain TEL, and for each pound of TEL manufactured for this purpose approximately 2/3 of a pound of common grade lead is required.

By and large, the amount of TEL sold each year is a function of (1) the total amount of gasoline consumed; and (2) the antiknock quality of the gasoline. The amount of gasoline consumed is controlled principally by the needs of bus and truck operators, tractor owners, and the great motoring public. The petroleum industry exercises no appreciable influence on the amount of this demand, and its only function in this regard is to manufacture and distribute the amount required. The quality of the fuel, on the other hand, is within certain limits under their control. It is dictated by the requirements of the engines using it and the relative competitive position which each petroleum company endeavors to maintain.

The manufacture of present-day gasolines is a process of considerable complexity. The final blending of stocks to get the desired finished product is somewhat akin to blending a good cocktail - say an Old Fashioned. A representative gasoline will contain at least five different ingredients. Generally these will include straight-run gasoline cut directly from the crude, thermally cracked gasoline made by applying heat and pressure to gas-oil, catalytically cracked gasoline made from gas-oil in the presence of a catalyst, a cut of light petroleum fraction such as butane to aid in starting, and tetraethyl lead. While all of the ingredients are important, the catalytically cracked gasoline and the TEL make the greatest contribution to the antiknock value of the finished fuel. It, therefore, follows that the most important competitor to the use of TEL (and therefore metallic lead) in gasoline is cat cracked

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base stock. The relative utilization of each is a matter of refinery economics. The use of large percentages of cat cracked gasoline requires very large capital investment costs while on the other hand TEL requires no investment cost but increases raw material costs. Good refinery practice dictates the use of both, so long as TEL costs remain low enough to show an economic advantage in obtaining antiknock value. The amount of TEL used will always be dependent upon its economic worth. That is one of the reasons why our Company is particularly sensitive to price changes in lead metal, and has consistently passed along to its consumers any cost reduction that has resulted from lower primary lead prices.

As to the future of the business, when Mr. Schaefer talked to you last year he painted a rather rosy picture. As I remember, it was one of the few bright spots in what was otherwise a very unhappy situation at the time. In general, we still have our rose-colored glasses on, although they have been smudged up a bit by the foreign situation in our business. I don't believe we are unique in this regard, since we all like to do business for dollars, and they are constantly becoming more difficult to come by in foreign markets. It is more apparent now than was the case a year ago that foreign demand for U. S. produced TEL will become more and more limited by the dollar exchange problem. Further, we can expect that within the next few years the capacity for manufacturing TEL in England and on the European Continent, which up to now has been quite small, will be appreciably expanded. This appears to be fore-ordained if the growing foreign demand for TEL - particularly in the Sterling Area - is to be fulfilled without the expenditure of U. S. dollars. Notwithstanding, however, a not too encouraging foreign market for the future, the outlook on this continent still looks quite encouraging.

It is most difficult to forecast the tonnages of lead that will be required for TEL in the next few years. As I pointed out, the amount required depends on the amount of gasoline consumed and the TEL concentration per gallon of gasoline which in turn is dependent upon the octane number. The petroleum industry economists are currently projecting an increase of approximately 3% per year in gasoline use for the next few years - assuming no serious depression or other adverse effect on the general prosperity. If we accept this to be accurate, then we can say that for each increase of one octane number in the average quality of gasoline the metallic lead requirement will increase from 5,000 to 10,000 tons per year, depending upon what part is obtained by cracking and what part from lead. An increase of at least 1 octane number is already indicated for 1950, and it is reasonable to expect that this trend will continue at least for a few years. All of this assumes, of course, that the price of lead will not get out of hand, which the present price certainly does not indicate, and further that no one will come up with a "flash of genius" that will either invent a high output engine that will run on low octane fuel or find a substitute for TEL as a knock suppressor.