



PETROLEUM AND ITS PRODUCTS

GULF OIL CORPORATION

PRODUCT DEVELOPMENT AND PRODUCT ENGINEERING

GULF BUILDING · PITTSBURGH 30, PA.

January 22, 1954

C. R. NOLL
DIRECTOR
AUTOMOTIVE PRODUCTS ENGINEERING

INCLUDING SUBSIDIARY
GULF REFINING
COMPANY

Dr. Robt. A. Kehoe
The Kettering Laboratory
College of Medicine
University of Cincinnati
Cincinnati, 19 Ohio

Dear Dr. Kehoe:

We wish to thank you for your letter of January 19th commenting upon the possible results of the addition of Additive containing lead, to a General Purpose Fuel Oil.

At the present time we are planning very limited field tests in a selected area. As these plans develop we will undoubtedly contact you further for suggestions relative to observations which you feel should be made in conjunction with this field work, and which we know will be most helpful.

Again thanking you for your interest in this problem, we remain

Yours very truly,

Director,
Automotive Products Engineering

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January 19, 1954

Mr. C. R. Noll, Director
Automotive Products Engineering
Gulf Oil Corporation
Gulf Building
Pittsburgh 30, Pennsylvania

Dear Mr. Noll:

I have been slow indeed to write to you in confirmation of the opinion expressed in a telephone conversation with you on November 27. Unfortunately I have been submerged by an accumulation of correspondence and other obligations, which resulted from my being out of the country during all of October and most of November, and am just now nearing the end of matters which have seemed to demand my attention.

With respect to the general problem of the addition of lead in any form to a general purpose fuel, there are, in principle, three considerations.

1. The combustion of the fuel will, presumably, result in the emission of lead compounds with the combustion products of the fuel, and this will add to the lead content of the atmosphere contaminated with the combustion products. Regardless of where such atmosphere is found, whether in the vicinity of a stack or flue, or in the vicinity of any exhaust system, a contribution is made to the air which someone breathes. Therefore, a potential hazard is in the making, in that the summation of all of such contributions may eventually reach a point of hazard as an expression of the total dose of lead from all sources to which some or perhaps many individuals in our population may be exposed. Some such exposure is utterly unavoidable, since there is some lead in our food and beverages and in the air we breathe. This unavoidable exposure must not be permitted to reach dangerous or near-dangerous proportions. There is a consistent effort, among persons concerned with the public health, to avoid unnecessary contributions to such exposure.

2. The foregoing principle leads to the need for careful scrutiny of any technologic proposal which would provide any contribution of the type indicated. There must be, or at least, in a prudent society, there should be very sound socially strategic or economic reasons behind such a proposal as an offset to the increment of potential reduction of the public

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safety, with respect to lead exposure. Otherwise there is no point in taking the proposal seriously.

3. The quantitative aspects of the matter must be taken into account in any case, even in the face of social advantages, and if there should be evidence that the margin of safety of the public or of unprotected groups in the public is being reduced so as to approach the vanishing point, then there can be no justification for the development.

With these principles in mind, it seems evident to me that the technical and economic advantages of your Company's proposed project should be looked into carefully. If there is good reason in the public interest and economy to go ahead, then the extent of the risk associated with the exploitation of the process should be weighed. As to the latter, you will need to consider the possibility of fictitious claims of lead intoxication, as well as the actual occurrence of such difficulties. (You will also need to consider the effect of the added lead on the efficiency and maintenance costs of burners and accessory heating equipment.)

With regard to the quantitative aspects of the exposure to lead which may be associated with the distribution of fuel containing lead in the quantities indicated, I am of the opinion that it would probably be too small to be measured, and therefore it would turn out to be an essentially insignificant contribution to the present level of casual or unavoidable exposure to lead on the part of any part of our population. I should think it likely that the lead in the flue of a furnace in which such fuel is burned could be determined without too much difficulty, but that some very considerable difficulty would be encountered in finding the lead in sufficient quantity to be identified in the atmosphere in the vicinity of the house from which the flue discharged. I base this opinion on our experience in the determination of the sources of lead in the atmosphere in various sections of certain cities, and also on our knowledge of the fate of the lead in gasoline following its combustion in motor vehicles. It has been found to be difficult to identify the sources of atmospheric lead, since these are numerous and variable in their effects at different times and places, and under varying circumstances. In my opinion, the contribution made by your product would be so small and so variable as to be lost in the other variables. Part of the reason for this opinion resides in my expectation that a considerable proportion of the lead in the combustion products from the furnace will condense out and agglomerate in the flue and never reach the outside of the house in a sufficiently finely divided form to remain suspended.

It would be wise, I think, to make some observations to test the validity

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of these opinions. If it is decided that this should be done, we could make some suggestions for the conduct of such observations that might be helpful.

I trust that these written remarks correspond essentially to your recollection of our conversation, and that they will serve your purposes. :

Very truly yours,

Robert A. Kehoe, M. D.

RMH:el

A.C.: Mr. George P. Eotter