February 21, 1939

Mr. J. H. Schaefer
Ethyl Gasoline Corporation
C hrysler Building
New York City
New York

Dear Mr. Schaefer:-

I am sending you herewith a few notations which I have made in response to the questions raised by Mr. Osborne of I.C.I. In as much as I do not know where to address Osborne, I should appreciate it if you would forward these comments to him.

You might, at the same time, convey to him my regret that he could not visit us, and my pleasure over his very kind note. I hope to have the pleasure of meeting him again and I wish to assure him, and his associates, that I shall be only too glad to give him every possible assistance.

Sincerely yours,

RAK:is

Robert A. Kehoe, M.D.

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QUESTIONS
IN RELATION TO MEDICAL CONTROL

1. Containers for collecting urine, blood and feces, and needles for the collection of blood, should be supplied to the plant medical department from the laboratory in which the analyses are to be carried out. It would not be possible, otherwise, for them to be available in a proper state of chemical cleanliness. The first requirement, therefore, is provision for such an analytical laboratory. This laboratory cannot be operated within the plant unless the most rigid precautions are taken against contamination of the laboratory space and environment with lead compounds, through isolation of the analytical rooms and by adequate filtration of all air entering them. This, in my experience, is quite difficult of accomplishment, and I would recommend that a laboratory for this purpose be situated at some distance from the plant.

Dr. E. C. Dodds, of the Courtauld Institute of Biochemistry at the Middlesex Hospital Medical School is in position to advise with respect to the personnel and facilities which will be required for setting up a suitable analytical control. I, also, should be glad to give any further assistance which may be required. The point which should be made at this time is that the analyses of biological materials for lead cannot be done in accordance with customary chemical routine in plant operations but, if it is to be of any value whatever, it must be done in a special laboratory, designed for that purpose, by specially trained personnel. In all probability, from three to six months of training in methods of analysis and in obtaining

and handling samples for analysis will be required to develop adequate personnel. The location and equipment of the analytical laboratory should be determined, in part, at least, after the selection of the person or persons who are to do the work.

2. I am at some loss to understand the origin and meaning of the question relating to a tarpaulin shed for cleaning a workman who may be contaminated with tetraethyl lead or Ethyl Fluid. Any man who might be splashed or otherwise wet with such a liquid should be washed thoroughly with kerosene and then with soap and water immediately. Containers with kerosene and emergency shower baths are scattered about in various parts of the plant. These would be used promptly in case of accident so as to wash away the liquid lead compound before any appreciable absorption could occur. In view of the danger associated with delay, one would strip off his clothing at once and clean up with or without assistance, as circumstances indicated.

QUESTIONS IN RELATION TO WATER POLLUTION

The lead concentration in a stream used for general purposes and flowing through agricultural or urban districts should not be permitted to exceed 0.1 mgm. per liter of water. Even at this concentration it is assumed that the lead exists mainly as suspended material and not in solution, so that filtration or settling would result in considerably lower values.

The permissable lead content of the "flashes" referred to in the report will depend upon the degree of isolation of these flashes and the use to which the water might be put. Moreover the

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extent to which the lead will precipitate out as sulphide will depend, obviously, on the acidity of the reaction mixture. It would appear that some means might be developed for producing approximately optimal conditions for this precipitation, whereby the clear supernatant water might be made substantially lead free.

Signed: Robert A. Kehoe, M.D.
Director, Kettering Laboratory
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College of Medicine
Cincinnati, Ohio