

February 10, 1950

Dr. E. W. Caldwell,
Standard Oil Development Company,
Linden, New Jersey. (P. O. Box 51)

Dear Doctor Caldwell:

Your letter of January 5, addressed to Ethyl Corporation, concerning the possibility of the performance of lead analyses on the blood and other materials of your employees has come to my desk. I have been delayed in replying because of a number of urgent matters, but I trust my delay will not have caused you inconvenience or dissatisfaction.

Speaking as the Medical Director of Ethyl Corporation, I may say that the Corporation, itself, has no facilities for the conduct of analyses of the type indicated. On the other hand, this Laboratory, which, as you know, has been partially sponsored by Ethyl Corporation, has been called upon by Ethyl as well as other sponsors, to carry out such observations that might be required from time to time in connection with occupational hazards. Therefore, we would be in position to conduct the kind of tests that you require, within the limits ^{that} may be reasonably adapted to your needs. Not knowing the scope of your problem, I am not in position to say what we can do or what should be done, but I can assure you of our complete willingness to examine the facts with you and to do what we can to give you assistance.

I am not sure at this writing whether this is a problem indirectly related to the responsibilities of Ethyl Corporation, or whether it is wholly a problem within your own organization. However, this matter can be considered later. For the present the important thing, from my viewpoint, is to establish what may be necessary to provide that reasonable assurance of safety which you require in connection with your employees. It has been our practice, over the period of years, to follow at suitable intervals the lead concentrations in the urine and blood of persons whose occupations give them significant exposure to lead in the activities concerned with leaded gasoline. As you are probably aware, the Medical Department of Ethyl Corporation has not intruded into the experimental activities of customer companies and has been concerned with the laboratory personnel only by invitation, or when circumstances appear to justify some degree of medical intervention or assistance. If your personnel, by reason of work carried on ⁱⁿ the normal conduct of testing and research relating to normal fuels, are exposed to tetraethyl lead, we have every reason to be deeply concerned and to seek the information necessary to appraise the hazards of such employment. On the other hand, if the exposure is associated with unusual circumstances arising out of ^{an} experimental

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program, we are not disinterested, and we would certainly give every aid and assistance, but we would not normally be concerned with this as a function of the medical activities of Ethyl Corporation. In any case, if you will let me know the nature of the problem you face, and what you wish to accomplish, I shall do my best to work out a means whereby we can provide you with the necessary information. You should not, under any circumstances, expect to carry out the kind of tests you have in mind in an ordinary technical laboratory or in an ordinary medical diagnostic laboratory. They simply cannot be done under these conditions. The difficulty in the conduct of these examinations is that even skilled chemists have no idea of the pitfalls associated with inadequate methods of collecting samples, and inadequate means of preventing the contamination of samples. Samples of blood and urine contain only a few micrograms of lead. Under the worst conditions of exposure the quantities are so small that the methods involve the most meticulous care and precision. This cannot be done except by specially trained personnel, making use of specially designed laboratory facilities.

In connection with such chemical examinations no useful purpose is served by examination of the feces, and it may be that no very useful purpose will be served by examinations of the blood, except occasionally. For reasons which I shall not go into in this communication, the most useful information in connection with potential exposure to tetraethyl lead, is the examination of the urine. We can provide you with containers for both blood and urine, with instructions for the collection of such samples, and with sheets or forms on which the appropriate information can be given us, so that suitable interpretation can be made of the analytical results. It would be desirable, I think, if we were to have an opportunity to discuss your entire problem in person. If that is not feasible, I should be glad to have you write me, and I will do my best to give you the information required.

The problem of exposure to tetraethyl lead is a somewhat unusual one, from the clinical point of view, and therefore I think it might be well if we were to discuss your situation in that regard as well. I shall hold myself in readiness to discuss these matters with you, at any mutually convenient time.

Cordially yours,

Robert A. Kehoe, M. D.

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C.C.: Mr. A. J. Baldwin

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