

July 26, 1961

Professor Harry V. Warren
Department of Geology
University of British Columbia
Vancouver 8, Canada

Dear Doctor Warren:

This letter is mainly an acknowledgment of yours of the 19th and an attempt to answer one of your questions, just prior to my getting away for a vacation in the western mountains.

I have not had an opportunity to go over your articles, for I've been hard pressed to get the urgent things done before abandoning my desk for a month. I'm shaking off all ideas of working for a time, for I need complete relaxation. I'll have the pleasure of studying your work when I return.

With respect to your question, I see no reason to believe that there is much difference in the products of the combustion of tetraethyl lead in various parts of the world. The antiknock compound always contains a little more than enough organic chloride or bromide (or both) to convert the combusted lead into halogenated salts. Dependent upon the other anions available, there is always some lead carbonate and sulfate and often some phosphate. There should be little oxide. (There is of course, some variation in the sources and in the chemical components of the gasoline. There is very little variation, however, in the composition of the anti-knock compounds.) When, therefore, the deposit on vegetation or soil or other surfaces is high in oxide, it has not come from automobile exhausts - unless, of course, through some chemical reaction the halogen is converted in situ into oxide. I'm not a good enough chemist to judge the likelihood of that reaction under the conditions that usually exist, but I should think that it could occur to some extent, under, suitable conditions.

Please accept my best wishes for finding a satisfactory outlet for the publication of your paper, and, more particularly, for the continuation of your work.

It has been a pleasure to know you through indirect exchanges, and I hope we shall meet in person before long.

Sincerely yours,

Robert A. Kehoe, M.D.