

August 19, 1948

Dr. George Calingaert,
Ethyl Corporation,
1600 West Eight Mile Road,
Ferndale 20, Detroit, Michigan.

Dear Cal:

The subject raised in your letter of August 16 has been given considerable attention at our hands. You will remember that we studied the toxicity of the several lead compounds referred to, and came to the conclusion that we were dealing with substances, which, when absorbed into the tissues of animals, had approximately the same toxicity as tetraethyl lead. Therefore, there is nothing peculiar in these compounds that would suggest the necessity of thinking of their direct hazards in any other terms than those of their physical properties. (I exclude here, from our consideration, the matter of chemical stability, although this is an important source of indirect potential hazard.)

If we are to answer your question as to the practical hazards of the manufacture and use of the more volatile lead compounds, we shall, of course, have to think in terms of the physical properties. The matter of volatility alone is a very serious hurdle. I shall have to give it more serious thought before I am prepared to give a final considered opinion, but I hasten to express my very great reservation considering the wisdom of any such procedure. It must be borne in mind that our situation, since the past war, is very different from that previously recognized. During the war, we found out what we had never observed before, namely, that acute tetraethyl lead intoxication can be incurred as the consequence of improper handling of leaded gasoline. This means that there is a hazard at the present time. The margin of safety, undoubtedly, is appreciable, but we do not know precisely what it is. It seems unlikely that we shall be able to know what it is on any other basis than that of human experience. It is very doubtful in my mind, if a commercial enterprise such as that in which Ethyl Corporation is engaged should incur the risk of establishing by experience the order of magnitude of this safety factor. It can only be established by hard experience, and this, I think, would be costly to the point of being prohibitive. If we consider the matter in terms of moral responsibility, there is still another issue. Frankly, I feel prepared to say at this point, that the reasons for the use of a more volatile lead compound would have to be compelling before one would be justified in accepting the risk involved in their use. You will remember that I have said that we should not, under any circumstances, permit the occurrence of an increase in the concentration of tetraethyl lead in motor fuel.

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I based this point of view on a number of considerations which I need not enter into here in detail, but one of them has to do with this very problem under consideration here. If this were to be done, we should have to set up a pilot plant study, which would simulate the conditions of the handling of the fuel, and to study it over such a period of time as would enable us to see the pattern of the environmental conditions, with reference to the lead content of the atmospheres.

With reference to the manufacturing problem, we should have to feel our way carefully. The difficulties would be considerable. The increase in the volatility of the manufactured material would influence the hazards in certain operations, and would fail to influence them importantly in others. A breakdown of the sources of atmospheric contamination in the manufacturing plants will show the points at which increases may be anticipated. I have no doubt that these matters can be handled in the manufacturing plant, although it will require more elaborate and more costly procedures than those in use at the present time. There again we should have to have pilot plant studies, and the approach would have to be made gradually. Here again we have found out a great deal about the limits of safety, and we dare not repeat the difficulties that occurred during the last war. I should be willing to undertake to handle manufacturing difficulty, if we can proceed stepwise, and be sure of what is required at every step. The hazard here is undoubtedly greater than it is in the field of distribution. The difference is, however, that here it can be controlled, while in the field of distribution it cannot. Therefore, I should say, that any program related to the manufacture and distribution of such a product will have to be dependent, primarily, upon the question of public safety. On this, I repeat, I have serious doubts.

Cordially yours,

Robert A. Kehoe, M. D.

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C.C.: Mr. J. B. Macauley

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