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UNIVERSITY OF CINCINNATI
CINCINNATI 19, OHIO
May 24, 1948

KETTERING LABORATORY OF APPLIED PHYSIOLOGY
COLLEGE OF MEDICINE-EDEN AVENUE

CABLE ADDRESS: KETLAB, CINCINNATI
TELEPHONE: UNIVERSITY 2665

Mr. R. M. Palmer
381 Fourth Avenue
New York 16, N.Y.

Dear Mr. Palmer:

It is unfortunate that most of the published articles dealing with the toxicity and behavior of tetraethyl lead are out of print. However, I send you a few that will give information and references.

The risk of oral absorption of tetraethyl lead is negligible, and the ingestion of gasoline containing tetraethyl lead is of no practical importance in relation to the lead compound, since one could not ingest enough lead by this means to produce illness without taking many times the lethal dose of gasoline.

The absorption of tetraethyl lead out of gasoline, likewise is of no practical importance, since the concentrations of lead in commercial gasoline are too low. Dilution of the lead compound in gasoline interferes with its absorption to a considerable degree, and when the concentration of lead approaches that found in commercial gasoline, the absorption through the skin is too slight to be measured.

The inhalation of tetraethyl lead out of gasoline is also so slight as to be negligible, so long as the gasoline is handled with reasonable care against spillage and virtually complete evaporation in an enclosed space. One can induce artificial conditions of complete evaporation, for experimental purposes, in which the gasoline and its complement of lead are evaporated totally. Under these conditions the lead in the air can reach toxic levels. However, because of the differential evaporation of the mixture, gasoline and tetraethyl lead, with the latter not in excess of 1 part per 1,000 by volume, and with the extreme difference in vapor pressure (TEL boils at about 200°C.), the vapors rising from a tank or open container of leaded gasoline contain only minute traces of TEL. In fact one can evaporate 25 to 40 per cent of the gasoline and lose only a very small proportion of the lead compound.

It is for these reasons that we came to the conclusion in the middle nineteen twenties, that there would be no practical hazard in the normal distribution and use of leaded gasoline with a carefully controlled lead content. These conclusions have been shown to be correct in practice, through extensive field studies that have not only failed to find cases of lead poisoning among gasoline handlers, but also have proved that these

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people (filling station attendants and refinery handlers of gasoline) do not absorb demonstrably abnormal quantities of lead.

If these articles and my comments do not answer your questions, please do not hesitate to write again.

Incidentally I should appreciate your reporting to me the name and location of the man who thinks he has lead poisoning. We always investigate carefully all the cases of this type that are brought to our attention from any source. What this man needs is a doctor who knows how to determine whether or not he has absorbed abnormal amounts of lead, and who can appraise the nature and source of his lead exposure. This is not a very difficult problem if one has the facilities for doing it. If he is ill otherwise, a diagnosis should be arrived at and proper treatment recommended.

Cordially yours,

Robert A. Kehoe (signed)
Robert A. Kehoe, M.D.

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