

December 22, 1942

Mr. Victor Byer,
Safety Department,
U. S. Navy Reserve Aviation Base,
New Orleans, Louisiana.

Dear Mr. Byer:

Your letter of December 4, addressed to the Ethyl Corporation, Baton Rouge, Louisiana, concerning the harmful effects of lead in gasoline, has been referred to me for reply.

Over a period of nine years since leaded gasoline first came on the market, my associates and I have investigated various phases of the hygienic questions raised by its use. Other investigations outside of this Laboratory have been carried out by the United States Public Health Service, by the British Ministry of Health, and on a lesser scale, by the health agencies of certain other countries. The results of all of these investigations have been exactly the same, in that no one has been able to find any evidence that the handling of leaded gasoline in the manner required for its use as a fuel in internal combustion engines, has had any harmful effect upon the persons so involved. Our initial studies reported in the Journal of Industrial Hygiene* were concerned with the study of a rather large number of filling station attendants and garage mechanics whose exposure had continued over a period of years. These investigations repeated at intervals over a period of years, failed to reveal any cases of lead poisoning, and moreover, demonstrate clearly that the lead absorption associated with these occupations, was negligible. Our further studies carried out by somewhat more rigid and precise methods showed that it is not to be expected that any of these persons will develop lead poisoning, since the lead exposure associated with their work is of negligible proportions. I am sending you a reprint of this later article, since it will serve to show the methods of study and the basis for present conclusions.

A search of medical literature will serve to show you that there has never been a case of lead poisoning reported in connection with the handling of gasoline. In 1924, I reported a series of cases associated with manufacturing operations, and somewhat later my associate, Dr. Machle, reviewed the whole subject and reported the cases which we had seen up to the time of this re-

* 16, 100 (1934)

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port. A number of these had been poisoned as the result of cleaning gasoline storage tanks that had contained leaded gasoline. By reason of a number of factors, the exposure in such tanks is of a totally different type and magnitude than that associated with the handling of gasoline in introducing it into automobiles, airplanes, etcetera. Aside from this one problem which is handled by specific regulations, there is no lead hazard associated with the handling of leaded gasoline as a motor fuel, so long as the lead content of the gasoline does not exceed certain limits. Investigations up to the present have indicated that lead concentrations up to and including 6 c.c. tetraethyl lead per American gallon, are not dangerous. There is no information on the concentrations above 6 c.c. However, we have done some experimental work with higher concentrations of tetraethyl lead in gasoline, and it is fair to say I believe, that lead concentrations in excess of 10 c.c. per liter (not per gallon), would be dangerous. It is not at all likely that there would be any sound technical reason for raising the concentration above 6 c.c. per American gallon, and therefore, it seems unlikely that any combination of circumstances would result in the production of gasoline containing dangerous lead concentrations.

I trust that this answers your question, but if you have other points in mind, please do not hesitate to write me directly, for I shall be glad to send you any information that is available.

Very truly yours,

Robert A. Kehoe, M. D.

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