

October 11, 1922.

Memorandum to Assistant Surgeon General
A. M. Stimson, through the Acting Director,
Hygienic Laboratory.

Sir:

My attention has been called to a situation which contains the elements of a serious menace to the public health.

Thomas Midgley, and his coworkers (J. Ind. Eng. Chem., 14 894, 1922), employed in the research staff of the General Motors Corporation at Dayton, Ohio, have discovered that certain compounds when introduced into the gasoline act as "Antiknock" or "Compressionizers" in that they prevent the knocking in engines running at low speed or at high compression. The most important of these compounds are diethylselenide and tetra ethyl lead.

At the present time the Dye Works Plant of E. I. duPont de Nemours and Company (the duPont Company controls the General Motors) is preparing to manufacture 20,000 gallons of lead tetra ethyl per day and it is reported that arrangements have been perfected with the Standard Oil Company of New Jersey to distribute the same.

In the preliminary work of manufacture of lead tetra ethyl several very serious cases of lead poisoning have resulted.

It is proposed to employ lead tetra ethyl in gasoline in the proportion of 2.5 c.c. per gallon. This is equivalent to approximately 1 part of lead tetra ethyl in 740 parts of gasoline.

The lead is eliminated from the engine exhaust in the form of oxides of lead, principally litharge, as an exceedingly fine dust.

The burning of 1 gallon of gasoline will throw into the atmosphere this dust to approximately the amount of 4 grams and since the average automobile engine will consume 2 gallons of gasoline per hour, 8 grams of litharge dust will result.

In the case of a gasoline engine operated in a building without means for leading out the exhaust gases, or in the case of a busy thoroughfare with continuously passing lines of motor cars or in the case of vehicular tunnels, it is possible that various results may follow.

Attention is called to the fact that the lead oxides turned into the atmosphere are not diffusible as is carbon monoxide and that on busy thoroughfares it is highly probable that the lead oxide dust will remain in the lower stratum.

Very respectfully,

Wm. Mansfield Clark
Professor of Chemistry.

WMC:FL.

Respectfully forwarded,
approved

R. E. Dyer
Acting Director.