

May 3, 1932

Dr. Frank R. Morton
Standard Oil Company
910 South Michigan Avenue
Chicago, Illinois

My dear Dr. Morton:

The acute intoxication of several men in your Detroit plant as a result of the cleaning out of tanks which contained Ethyl Gasoline, came to my attention some days ago. I sent Dr. Schradin to look into the matter at once. He saw the men and was not convinced that their illness was the result of lead absorption. However, he looked into the matter at the plant and obtained samples of material from the tanks. He was unable to establish any evidence of gasoline intoxication and when he described the symptoms of the men as well as their evidences of eye and nose irritation while working, I felt reasonably certain that the condition described was a fleeting intoxication due to the inhalation of Tri-Ethyl lead compounds. The examination of the materials from the tanks established further evidence of the correctness of that conclusion. Doubtless you will be interested in the result of our analysis. Material from the shell of the tank was composed chiefly of iron rust containing (.003) percent organic lead and (.57) percent total lead. The material from the bottom of the tank contained (.5) percent organic lead (I take this to be almost entirely Tri-Ethyl lead salts) and (5.4) percent total lead.

In order to get an idea of the concentration of lead in the very finely divided dust which might be raised by the handling of sludge, a sample of material from the bottom of the tank was screened, separating out that which would pass through a 200 mesh sieve. This finely divided dust contained (.56) percent organic lead and (6.11) percent total lead.

With these facts together with the definite information that the men sneezed while in the tank, and with the description of their symptoms, I have no doubt that the absorption of small amounts of Tri-Ethyl lead compounds was responsible for the condition.

This occurrence even once brings me to recognize that it is necessary to establish certain precautions in the handling of material at the bottom of these tanks. Naturally the reason it has not occurred before is that

the material is very easily handled and has been handled by accident, as it were, in a proper fashion. The most important single thing is to see to it that there is no dust raised when the tanks are cleaned. In this instance the material was allowed to dry in certain places on the floor, and when it was agitated the finely divided dust rose and was breathed by the men. This can be obviated perfectly by keeping the material moist.

I have undertaken to find out as much as I can about the actual manner of cleaning these tanks. First of all, I am interested in knowing how frequently the sides of the tank are scraped if at all. Secondly, it is important to know how the material at the bottom can be handled in such a way as to make sure that it will be wet at all times.

Previously we have only had to consider the dangers from the point of view of gasoline vapor. There have been a number of instances in which men have gone into these tanks before they were properly aired out, and have experienced gasoline intoxication. Apparently if one takes the utmost precautions to eliminate all of the gasoline, a considerable opportunity will have been offered for the drying of the scale and sludge. Whenever the sides of the tank are to be cleaned under these conditions they should be hosed at the same time. Thus if one used a wire brush with a sufficient jet of water so that no part of the brush could come into contact with a dry surface, one could be certain that there would be no dust from this source. Then if the sludge in the bottom was shoveled out while still moist, again no opportunity for dust inhalation could take place.

The absorption of Tri-Ethyl lead compounds through the skin is not rapid. Employees should avoid contact with such lead compounds as much as possible. Naturally they should wear gloves and they should be provided with boots and their clothing should be laundered after having carried on such work. On the other hand, if the danger from gasoline has been entirely removed and if the materials in the tank are moist, there is no necessity for the use of gas masks. In any case where gasoline fumes are present, the masks should be used. In my opinion the safe mask to use in this case is the air mask with a continual stream of fresh air being pumped into the face piece in such a way that it always has some positive pressure.

I trust that the above outlines my point of view and I have no doubt that it will be possible to devise such precautions as will completely eliminate this hazard. If there is any further way in which I can cooperate with you in this, please let me know. As a result of this instance I shall doubtless issue certain instructions relating to the cleaning of tanks, tank cars etc., in the rules and regulations for the handling of Ethyl fluid and Ethyl gasoline.

With kindest regards,

Very truly yours,