

April 18, 1932

Dr. R. M. Trigg
1st Nat'l Bank Bldg.,
Fort Worth, Texas

My dear Dr. Trigg:

Your letter of March 26th to the Ethyl Gasoline Corporation, has been referred to me for reply. I shall attempt to answer the questions which you have posed as well as I can, though the matter can not be answered with entire satisfaction on the available information.

There is a very considerable danger whenever a workman enters a gasoline storage tank whether the quantity of gasoline is large or whether it is small. Unless the gasoline vapors have been completely disposed of by a prolonged steaming, there will be a sufficient concentration of gasoline vapors to bring about intoxication. If the concentration is high, unconsciousness will develop very rapidly. In this event, unless the patient is removed very rapidly, death will ensue for perhaps the same reason that one dies of high concentration of anesthetic compounds. The cause is undoubtedly an acute central nervous system intoxication with depression of the centers which have to do with circulation and respiration; the latter especially. In this connection there is a fair amount of difference in the toxicity of different gasoline vapors. Probably, the effect is one of concentrations of vapor. Thus, if an individual enters a tank containing low boiling point compounds, the concentration of vapor is likely to be very high, and intoxication results very rapidly.

In the event that the tank contains Ethyl gasoline instead of ordinary gasoline, no appreciable greater danger exists. There is the possibility that as a result of prolonged exposure the individual might absorb measurable amounts of lead. However, no result due to the lead could occur quickly and there is a considerable doubt whether even a measurable amount of lead could be absorbed from the gasoline in any reasonable period of time. All the experimental

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evidence on this matter is negative and there have been no cases of poisoning from the absorption of lead up to the present time. Thus, in this case again, the danger is from the inhalation of high concentration of the gasoline base. The volatility of the lead compounds in Ethyl Gasoline is so slight as compared with that of the gasoline that no appreciable concentration of lead vapor is detectable in the vapors overlying the liquid gasoline.

In most instances in which men are overcome by gasoline vapors, their intoxication develops rapidly and they usually collapse being completely unable to escape from the tank. Under these circumstances death usually results unless there is someone present who quickly removes the individual from the tank. Generally speaking, if the individual recovers from the acute toxemia, he has very little in the way of permanent damage though occasionally such cases have nervous system symptoms for some period of time. As far as my experience goes, they do not develop permanent disability.

The case which you describe is somewhat atypical. If the person in question had been overcome in the tank and had been removed unconscious or dead, it would seem to me to be a straight forward case of intoxication from gasoline vapors, despite the fact that he wore a gas mask. Ordinarily, the type of mask which you describe is entirely effective in preventing the inhalation of gasoline vapors. If the pump is kept going and if it is not defective, the supply of fresh air pumped to the individual in the tank, is adequate to maintain a positive pressure in the face piece so that no fumes from within the tank can be inhaled. Nevertheless, one must consider the possibility either that the pump may have failed or that the face piece leaks so badly as to permit the individual to inhale gasoline vapors. If he did so, he should have become intoxicated in very much the same manner that would occur with alcohol. Such an individual becomes drunk, his muscular coordination is very ineffective and he behaves exactly as though very much intoxicated with alcohol. Presumably, this individual did not become so intoxicated that he was unable to come out of the tank. Thus, one questions the cause of his death and is entitled to suppose that some type of organic disease may have been responsible wholly or in part for his death. I do not believe this question could be answered except by an autopsy. An autopsy should be able to determine whether the man died of sudden heart failure or of cerebral hemorrhage, or of some such similar cause of sudden death.

I know nothing of the laws of your state as regards these matters. I should imagine in a common law case, the claimant would be required to produce evidence of negligence on the part of the employer in order to collect damage in Court. On the other hand, an industrial commission would almost certainly

regard this under the circumstances as an industrial accident, except as information might be made available to show some other cause for the death. In any case I should regard it wise to have an autopsy performed after exhumation of the body, unless other information than that which you have given me is available with which to arrive at a more certain conclusion.

If there is any further information in these cases, or if there is any way in which I can be of any further assistance to you, please do not hesitate to let me know. If any useful purpose would be served in having one of my assistants look over the matter by a visit to Fort Worth, I shall be very glad to see that this is done. Meantime, I would appreciate very much receiving any further information as to the progress of the matter.

Very truly yours,

RAK:IS