

February 1, 1968

Mr. William S. Pollitzer
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Dear Mr. Pollitzer:

I am not sure that I know how to answer the question raised in your letter of January 22nd, principally for the reason that I have no proper basis for judging the degree of toxicological sophistication out of which the question arises. If, therefore, my reply seems to impute a considerable content of naivete in the question, I trust that you will recognize that I am not being patronizing, but only simple in my attempt to reply.

First let me say that modern gasolines (I use the plural advisedly) are extremely complex in their composition, having a variety of additives (antiknock compounds, anti-oxidative, etc., etc.) in their tailored patterns, all of which are present in low concentrations. The components that are obviously toxic in the high concentrations in which they occur, are the petroleum hydrocarbons, of which there are large numbers and varieties. Many of the present commercial gasolines are high in aromatic hydrocarbons, and these as a group are more toxic than the aliphatic hydrocarbons. All of them have narcotic properties, being capable in suitable concentration of inducing varying degrees of disorientation, drunkenness, drowsiness, narcosis; they may be lethal under appropriate conditions.

Most of these effects, short of deep coma and death, are completely reversible, but from time to time, fairly rarely, I would say, sequelae are observed. It is difficult to say just why this is true, but it is true, even of ethyl alcohol. There is therefore, no reason to be mystified by the occurrence of irreversible damage to the central nervous system in the wake of narcosis induced

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deeply enough and frequently enough by a variety of petroleum hydrocarbons, than by the alcohols. We are indeed mystified as to the mechanism, as I do not deny, but I do not consider that we need think of any new or highly specific "toxic agent". Do not misunderstand me as deprecating our knowledge about the petroleum hydrocarbons. There has been a tremendous human experience which has told us that they are not remarkably toxic. This experience has not been as prolonged as our experience with some of the alcohols, but it has been intense during the past forty years. During this period, however, the mixture of hydrocarbons which have entered into gasolines has varied greatly in time and place, and it must be recognized that we have little information - very little indeed - about the higher aromatic hydrocarbons.

It has been a temptation, which has not been resisted by many persons, some of whom should know better, to credit the toxic effects exerted by gasoline to its content of lead alkyls (lead tetraethyl, tetramethyl, etc.). This, of course, is a matter that has been worthy of investigation, and much investigation has been carried out. There are good reasons for great skepticism concerning the possible role of these compounds in the situation which you describe.

It may be that I have raised certain questions in your mind, instead of providing answers. If so, I should be glad to hear from you further. The phenomena which you describe are important. The "sniffing of gasoline" is not new, but like other addictions of this type it is a distressing affair.

Sincerely yours,

Robert A. Kehoe, M.D.

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