

Handwritten: 12/10/41

December 10, 1941

Mr. John Schaefer
Ethyl Gasoline Corporation
Chrysler Building
New York, New York

Dear Mr. Schaefer:

Following our conversation in New York, I am writing to advise you concerning the status of the blender at Deepwater. As noted in our previous reports, conditions in the blender have been a cause of concern to us for some time, and hand in hand with the increase in the amount of drumming of Ethyl Fluid in the last year, there has been further evidence of an increase in the frequency of irregular exposure of the men. Last week Dr. Evans and I reviewed all of the clinical data that had been assembled and we have in preparation a study of the analytical data to correlate with the clinical observations. We are giving you below the general conclusions that were arrived at from study of the clinical records. From our observations so far, there is no reason to believe that the complete study of the analytical data will necessitate any changes in the conclusions. In fact, concordant evidence of recurrently increased exposure has been apparent in this group from time to time.

All of our material was studied on a time base. That is to say, the status of the men was reviewed as it was tabulated from year to year. In addition the group in the blender was compared as a whole with workers employed for an equally long period of time on the Fifth Floor.

It should be noted at the outset that the criteria upon which the clinical study was based and which are referred to here as "the occurrences of abnormalities" were not in themselves entirely specific of harmful lead absorption. Neither are they non-specific, in that as the number of these clinical abnormalities increases in a group, their coincident occurrence in many instances is sufficient clinical evidence of harmful lead absorption.

Our principal conclusion was that the state of health

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of blenders is apparently worse than at any time since 1934. Moreover, as measured by the rate of occurrence of abnormal clinical findings, there has been a progressive increase since 1938. In connection with this last observation we may say that while it has not been established that our charted rates of occurrence of abnormalities are stable from a statistical point of view, this trend toward increase is unmistakable.

Rates of occurrence of positive clinical findings in the entire blender group when averaged over the last nine-year period, have been less than those for the Fifth Floor group. However, and more importantly from the point of view of the problem at the moment, the rate for the blenders in 1941 is 1-1/2 times that for the Fifth Floor group.

In no instance in either group do the rates for 1941 reach the 1934 level, though the rate for the blenders in 1941 closely approximates that found in 1934. This observation is of considerable significance since it demonstrates the close relationship between volume of production, (quantity of material passed through the blender) and the occurrence of symptoms in these men. (In 1934, it will be remembered, there was a great increase in production following the introduction of "Q" Fluid.) If any increase in load upon the blender is contemplated, particularly in the quantities of material that require drumming, the situation must be viewed with concern, since we are now dealing with equipment that has had a number of years of use since 1934.

It appears to us that the problem created by the recent increase in exposure in the blender can be dealt with in one of two ways; either by reduction of the amount of Fluid produced and passed through the blender, or, if the quantities are increased as is contemplated, by the installation of new and adequate equipment.

In our discussion the question arose as to whether or not the present situation resulted from the cumulative effects of years of exposure. Our observations indicate quite clearly that this is not the case. Rather, the increased occurrence of symptoms now is the result of an immediate response to recently recurring and for the most part brief exposures of increased intensity. The fact that the lowest rates of abnormality in the blender

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group are associated with the longest service, indicates that the means for dealing with this present problem is that of reduction of present hazards by means of improved equipment and care, and not by transference or substitution of new men.

While there was no regular relation between the amounts of drumming in each year and the occurrence of abnormalities in the blender group, it is true that the frequency of abnormalities was highest in the year in which the greatest volume of drumming occurred. Because of the present design of the blender and the lack of segregation of different sources of exposure, it would not be expected that a close year to year correlation between drumming and symptoms would be found. The inauguration of the six-hour cycle with increased throughput could easily result in sufficient elevation of the general levels of exposure throughout the blender to obscure correlations at any one point.

In spite of the fact that the lead hazard at this plant has been well controlled over a period of years, the greater demands for lead that are anticipated, the condition of the existing equipment, and the increase in symptoms on the part of the men in 1941 make it imperative that substantial improvement in equipment be made as soon as possible.

Very truly yours,

WM:vr

Willard Machle, M. D.