

January 5, 1945

Mr. O. B. Lewis,
Ethyl Corporation,
Chrysler Building,
New York City 17.

Dear Oscar:

I had hopes of seeing you in New York yesterday so that we could discuss several matters of more than usual importance that have come up lately. Unfortunately the day was too busily occupied, and since my train was late in getting in and on time in leaving, I had very little chance to attend to a number of matters. However, there is no reason why they cannot be handled through correspondence.

First, I want to make a few comments on the tragic episode at the refinery of Continental Oil Refining Company at Artesia, New Mexico. We are carrying out certain additional analyses on materials brought back to the Laboratory by Dr. Schradin, in an effort to establish the significance of certain rather unusual findings now available. Until all of the results are available I shall not attempt to prepare a complete report. However, there are certain things which need to be pointed out in order that we may do our best to prevent a recurrence of a difficulty of this type. It is necessary to recognize that a serious mistake was made in this instance in that men were permitted to enter a tank that was not regarded as cleaned, without being equipped with suitable protective equipment. It appears from the information that has come to me that this is not altogether an unusual practice. I do not know how it arose, but certainly there should be no exceptions made to our regulation that men must not enter a tank that is unclean, without suitable respiratory protection. I have known for a long time that not all tanks were being thoroughly cleaned and that some were, therefore, regarded as unclean after a certain amount of cleaning. I have never known previously that any of our people had permitted repairmen to enter a tank without protective equipment, unless they regarded the tank as entirely clean. Certainly this practice should not be allowed to continue. We may have certain questions in our mind as in the past, as to what a clean tank really is, but certainly there should be no relaxation in regulations in the case of the tank which one of our own people regards as unclean. So long as it is unclean,

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no man should be permitted to enter without full protection. This point should be made clear to all of our people, and no exception should be permitted. The first mistake in this case was to grant that the concrete floor could be introduced by unprotected workmen. If any information has ever been given out that would justify the granting of this permission, I am unaware of it. If I am mistaken in this belief, do not hesitate to correct me, but I know of nothing that I have said that would justify such a relaxation of our regulations.

The second mistake in judgement was that of disregarding the possible importance of a leak or series of leaks in the bottom of the tank. A hole in the bottom of a tank presupposes that sludge has oozed through into the space under the bottom. It may be and probably will be difficult in most of such cases, to determine how much sludge has gone through. In this situation no assumption should have to be made, unless it is to assume that the quantity of sludge which has penetrated the tank is significant. If one makes such assumption, no risk will have to be taken, since no such tank will have to be called clean for the purposes of entrance without protection.

If there is any question in your mind about the position I am taking, please do not hesitate to give me your reaction in detail. However, if you are in complete agreement with me on these points, I think you should prepare a letter for the field in which the present accident is cited in its essential characteristics, and in which these lessons are drawn. Specific instructions may then be given to cover all such future situations.

Despite what I have said above there is no question that there were certain unusual features of the lead exposure in this case. I think that in most cases the procedure carried out here would have gone by without untoward results. It is probable for this reason that such practices have developed in the field. We have certainly had a number of instances in which men have cleaned tanks or have made repairs without suitable protection, and yet without illness. We must recognize, however, the unpredictability of unusual situations, and therefore this case provides the lesson for all of us. It is undoubtedly true that the lead content of the sludge within this tank was very high. It appears that the total quantity of sludge was low. The combination of a small amount of sludge with high lead content, produces a situation which provided one of the most severe exposures of this type that we have ever encountered. We shall probably never know just how much tetraethyl lead was in the bottom of this tank and underneath it, nor shall we be able to find out just how it got there. I

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think our analytical data when completed will give us some useful information on an unusual occurrence. The important point, however, is that this situation did occur and that it can occur again. We must not allow such a slip-up to occur a second time.

As a consequence of this unusual situation, I have come to the conclusion that we shall have to exhaust every possibility for the development of a testing apparatus that will enable us to recognize unusual hazards of this type. It is a difficult job to do, and hitherto I have considered it unnecessary by reason of the demonstrated effectiveness of the regulations now promulgated. However, there may be situations in the future in which the use of such apparatus will provide the concrete evidence that is necessary to convince refinery people of the need for strict adherence to the regulations. We shall not be able to devise such an apparatus on the spur of the moment, but in so far as we can do it, we shall attempt to provide an equipment that will work at least to the extent of differentiating between no hazard, moderate hazard, and serious hazard. I have already discussed this with one or two members of the Laboratory staff, and we shall do out best with the problem.

Sincerely yours,

Robert A. Kehoe, M. D.

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