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ARTHUR L. RINGLE, M.D., C.P.H.
DIRECTOR



STATE OF WASHINGTON

DEPARTMENT OF HEALTH
DIVISION OF
PREVENTIVE MEDICAL SERVICES
SMITH TOWER
SEATTLE 4

SECTIONS:

COMMUNICABLE DISEASE CONTROL
MATERNAL AND CHILD HYGIENE
AND CRIPPLED CHILDREN
INDUSTRIAL AND ADULT HYGIENE
MENTAL HYGIENE
DENTAL HYGIENE
TUBERCULOSIS CONTROL
EPIDEMIOLOGY AND
VENEREAL DISEASE CONTROL

July 10, 1946

Robert A. Kehoe, M.D.
Kettering Laboratory of
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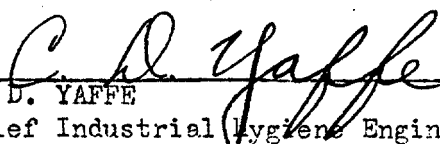
Dear Dr. Kehoe:

Thank you very much for your letter of July 5, 1946. The detailed discussion of the lead hazard in storage tanks will be very helpful to us and is appreciated.

Thank you also for the suggestion, which we will follow, that we communicate with the local office of the Ethyl Corporation.

Very truly yours

INDUSTRIAL AND ADULT HYGIENE SECTION


C. D. YAFFE
Chief Industrial Hygiene Engineer

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July 5, 1946

Mr. C. D. Yaffe,
Chief Industrial Hygiene Engineer,
Department of Health,
Smith Tower,
Seattle 4, Washington.

Dear Mr. Yaffe:

Thanks very much for your letter of June 18 and for the reprints which you were so kind as to send.

On the question of the hazard of chipping operations in storage tanks that have contained leaded gasoline, I am glad to give you my views. We have had this problem before us for quite a number of years, and the information which has come in over this period is fairly comprehensive. On the other hand, we have not had specific experience with fuel tanks on ships, and it is possible that there may be some variation in the character of the problem at this site. On the other hand, one can generalize on certain phases of the situation. Insofar as tetraethyl lead is concerned you need have no worry, provided all of the sludge and the gasoline have been removed prior to entrance into the tank for chipping and scaling. If there is any sludge in the bottom of these tanks, it may contain decomposition products of tetraethyl lead, and it might also contain small but significant quantities of tetraethyl lead. On this account it is necessary to have all of such sludge completely removed by men equipped with air-line masks and clean clothing. I am sending you herewith complete instructions for carrying out the provisions of our regulations in the conduct of this work. May I suggest also in this connection that the safety representative of Ethyl Corporation attached to the Division Office, 1411 Fourth Avenue, Seattle 1, Washington, may well be able to be of assistance in this matter, since he will have had extensive experience in the cleaning of all kinds of gasoline storage tanks. Any particular variant of the usual problem may well be considered in terms of his advice. Generally speaking, it would not be supposed that much sludge would be present in these tanks. I would anticipate that there would be some scale. If such is the case, the problem of exposure to tetraethyl lead will not be very significant, since the scale contains only such traces of tetraethyl lead as will have been dissolved in the gasoline absorbed into such scale. On the other hand, such scale will contain low concentrations of decomposition products of tetraethyl lead, and for this reason it would have to be dealt with in substantially the same fashion as any other lead containing solid material. That is to say, such material should not be mechanically distributed into the air in the form of dust, and it should not be burned or otherwise volatilized by exposure to high temperature. The material that is in the scale

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is incapable of absorption through the skin to any measurable extent.

In removing the scale from the sides and bottom of the tank, we advise full respiratory protection for the workmen. This is best supplied by means of air-line masks with complete coverage of the face and eyes. If it is quite certain that gasoline vapors have been removed and that there is ample supply of fresh air for breathing, adequate dust respirators and goggles will supply protection against the inhalation of the lead-bearing dust. This material is not as finely divided as a lead fume, but as you are doubtless aware, the particle size may be small. On this account and because of the necessity of protecting the eye, it may be just as well to use full facepiece canister masks during the scaling operation. Inasmuch as it is difficult if not impossible, to provide adequate general ventilation within such a tank, we do not feel that adequate masks or respirators can be dispensed with in the course of this work. Therefore, the question of a tolerable concentration of lead in the air need not enter into the problem. On the other hand, for your information I may point out that the maximum allowable concentration of tetraethyl lead in air does not differ from that of lead fume^{and}, of course, this is of the order of magnitude of 1.5 mgs. of lead per 10 cubic meters. It is advisable in any kind of prolonged operations to have the concentration below that level, since in the case of finely divided and readily absorbed lead compounds, this generally acceptable lead concentration is a little bit too high for complete safety.

I might also point out, in view of your question, that the physiological significance of the urinary lead concentration is quite the same regardless of the nature of the compound of lead to which individuals are exposed. There is some difference in the lead concentration in the blood, in the case of persons exposed to tetraethyl lead, for under these conditions the lead concentration in the blood is disproportionately low. However, in the case of the urine the usual situation holds true. As a matter of fact tetraethyl lead behaves differently in the animal organism in a number of respects, than that of ordinary lead compounds. However, its toxicity depends upon the lead content of the molecule, is of the same order of magnitude as that of other lead compounds, and in the general sense in which we are concerned in relation to lead exposures of the type under consideration, the problem is substantially the same as that of any other lead compound.

It seems quite probable that I have not answered all of your questions, for this is a somewhat complicated problem which has a good many aspects. However, I shall be glad to be of any further assistance if I can, and I repeat, at the risk of being somewhat insistent, that it may well be worth your while to make use of the advice and assistance of representatives of Ethyl Corporation, who are in your area. It has been the general practice of governmental

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agencies and the armed services to consult representatives of Ethyl Corporation and to make use of their assistance in all of these matters. Because this practice has been so general, and because Ethyl Corporation has every reason to be keenly interested in this problem, I am taking the liberty of sending a copy of this letter to Mr. H. Claire Dees, Division Manager of Ethyl Corporation for the Seattle area.

Cordially yours,

Robert A. Kehoe, M. D.

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C.C.: Mr. H. Claire Dees

Enc.

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