

May 22, 1943

AIR MAIL

Mr. Ray Bevan,
The Associated Ethyl Company Limited,
Artillery House,
Artillery Row,
London, S. W. 1,
England.

Dear Ray:

I have your two letters of April 16, to which I shall attempt to reply separately. In this one I would like to give you as much information as I can about the use of leaded gasoline in stoves.

I have realized that leaded gasoline was being used in ordinary gasoline stoves and that certain troubles, mostly operational, had arisen. This, of course, was not unexpected. The same troubles have occurred in this country in connection with the use both of ordinary stoves and of stoves specially designed for the use of leaded gasoline. It has also been reported that some cases of lead poisoning have occurred in the Armed Forces. Such evidence as I have been able to obtain has not substantiated these reports. Moreover, the one published article on the subject was clearly in error. Despite this fact, the article was picked up by several reviewers, and I have no doubt it will be used by various persons as evidence that the hazards of this source are quite serious. As a matter of fact, it would not surprise me if mild cases of poisoning should be seen among persons who have opportunities for prolonged exposure. In the main, however, those of us who have had experience with industrial lead exposure should realize that this is not as grave a danger as many uninitiated people might suspect.

Despite what I have just said above, the hazard is not negligible, and it should be avoided by reasonable care and eventually by the use of equipment designed to dispose of the lead compounds before they are distributed into the atmosphere around operating stoves.

I am glad to know the authorities from this country have provided you with information on the cooking equipment used by our Armed Forces. The original equipment devised for this purpose was satisfactory in most respects, but was somewhat diffi-

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cult to operate, especially when persons without skill and training attempted to make use of the equipment. We studied the operation of the stove from the point of view of its lead removal. The information obtained is quite to the point and for that reason I am sending you three copies of a report which we submitted upon this subject. You will see that certain slight defects in the lead removal were apparent, but that in the main the filter did its job very well and eliminated most of the hazard.

Various improvements have been made in the Army Field Stove, and certain studies are still going on for the sake of further improving it. Certain experiments, reports of which are not available to me at present, have been made by George Calingaert in the Detroit Laboratory of the Ethyl Corporation. Other work has been done elsewhere, and we have just finished a study of a new model developed by the Office of the Quartermaster General in collaboration with one of the stove manufacturing companies in this country. Our report on this study has just been forwarded and is not available at present for even restricted distribution. Nevertheless, I may say that the new burner has shown itself to be an improvement over ^{the} previous model and that the new filter used therein is highly satisfactory. There seems little question, therefore, that this problem has been substantially solved by technical means. I should think it would be possible to give your people all the necessary information in order that stoves operating on similar principles might be made by yourselves.

I regret very much that I have been unable to assist you properly in the matter of regulations. I have given you the best information I could get however, and I have offered such advice as seemed to me reasonable. If there is any way in which I can help you further, I shall be glad to do so and if there is any other information I can provide, do not hesitate to suggest it.

In certain general relationships to this subject I am sending you some articles that deal with the general problem of lead absorption and lead poisoning. Of especial importance, in my opinion, is the article that deals with experimental studies on the ingestion of lead compounds, this article together with the continuation of the same study in the blue booklet which I am sending, give very clear evidence of the degree of hazard associated with the ingestion of lead compounds. Not only the dogs but also time, has been subjected to critical examination, and from this information I think we are in position to judge fairly well how much importance to attach to the ingestion of lead in or with food. This information is useful, I believe, in the present connection, since cooking with leaded gasoline is likely to produce some contamination of the food. Obviously materials

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exposed to the flame will be considerably contaminated, - excessively so, I think -, and therefore this mode of cooking should not be used. Otherwise the introduction of lead will probably be in small amounts.

Doods will be interested in the other articles I think, and on the whole I think the information I am sending you will be useful in considering this problem. It may also be useful in connection with occupational lead exposure within your country, and perhaps even in connection with the manufacture of Ethyl Fluid.

It has been very good to hear from you, and I hope some time we may both of us have the time to sit down and write a personal letter. For the present I have been much too busy to concern myself much with personal matters. I dare say your own situation has been much the same. However, I would like you to give my kindest regards to Timmy and to be remembered to her. All of the best to yourself.

Sincerely yours,

Robert A. Kenoe, M. D.

RAK of

P. S. I have asked Mr. Kaley of the New York Office of the Ethyl Corporation to forward the printed material to you in order to save the delay that might be occasioned by censorship. Since there is nothing of confidential character in these published articles, there seems no point in sending them through Washington.

RAK

RE 0007233

THE ASSOCIATED ETHYL COMPANY LIMITED

Registered Office: THE ADELPHI, LONDON, W.C. 2

Address all communications until further notice to:

ARTILLERY HOUSE, ARTILLERY ROW, LONDON, S.W. 1

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OUR REF.

O/ab

YOUR REF.

Dr. R. A. Kehoe,
Dept. of Physiology,
College of Medicine,
University of Cincinnati,
Cincinnati, Ohio,
U.S.A.

16th April 1943

Dear Bob,

There is a possibility and at present it is no more than a possibility, that operational necessities may require the preparation of limited quantities of gasoline containing a very high lead concentration.

The problem is roughly this. In the event of certain developments maturing, it may become necessary to prepare small containers holding in the order of two or three gallons, which will be filled with gasoline having a lead concentration of about 100 c:cs per gallon.

The problem as I see it at present, would limit itself very largely to the filling of containers, since I believe that for what we have in mind there would be no necessity for anyone to come into contact with the material once the container had been filled. I am afraid I cannot give you any real details as the idea is at present no more than an idea and may never materialize. On the other hand, if it does develop it may come upon us quite suddenly and I would like, therefore, to have your views on the general problem of hazards involved and the precautions that should be taken in the blending and handling of gasoline in the concentration I have mentioned.

This letter gives you very little to go on and I appreciate that all we can hope to get from you in reply is your general views on the question of the use of lead concentrations in the order of magnitude that I have mentioned.

Sincerely yours,

R. A. Bevan

ORIGINAL BY STEAMER ✓
COPY BY AIR MAIL.

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OUR REF.

PC/h

YOUR REF.

Dr. R. A. Kehoe,
Dept. of Physiology,
College of Medicine,
University of Cincinnati,
Cincinnati,
Ohio, U.S.A.

16th April 1943

Dear Bob,

I had expected by this time to be in a position to write you in regard to our exchange of cables on the subject of the use of leaded gasoline for cooking. I have, however, to date little of interest to pass on to you.

I was surprised at the statement contained in one of your cables that authorities in Washington had advised you that adequate supplies of unleaded material would always be available for cooking purposes. This was contrary to the information I had received and on checking this point it has again been confirmed to me that unleaded material will not be available in a number of areas and I think we must accept this as a fact.

In conjunction with Dodds, I have had several informal meetings with the British and Canadian military medical people. My main concern has been to try and get the British, Canadian and American authorities here to consider the problem jointly, since obviously it would be preferable for any regulations which may be issued on the subject, to be identical for all three forces. I have not met with any great success to date but am still hoping that something concrete will develop in the near future.

The U.S. authorities sent to our last meeting, one of their cooking experts who gave us detailed information as to the field cooking equipment used by the U.S. Forces. We were all most impressed with this equipment and I noted, amongst other things, that it contained a filter which the expert advised us removed a certain percentage of the lead when leaded gasoline was used. In the official U.S. Army handbook dealing with field cooking ranges, which he showed us, it was clearly stated that leaded or unleaded gasoline could be used for cooking purposes. The American expert was, however, a technical man and not a medical man and knew nothing about any health problems involved. He was concerned solely with the instructions issued by the U.S. Army, which as mentioned above, clearly permitted the use of leaded material and, as far as I could see, made no reference to any special precautions.

Dodds has undertaken to carry out a few simple tests using one of the British Army cooking stoves, to assess by analysis the lead contamination and depth of penetration in foods cooked in this stove when using leaded material. He has just called me to say that the tests are to be carried out on Wednesday next.

We of course know by experience that leaded material has been used for cooking under field conditions for the last two years, but now that its use has become so much

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more general it is essential that the medical authorities of the Forces concerned be fully advised so that they may consider what, if any, regulations should be issued on the subject. Whether any such regulations if and when issued would be strictly adhered to is of course a matter which neither they nor we can hope to guarantee.

As soon as anything of interest develops I will, of course, let you know and in the meantime should you have any views on the subject additional to those contained in your cables, I would very much appreciate your passing them along to me.

With kindest regards and best wishes,

Sincerely yours,
R. B. Riva

ORIGINAL BY STEAMER ✓
COPY BY AIR MAIL..

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