

December 6, 1940

Dr. Joseph Aub
Huntington Hospital
Harvard University
Cambridge, Mass.

Dear Doctor Aub:

I have just returned to my desk after an absence of two months, and I hasten to answer your letter of December 2nd and to send you a reprint of an article which appeared in the November issue of the Journal of Industrial Hygiene and Toxicology which you may not have seen. This paper bears directly on the problem which you and your Committee are to consider, and it gives most of the information on which any opinion of mine with respect to the minimal toxic dose of lead by mouth would be based. If I could be of any service to your Committee in pointing out further results of our observations on human subject, up to the present time, I should be glad to do so and I hope you will not hesitate to call upon me.

With reference to the tentative draft of the first part of the report of our Committee of the American Public Health Association, I see no reason why you may not make use of the available material. Accordingly I am returning to you the copy which I originally sent you of the outline and the initial draft. It should be understood that this material is not in final form and that it comes from me rather than from the Committee in its present form. Obviously it should not be published or dealt with publicly since it is a private communication.

Since you may wish to make use of this material, I think I ought to reply to one or two of the criticisms made in your letter of September 16th. You will appreciate, I believe, that I accept these criticisms in the constructive spirit in which they were given. Nevertheless they are not all valid for reasons which I think I should discuss briefly.

(1). You object to the examination of a single fecal evacuation. In principle I do also, since from a physiological point of view the single fecal evacuation has a doubtful significance. On the other hand, if you

will examine our data carefully, you will find that the analysis of single fecal evacuations, collected as we have collected them, gives exceedingly useful information when one is dealing with a group of individuals rather than a single individual. From a statistical point of view, the results are valid and highly specific in their meaning. Moreover we have used these figures for practical purposes over a period of many years, and there is simply no question whatever that this represents the most useful simple method for the determination of the general level of daily lead ingestion. This is true for the simple reason that a large proportion of healthy individuals, when properly instructed, will provide a single fecal evacuation which gives a very close representation of their twenty-four hour alimentary emptying. I am not talking here about theory or physiological argument. I am talking about facts as revealed by masses of data.

(2). The expression of urinary lead excretion in terms of concentration rather than on the basis of time, is also subject to criticism from a practical point of view. Here again, however, if you will examine our data, you will find that this case has been proven beyond any possible peradventure. There is simply not the slightest question at the present time that the most satisfactory method of expressing urinary lead excretion in the case of a group of individuals, or in the case of a single individual over a period of time is in terms of urinary concentration. The excretion of lead per twenty-four hours has been shown by our data to vary quite as widely as the concentration. We have shown why it is and to what extent the concentration varies. This again is not a matter of theory. It is a matter of fact as proven by extensive and unequivocal data.

It may appear to you that the statements in the preceding two paragraphs are rather categorical, and so they are. I have made them so deliberately for the simple reason that we have been spending a very large amount of time and effort in attempting to define with mathematical precision the practical applicability of different techniques for the estimation of human lead exposure and absorption. I conceived of this a number of years ago as the most important problem which we had to solve in order to fulfill our professional obligations in the hygienic supervision of workmen in the lead trades. In the course of our studies, we have examined critically the methods which we have employed in actual practice. I feel that it is quite safe to say that it is possible by the application of these methods to determine the degree of lead exposure of any group of workmen, regardless of the nature of their exposure, and to assess with a high degree of accuracy the hygienic significance of that exposure. Since these methods are

available and have been tested in use, I am naturally very much concerned with the desirability of their use in any problem of lead exposure which involves either industrial workers or the public.

Before concluding I should like to reply also to the question in your letter of October 9th. You may be assured that the report of the Committee of the American Public Health Association will not be published until it has met the critical examination and approval of all the members of the Committee. By this I do not mean to indicate that we need to be in complete agreement on all the details, but that we will need to agree among ourselves as to both the substance and the details of the report.

With kindest personal regards,

I am

Cordially yours,

RAK:is

Robert A. Kehoe, M.D.