

September 15, 1937

Mr. Charles A. Marlies
Consumers Union of United States, Inc.
55 Van Dam Street
New York

Dear Mr. Marlies:

I have your letter of September 8th in which you have raised a number of questions about the possibility of our carrying out certain analyses for your organization. I am familiar with the general character of your work but I regret very much that we shall not be in position to do any regular work of the type you suggest. However, in as much as we have done and are continuing to do a fair amount of work which may be of ultimate interest to you, it seems worth while to explain our situation, and to reply briefly to the questions raised as to our facilities.

This laboratory is not a testing laboratory in any sense in as much as it is one of the investigative laboratories of the Medical School of the University of Cincinnati. Our principal work is concerned with the study of major problems in industrial hygiene, and that portion of the work in which I am chiefly concerned has had to do with the study of lead absorption both in industry and in the general population, and lead poisoning both in and out of industry. By reason of our academic and public responsibilities in a municipal university, we are not in a position to do commercial work or confidential work. That is to say, studies which we make are primarily for the purpose of obtaining information for publication through the normal scientific channels. We do not engage in any work except with the understanding that the results are to be published when and where we see fit. Thus most of the information which we obtain would be made available to you or to other interested persons in the normal course of events. We have been making observations on the lead content of food material and on the average daily lead ingestion of normal average individuals in the American population with the idea of obtaining a substantially cross-sectional picture. This work has continued over a period of years and we have thus accumulated a sizeable mass of data, some of which has been published and some of

which is awaiting early publication. Our facilities for this work are, perhaps, as complete as those to be found anywhere in the world. The methods which we employ include a spectrographic method devised and standardized by one of the members of the laboratory staff. (This method is applicable not only to the quantitative estimation of lead with a negligible experimental error, but has also been extended to the quantitative determination of a number of other heavy metals.) These methods have been described in the literature together with the limits of sensitivity and accuracy by my associate Jacob Cholak. We are also using a modification of the Fischer-Leopoldi "Dithizone" method which has been very carefully checked step by step, and which gives results comparable in accuracy with those obtained by the spectrographic method. For larger samples with a larger lead content we have used a chemical method, the details of which are described in the Journal of Industrial Hygiene for September 1933. The comparative sensitivity and accuracy of these three methods have recently been worked out in detail in a considerable series of parallel analyses on a variety of materials. The article containing these data will appear in an early number of the Analytical Edition of Industrial and Engineering Chemistry.

To summarize briefly the accuracy of these three methods, it should be said that the spectrographic method yields an error of approximately .01 mgs. over the range of values from .01 to .5 mgs. in the sample. The sensitivity of the method is much greater than this, however, and it is possible to deal with quantities of lead of an order of magnitude considerably less than .001 mgs. The dithizone method has a slightly smaller error in dealing with quantities of lead of the magnitude specified above, but one can not work with quantities less than .001 mgs. per sample. The chemical method which we have used has a mean loss of approximately 0.07 mgs. per sample by virtue of the large number of steps involved in the chemical separations. This loss is substantially constant. This method is, therefore, quite serviceable in dealing with quantities of lead above 0.2 mgs. per sample. Actually in recent months we have largely discontinued the use of the chemical method since the dithizone method lends itself satisfactorily to the determination of any quantity above .001 mgs. per sample, since suitable aliquots can always be employed for the final determinations.

We have done lead analyses on practically all types of biological material, and at the present time we are carrying out a series of studies which involve the analysis of all types of food as well as animal tissues

Despite what I have said about our inability to undertake any regular work for your organization both by reason of the nature of the work as well as the nature and magnitude of our own work, I wish to assure you that I am quite sympathetic with the purpose of your undertaking. Therefore, if we can be of assistance to you in specific instances, we shall be glad to do so.

Very truly yours,

RAK:is

Robert A. Kehoe, M.D.