

September 8, 1967

Robert T. P. deTreville, M.D.
Managing Director
Industrial Hygiene Foundation of America, Inc.
Mellon Institute
4400 Fifth Avenue
Pittsburgh, Pa. 15213

Dear Bob:

I hasten to reply to your letter of inquiry of September 5.

From the aspect of precision, of course, it is incorrect to equate weight with volume in the case of the blood, and therefore any report of an analytical result should state the case correctly, by referring to the concentration according to volume or weight, according to the calculation actually made in the laboratory.

As a matter of practical fact, however, the difference between the results of the two calculations is negligible when considered with the magnitude of the analytical deviation. For example, 80 micrograms of lead per 100 grams of whole blood is the same as 76 micrograms per 100 ml, but if you look at the calculation and remember that the sample was of the order of 10 grams or 10 ml, it becomes apparent that the potential error of analysis, which is of the order of 10 per cent (of quantities of this order of magnitude) when the best of the present methods of analysis are employed, reduces this difference to complete insignificance (when a single analytical result is under consideration). The matter, therefore, is one of theoretical (or academic) significance, and need not be considered in any practical sense. This, no doubt, was the reason for Lane's failure to note the difference.

Incidentally, I am not familiar with the book from which the analytical method of your inquirer was taken, and I have not taken the time and trouble to look it up. The error of their method may be much greater than that to which I referred above. It can hardly be less.

This inquiry is of the strangely naive type that comes from technical people who do not understand even how to make a calculated correction. It is what I have been disposed to label as "cook-book" technology. Perhaps you would be able to reply more satisfactorily, in dealing with this simple type of mind, if you were to ignore my remarks above and simply tell (or show them a table) them how to convert the value obtained from weight to volume or volume to weight by the simple means of calculation. However, you might go further and point out the insignificance of the difference.

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I'm afraid you will have difficulty in introducing any real understanding into this matter. With some few exceptions, no doubt, our South American friends go dogmatically according to the book in their medical and hygienic laboratories.

Sincerely yours,

Robert A. Kehoe, M.D.
Professor Emeritus of
Occupational Medicine

RAK:wp

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