

August 8, 1963

Dr. R. Cecil Chapman
301 Medical Tower
Norfolk 7, Virginia

Dear Doctor Chapman:

I forward to you herewith two copies of the report of our analytical findings on the blood of your patient, [REDACTED] I have interpreted the results in a formal manner in the report proper, but it may be useful to comment on them for your further information.

From the aspect of primary diagnostic purposes, the loss of the sample of urine is of no moment. I always like to have a sample of urine of the type indicated in our instructions, for the reason that it gives information as to the functional performance of the kidneys (which, at times, is of great significance), and also because the rate of the renal excretion of lead is indicative of the recent severity of the exposure of the individual to lead, as opposed to the extent of the absorption of lead over a prolonged period of time, which is represented more satisfactorily by the concentration of lead in the blood.

The disparity in the two results obtained by two totally different but sensitive methods of analysis is an expression of the analytical deviation which is always involved in micromethods of analysis. The dithizone method yields less variable results, and is the nearer to the absolute truth, but, since, in this instance there is a wider than average difference in the two results, it is probable, if not clearly evident, that the analytical error in the one instance (dithizone) was on the high side, while that obtained by the spectrographic method was, by chance, on the low side. The weighted average of the two results would fall between the two but nearer to 0.085 than to 0.06. In any case (and taking into account some decrease since July 18,) this man was very close to the threshold level of 0.08 mg. per 100 grams. It is not surprising, then, to me, that he is free of the specific symptomatology of plumbism, and I am considerably more than merely dubious - without being adamant about it - of the rôle of ^{and} lead absorption in his illness. On the other hand, without hesitation/for the sake of giving him the full benefit of the doubt, I would remove him from the potentially hazardous job which he has been performing, and (if he is reasonably fit) continue him in work involving no exposure to lead, until his blood returns to the normal range in its lead content. Incidentally, it may appear that I have been splitting hairs in my remarks about the two results recorded in the report. The fact is, however, that the level of the concentration of lead in the blood, in relation to the onset of the mildest forms of intoxication, is crucial - so much so that we employ the two methods of analysis not only to check for possible contamination, but to obtain a balanced value, as free of error as possible. (Of course, the results, in frank plumbism, are usually far above the threshold value.) The

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importance of this is that, while the methods of analysis at these minute levels of concentration are variable, the threshold of intoxication appears not to be, as judged by many results treated statistically. It seems reasonably certain to me that Mr. Morano's results in the Virginia State toxicological laboratory tend to run high. Not only is this probable in principle, and also from the divergence in this case, but there are other comparative data of similar import. (We have agreed, between us, to carry out some parallel analyses in order to obtain some relative values.) This is important in view of the threshold value of 0.08 mg. per 100 grams of blood, which is in the literature. I have attempted to keep this "standard" related to the precision of the method, but you will recognize how difficult it is to qualify numbers of this type, in relation to clinical medicine.

I enclose a bill for the analysis, merely to get this behind us in some manner. Your patient should not have to pay it, under the circumstances, but I leave to you the manner of handling it. If you decide to pass it back to me, do not hesitate to do so, for I can handle it, I am sure, through the Medical Department of the Ford Company.

Cordially yours,

RAK:vr

Robert A. Kehoe, M.D.

Encl. - 3

KE 0005166

Name: [REDACTED]

Material: Blood

Submitted: 8-2-63 by Dr. R. Cecil Chapman, 301 Medical Tower,
Norfolk 7, Virginia

Required: Lead Analysis

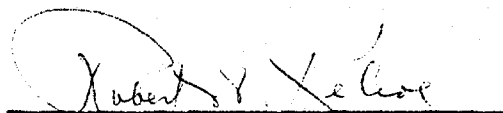
BLOOD

Analysis Number - 63A-5137

	<u>Spectrographic</u>	<u>Dithizone</u>
Grams	- 20.8	20.2
Mg. Pb/100 Grams	- 0.06	0.085

*Urine sample lost in transit.

The concentration of lead in the blood is near, but probably somewhat below, the threshold of intoxication - certainly it is of borderline significance. There is no doubt, however, that this man has absorbed abnormal amounts of lead in association with his occupation.


Robert A. Kehoe, M.D.

Sample Collected: 8-1-63
Sample Received: 8-2-63
Sample Reported: 8-8-63

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