

August 7, 1963

PERSONAL AND CONFIDENTIAL

Mr. George D. Clayton
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Detroit 27, Michigan

Dear George:

Some time ago, I consulted with the people at the plant of the General Electric Company at Edmore, Michigan, and encountered some matters about which I thought it desirable to talk with you. Unfortunately, I've been unusually busy, and this was not done. We have now been involved in another situation in the Vincennes, Indiana, plant of Electric Autolite Company, in which, I find, your group has been consulted. Just when you came into this matter I do not know for this was not mentioned when their physician, E. T. Edwards, asked us to carry out some analyses for him. We, of course, do not do such work without being informed of the problem, for we are not in the business of rendering analytical services of this type except as we are consulted in the general problem, and are enabled to give pertinent advice. Above all, we are not in competition with service organizations such as your own, since our primary function is that of investigation.

On the other hand, we have undertaken to aid industrial organizations mainly through their physicians, in gaining an understanding of their hygienic problems. Specifically, we have done all that is proper for us to do in cleaning up various lead trades, since, as you know, our experimental work in this field has had, as its objective, the establishment of the facts on which adequate hygienic control can be based. It is for this reason that I am deeply concerned when I run into a misinterpretation of the facts, and an unsound policy, based upon such a misinterpretation. There is not the slightest doubt in my mind that the standard which has been promulgated in the automobile industry is in this category, and I should be remiss in my professional duty if I did not inveigh against it vigorously.

I refer here to the level of 0.09 mg. of lead per 100 grams of whole blood, as the threshold for the occurrence of lead poisoning. This value is too high, for it has been documented fully that cases occur at values as low as 0.08 mg. per 100 grams in substantially absolute terms of accuracy. This is rare to be sure, but it occurs, and since it occurs, the higher standard is at fault - seriously so, from the medico-legal viewpoint. I realize fully that the error of analysis in any laboratory is such that the difference between 0.08 and 0.09 is slight and, in some analytical laboratories, negligible.

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The tendency is for the results to err on the high side, and so, in order not to be too exacting of management, the threshold is set in practice on the high, rather than the low, side. This, however, is a mistaken policy of leniency, for it gets the plant into trouble, as I have found on several occasions, one of very recent occurrence. If the practice of the plant is adapted to the high standard, instead of the lower, there will be cases of lead poisoning in times of stress, and this is just what has happened. There is little point, these days, in doing almost, but no quite, well enough, for there is just as much of a problem over a "little lead poisoning" as there is over a "slight degree of pregnancy." One either does well enough, or he will be in deep trouble.

It is all very well to adopt your own standard in industry for your own practice, when no one is at hand to check you, if an error is made. The time when this could be done is fast ebbing, and so it was in the last instance to which I referred, when a state analytical laboratory was available to do the checking, and when some highly competent doctors were involved. What comes of this is that we must be right, and this standard unfortunately is not right. As it is used in practice, men are not removed from hazardous jobs soon enough, and they develop lead intoxication on the job. I have seen this on more than one occasion, and when it occurs it results in great trouble, much of which is due to apprehension and distrust among the workmen.

There are three things, I believe, which you should do in this matter, in order to be in position to give industry sound guidance in the lead trades. If I seem to be arbitrary in suggesting these things, I believe you will agree that my years of careful investigation, and my experience in a wide spectrum of industry justify this expression of advice. If anything else is needed to pave the way for listening to my advice, I ask you to remember that I am not throwing my weight around, or seeking anything but the acceptance of facts which if applied would eliminate lead poisoning from American industry. Anything that gets in the way of this goal is subject to my attack in one way or another.

1. You and I should get together for a discussion of the practical approach which should be made to industrial hygiene in the lead trades, and in industry generally. The present procedure, for several very good reasons is not good enough, partly because industry does not know how properly to use your services.
2. It would be wise if your laboratory and ours were to do some cross-checking of samples, with respect to lead content. This should follow suggestion No. 1.
3. Your standard for application to the removal of men from

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their work at a certain point in their absorption of lead should be revised. The precise extent of the revision should be made to depend upon the size of the analytical error which is to be expected. That is, upon the magnitude of the systematic deviation from our results. (Incidentally, we are dealing with some other groups on this same problem.)

Do not misunderstand me as saying or believing, that ours is the one and only correct procedure, and that it is the absolute basis for comparison with every other. This is not the point. Every laboratory engaged in this work operates under a set of conditions which influence its results. The effect of this is to create systematic deviations between the several laboratories. Our standard, which has been fully authenticated, is based upon our analytical performance, which has been unchanged for quite a number of years. Since the threshold for the possible onset of lead intoxication is very sharply defined, a systematic difference of 0.01 mg. per 100 grams of blood, as between two laboratories, is highly significant. On the other hand, if the error varies appreciably from analysis to analysis, in the same laboratory, i.e. if it is erratic, then the whole procedure of the laboratory must be overhauled, in order to provide results of uniform quality with known positive and negative deviations.

I do not wish to make suggestions to Dr. Edwards of Autolite which will run counter to yours, but I had already given him the basis for our judgment in this matter, and I can hardly back off at this point. I will go lightly in the matter therefore, and will tell him that you and I will probably discuss various aspects of the situation, after which he will hear from you.

I hope we can do this early in October. I shall not be free to do so sooner.

With kindest personal regards.

Sincerely yours,

RAK:vr

Robert A. Kehoe, M.D.

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