

Du Pont's No. - PR 4-1000.

June 29, 1959

Mr. J. R. Sabina
E. I. duPont de Nemours and Company
Wilmington 98, Delaware

Dear Mr. Sabina:

I am sending four copies of a brief report of our experimental observations of some years ago on the lead alkyls. It has taken an unduly long time to get this to you and your associates, since I promised to do so, and I am apologetic for the delay. We have been unusually busy, however, and certain other calls on our time and effort have seemed to be more urgent.

You can distribute these copies as you like, and more can be provided if you want them. I'd appreciate it if you would tell John Zapf, that if he would like to have the analytical data on the considerable number of animals to which the various compounds were administered I'll be glad to let him have them separately. These data are fairly voluminous and it hardly seemed worth while to attach them to this report in tabular form in view of their lack of special significance beyond the general conclusion that could be drawn by inspection.

Perhaps I should make reference to the analysis of urine and blood in association with the survey being carried out in San Francisco, since there seems to have been some question about this matter in the minds of our friends in California Research. I can appreciate the willingness of your people to carry out this work, in view, especially, of the nearness of the Antioch Laboratory to the experimental site, and there may have been the appearance of a certain arbitrariness in my decision that these must be done in Cincinnati. If I had been unduly sensitive about appearances, or a bit less concerned about the outcome of these observations, the easy course would have been to allow the analytical work to be done as suggested. This, however, would have been both unwise and irresponsible on my part. Unwise - because there was no basis for comparison between ourselves and the Antioch Laboratory, and because, therefore, this would introduce another variable into our already complex and somewhat difficult investigation; irresponsible - since as consultant to the California group, I would have been remaining silent about a matter on which I had grave misgivings. It is not generally appreciated that the results of such analyses, as between any two laboratories, vary appreciably, and that systematic differences occur because of local variables. The statistical aspect of this survey may be questionable even with every refinement that can be introduced. The manner of sampling, for example, is not strictly satisfactory, and cannot be made so under the existing conditions. We shall have to rely, therefore, on every feature

KE 0003283

June 29, 1959

of our experience in the interpretation of these results, and I want as few variables as possible. I am apprehensive lest the entire survey should turn out to be inconclusive. Because of the important issues in the situation that call for haste, we are attempting to learn - or at least to discern the trend - in a very short time, facts which can only be determined conclusively by long-term observations. In this situation I am on the spot, and I cannot afford to be at the further disadvantage of having to interpret data for which I have no point of reference. This has nothing to do with the functional reliability of the analytical work at Antioch. It has everything to do with my lack of evidence and, hence, of scientific assurance on that point. I have no doubt of the adequacy of the analytical work for the purposes of industrial hygiene in your plant. On the other hand, I cannot fail to doubt the comparability of the results with ours, and, therefore, their inadequacy for the purposes of research in a matter which must be decided on the background of our prior data and experience.

I have put together all of the data obtained by the analysis of the samples of urine of the employees of the San Francisco garage during Phase I of the observations. There are a few other data (on the employees of Standard of California,) and a scattering of analytical results on the blood of various men. These are of value, but they will not have equivalent weight in the statistical comparison. Suffice it here to say that the findings in the blood, as expected, demonstrated that these men had not absorbed significant quantities of lead in the course of their work during some months (or perhaps even years) prior to these observations.

I enclose, with but brief attached comment, the tabulation of the results in the form of a frequency distribution, from which the mean, its probable error, the standard deviation, and the coefficient of variability, have been calculated. I have reported the results to California Research as they have come through in groups, but have considered it unnecessary to report them to the other groups, since little can be made of them in bits and pieces.

If there are questions or comments on any aspect of the matters which I have mentioned above, please do not hesitate to let me know.

Cordially yours,

Robert A. Kehoe, M.D.

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Enclosure

KE 0003284

**DISTRIBUTION OF ANALYTICAL RESULTS ON THE URINE
OF EMPLOYEES OF YELLOW CAB COMPANY DURING
THE PERIOD DESIGNATED AS PHASE I**

<u>Lead in Milligrams per Liter of Urine</u>	<u>Number of Samples containing Lead within Indicated Range.</u>
0.02 - 0.0299	13
0.03	13
0.04	23
0.05	17
0.06	9
0.07	2
0.08	3
0.09	3
0.10	2
0.11	0
0.12	0
0.13	3
0.14	0
0.15	0
0.16	0
0.17	0
0.18 - 0.1899	<u>1</u>
	Total.... 94

Mean	=	0.062 mg. per liter
P.E. of Mean	=	± 0.002
S.D.	=	+ 0.028
Co. Vari	=	50.49 per cent