

October 10, 1942.

Dr. W. D. Norwood,
Medical Supervisor,
E. I. du Pont de Nemours and Company,
Kankakee Ordnance Works,
P. O. Box No. 955,
Joliet, Illinois.

Dear Dr. Norwood:

We should be very glad to give you all the help we can in the study of the lead exposure of a group of your workmen. Perhaps it would be advisable if I made a few suggestions concerning the most useful way of making the observations. To some extent, this will depend upon the number of men involved, but I assume from your letter that the number is small, and what I shall say will be based on that assumption.

Instead of obtaining samples of feces, it would be more useful, I believe, to obtain samples of blood. The latter may or may not be feasible, but if it is, it will give you much more useful information, since a single series of analyses of the feces of a small group of men will be almost wholly valueless. Such observations carried over a period of time are useful, but otherwise it is almost impossible to determine the difference between occupational lead exposure and mere variations in the lead content of the food consumed.

Analyses made on the blood, on the other hand, will serve to check the results obtained on the urine. If blood samples are obtained, we shall send you the necessary tubes together with needles for the collection of the samples. It will be necessary to collect these with the utmost precautions against contamination. The men will have to remove their clothing and bathe if they are engaged in dusty or dirty work, and the samples will have to be drawn in a very clean place that is free of dust. We shall send detailed instructions for the collection of such samples. It often happens that men who take such samples for analysis, come to the conclusion that the precautions are excessive. This is not true, for even under the best conditions, occasional samples will be grossly contaminated. The same applies to the collection of samples of urine. Two types of urine samples can be collected. Large samples of urine may be obtained in gallon jugs, which will be chemically cleaned and sealed in paper bags. The men should not be permitted to handle the con-

Dr. W. D. Norwood - (2) - October 10, 1942.

tainer during work hours, but it should be sent or taken to their homes, and the sample should be collected there under cleanly conditions and with the exercise of every care against dust or other foreign material. One or two liters of urine should be obtained. Another type of sample can be collected at the plant, if there are clean facilities and if it is possible to supervise the collection of each sample. For this purpose, we provide a sample bottle in which a single spot sample of approximately 100 c.c. can be directly voided. The precautions taken here must be very great indeed, and the same cleanliness must be observed that has been indicated in obtaining blood samples.

With the results available on both the blood and urine, it will be possible to interpret the extent of the lead exposure. Otherwise, if spot samples are used, it would be advisable to collect at least two urine samples on each man at different times.

The cost to us of making these analyses will be approximately \$5.00 per sample, and this is the charge we would make.

We should like to have as much information as possible concerning the exposure, the nature of each man's work, and as much of his medical history and clinical record as is available. This will enable us better to interpret the results, and at the same time, it will give us the information which is required for investigative purposes.

I have had no direct experience with lead azide. There is little doubt that the absorption of this lead compound occurs in the same fashion that characterizes other compounds. The compound has one additional property, however, in that it is a skin irritant and will produce dermatitis under suitable conditions. If you have been handling this compound for long, you probably know more about this dermatitis than I do. In any case, it is advisable, however, to provide as much protection as possible against skin contact and to encourage a high degree of cleanliness among the men.

I shall transmit your message to Dr. Machle when I see him. He is in military service at Camp Knox as the Director of the Armored Force Medical Research Laboratory and will be there for the duration. Please let me know your wishes in connection with the work you have in mind, after which we will send you the necessary containers.

Cordially yours,

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Robert A. Kehoe, M. D.

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