

August 19, 1941

Dr. J. W. G. Hannon
625-635 Washington Trust Building
Washington, Pennsylvania

Dear Doctor Hannon:

Your letter of August 8, directed to Dr. Kehoe has arrived in his absence. As he will be out of the laboratory for some weeks, I am replying to it and will hold your letter pending his return in the event he wishes to comment further.

The urinary lead excretion of your patients is of such order of magnitude as to indicate recent severe lead exposure and is consistent with the occurrence of intoxication. If one can be certain of the technic of collecting the urinary samples and of the absence of contamination in this step or in the later analytical procedure, the results would indicate a serious level of lead exposure and absorption and would make it advisable that the men be removed from exposure until adequate protective measures are installed.

In reply to your question on the solubility and toxicity of lead borosilicate, we can advise you that the solubility of the lead silicate is low. However, there is no accurate experimental or clinical information on the solubility of these lead compounds in gastric juice or in the succus entericus. One cannot say therefore on the basis of the water solubility or lack of water solubility of lead borosilicate that exposure to the material is without danger. In point of fact, from a practical clinical point of view, if lead borosilicate is the only lead compound to which these men are exposed, the finding of a high rate of lead excretion uniformly in the men is very good presumptive evidence at least, of the absorption of this compound.

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We would suggest as a means of verifying the degree of exposure that you obtain urinary samples with great care against contamination from five or so of the men with the most severe exposure and that with this group a corresponding number of urinary samples on men without lead exposure be analyzed. The control group can be selected from office workers and others not engaged in plant activities. Comparison of the analytical results obtained on the exposed and non-exposed group will give you a good check on the validity of the analytical method and the technique of collection of samples. The results on normal non-exposed workers should not exceed from 0.03 to 0.05 mg. of lead per liter of urine. We will be glad to comment on and offer our interpretation of any results that you may obtain by this method.

As a further measure, a careful investigation of the plant is warranted. Frequently, a variety of compounds go into the preparation of glazes and although the finished glaze may be in an inert chemical and physical state, the raw component materials may be of such nature as to give rise to dangerous dust that is dispersed widely.

Your medical records on these men would be of great value in interpreting the urinary excretion. Evidence of lead exposure in the form of lead lines, or increased stippled cell counts should be apparent, as well as symptoms and signs associated with intoxication.

Very truly yours,

WM:vr

Willard Machle, M. D.