

June 23, 1944

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Mr. H. R. Bryant,
Johnson Bronze Company,
New Castle, Pennsylvania.

Dear Mr. Bryant:

I have spent some hours going over carefully the analytical results on your men. It has been necessary to spend a great deal of time on them because of the fragmentary and badly scattered character of the information you have supplied me. I have had to check and double check everything because you did not give me the information I requested in a form in which it could be utilized directly. However, I have finally been able to make some headway in the interpretation of your position. I give you herewith the best conclusions which can be obtained. Let me begin by making a summary of what we have done.

We have analysed one or more samples of urine and/or blood of 52 men, these comprising 59 samples of urine and 21 samples of blood. Discarding those results which are obviously invalid or which, because of the time they were taken, have no relation to the information we were seeking, we now find that we have some kind of results on 33 men, this information being given in the results on 39 urine samples and 10 blood samples. That is to say, we have thrown out as utterly worthless the results obtained on 20 samples of urine and 11 samples of blood. Checking back over your letter, therefore, we find ourselves in this position. We have results on 3 of your furnace tenders, 3 furnace repairmen, 10 pourers, 7 molders, 7 laborers, and 4 shake out men. The result on the one sand handler is not acceptable as valid, and the result obtained upon the foreman, Altobelli, has been discarded because it was not obtained at the proper time, and it is also too high under the circumstances to be trusted.

Before going into the question of the additional samples that should be obtained to portray the conditions in your plant, let me refer you to my repeated remarks concerning the manner of carrying out this last study. Because you seem to have forgotten what I told you, I enclose herewith a copy of the memorandum on the study of exposure in the foundry. I have supplied this to you twice and you have completely ignored it both times.

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What I should like to know is whether it is possible or impossible to carry out this survey in the manner I have suggested. If it is possible, it should be done in this manner. If it is not, we shall have to go to a second best method. That method is not the one you have elected. It will not do us any good to obtain the limited number of additional spot samples on men in the various categories. As I have pointed out to you previously, the spot samples are not sufficiently reliable to enable us to draw the conclusions from a small number. We shall have to have quite a number more than you have suggested in your letter, and they will have to be supported and augmented by results on the blood of each individual studied, unless you are willing to go to the trouble and expense of obtaining two to four samples within a short period of time on every man selected as a representative of his group. This can be done, but it will be unnecessarily expensive. There is also an additional handicap. It is quite apparent that the samples that you are sending to us are being contaminated with fair frequency. As I indicated previously, 11 of the 21 blood samples analysed thus far have given misleading results because they have come to us contaminated. I have tried to point out to you that these samples cannot be obtained satisfactorily under the conditions in which they are being taken. You will never be able to obtain samples that will give satisfactory and truthful results until you have a place that is clean, with filtered air into which nothing is ever brought, and into which no man ever enters, without being carefully cleaned up to see that he does not bring dust into the place. It is on this account that we do not dare trust the results that we have up to the present time. Some of them no doubt are approximately correct. Quite a number of them are of very dubious value, and we do not dare put dependence on them.

While we are on the subject of this survey, let me call your attention to the fact that we must have complete employment information on every man who is selected to represent the particular occupation in which he is engaged. It is especially important that we know all about where he has worked in the plant and for what length of time he has worked continuously. Thus any changes in his work location or any periods when he has been off work will be of consequence in interpreting the data.

You can use your own choice with respect to whether you obtain medical information on the men we study. If we are not able to get more and better information than we have had previously on individual men, it will not be worth your time and expense to bother with it. So far the medical information we have had has been utterly worthless. If the reports indicate the quality of the service you are getting, you are wasting your money altogether,

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for you are not getting any information that is useful either to yourselves or to the men.

Now to get around to what little interpretation we can offer on the data that are already available, I attach hereto a brief summary of the results. You will note that all of the results on the furnace tenders are well above any level of safety. Any one of these men may develop acute lead poisoning at any time if these figures are to be trusted. We have 5 results on the urine of 3 men, every one of which is above 0.20 mgs. per liter. The two results on the blood of 0.09 and 0.13 respectively are clearly in the dangerous zone.

The three results on the urine of furnace repairmen would seem to indicate that this is not very hazardous work. I presume this is because of the intermittent character of this work.

We have 12 results on the urine of 10 men who are pourers. These ranged from 0.045 in a man who has been employed but little more than half a year to 0.44 in an older employee. In general the results would seem to be such as to justify the conclusion that this is a highly hazardous job. There are 9 results on the blood of men in this group. Five of these are almost certainly invalid, while the other 4 are within reasonable limits. I doubt very much the correctness of any of the results obtained on [REDACTED] but the findings on this man in both the blood and the urine are remarkably high, and if true, this man must have had a very dangerous exposure for quite some time.

There are 9 results on the urine of the molders. One of these is highly questionable (that on [REDACTED]), but I have included it because it is not an impossible result. The combined data would appear to indicate that these men are quite as much exposed as the pourers.

There are 7 results on the urine of 7 laborers. Also 3 blood results, but they are not in agreement with the results obtained on the urine, and I consider them all unreliable. It is not to be expected that the lead concentration in the blood per hundred grams will exceed that in the urine per liter among exposed persons. It is theoretically possible, but it is a most unlikely occurrence. It would appear from the urine results that none of these laborers is very seriously exposed to lead. There is not a dangerously high result in the group, and you will realize that low results are much more to be trusted than high.

We have 5 results on 4 shake out men, and these are supported by 3 results on the blood. Two of these latter results are higher than the urine concentration, and therefore are not to be accepted as trustworthy. The one high result on the urine in this group, that on Warren Taylor, is not to be trusted implicitly,

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and certainly the result on the blood sample on this man is open to great question.

In summary we can say that the furnace tenders, the pourers, and the molders are being subjected to a quite hazardous exposure to lead compounds. Furnace repairmen, laborers, and shake out men may be seriously exposed, but apparently are not regularly or frequently subjected to a very dangerous exposure. This is the best conclusion that can be drawn, and it is not too well founded because of certain unreliable characteristics of the data from which these conclusions are drawn.

I think that you should go ahead and carry out the survey that you had in mind. However, I do not think I can make any useful nor specific suggestions as to how to proceed until you tell me how you are prepared to go about it. I must insist that you should not go about it by means of spot urine samples, unless you intend to secure several samples from each man within a period of a week or ten days. If you intend to do it on a limited basis, making use of the kind of samples that have previously been obtained, you must select your subjects carefully, and you must obtain blood samples along with urine samples on every man. Even then the results will be somewhat unreliable by virtue of the bad conditions under which the samples are now being taken. I must urge upon you the necessity of doing something to cure this last condition. You are wasting money, and more importantly you are wasting time for both of us. Unfortunately for yourselves, you are obtaining a background of misleading information which cannot fail to work against you in any compensation cases that may develop or in any litigation that you may run into. In other words you are showing or apparently showing a severity of exposure which does not really exist.

Finally let me say that I strongly advise the use of the method I have outlined in the memorandum for carrying out this survey. If the men are selected with sufficient care, and if they are properly selected, and if they actually bathe and clean themselves up when they leave the plant, you will be able to get samples by this method that will give us reliable results. It will mean taking trouble, and it will mean that somebody pays more attention to what I have said than has been done in the past. If you will let me know what you have decided to do, I will give you the best advice I can on the numbers of men in the different categories.

Very truly yours,

Robert A. Kehoe, M. D.

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