

The Markey Bronze Bushing Co.,  
Delta, Ohio - Mancuso (State  
Health Department Survey)

KE 0018766

N19736

Dear Mr. Roberts:

I send herewith the reports of the analytical results obtained on the samples of blood and urine of certain of your employees, together with a bill to cover the cost to us of performing the analyses.

The interpretation of these results, in the absence of histories on the occupations of the men, and especially on account of the lack of information on the last day of their employment (exposure), cannot be made with complete satisfaction. Moreover the analytical results do not signify that any of these men are ill. They merely demonstrate the extent of their recent exposure to and absorption of, lead.

Assuming that all of the men have worked up to a very recent date, under conditions of exposure associated with their normal occupations, it is apparent that [REDACTED] had the most serious exposure, [REDACTED] the next and [REDACTED] next, [REDACTED] being the least and only slightly exposed. The length of employment of these men may well have been quite as important as the character of their jobs, in determining the results.

From the aspect of hazard, the results on [REDACTED] correspond to a quite hazardous condition, the continuation of which would certainly cause lead intoxication; those on [REDACTED] are also indicative of dangerous lead exposure, while those on [REDACTED] are only slightly less significant. These men might well be showing symptomatic evidence of toxic effects, as well as signs of lead absorption, although that is by no means necessarily true. It would not be expected that [REDACTED] would be ill. His exposure was mild or of short duration, or else it has been some time since his exposure was discontinued.

I should be interested in obtaining the clinical and occupational histories of these men in order to complete my records.

Very truly yours,

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Robert A. Kenoe, M. D.

IAK ef

C.C.: Dr. Thomas F. Mancuso

Enc.

125 2240525

URINE

Analysis Number - 47A-1976  
Volume - 100 ml.  
Specific Gravity - 1.007  
Mg. Pb/Liter - 0.045

BLOOD

Analysis Number - 47A-1977  
Weight - 21.3 Grams  
Mgs. Pb/100 Grams - 0.07 (Dithizone)

Samples Collected: 3-19-47

Samples Received: 3-24-47

Samples Reported: 3-29-47

Dr. Robert A. Kehoe  
Kettering Laboratory of Applied Physiology  
College of Medicine, Eden Avenue  
Cincinnati 19, Ohio

Dear Dr. Kehoe:

I should like to acknowledge receipt of the five blood and urine sample kits.

I am returning to you today the blood and urine samples of four men. The fifth kit was not used, with the exception of the needle.

The specimens were taken from Mr. [REDACTED], Mr. [REDACTED],  
[REDACTED] Mr. [REDACTED] and Mr. [REDACTED]

Would you kindly run laboratory analyses for lead and send the reports and laboratory charts to me, with the copy of the report to Dr. Mancuso.

We appreciate your co-operation in this matter.

Very truly yours,

THE MARKEY BRONZE BUSHING COMPANY

*W.A. Roberts*

W. A. Roberts, Assistant Manager

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URINE

Analysis Number - 47A-1982  
Volume - 100 ml.  
Specific Gravity - 1.018  
Mg. Pb/Liter - 0.12

BLOOD

Analysis Number - 47A-1983  
Weight - 10.8 Grams  
Mgs. Pb/100 Grams - 0.075 (Spectrographic)  
Mgs. Pb/100 Grams - 0.09 (Dithizone)

Samples Collected: 3-19-47  
Samples Received: 3-24-47  
Samples Reported: 3-29-47

URINE

|                  |   |          |
|------------------|---|----------|
| Analysis Number  | - | 47A-1980 |
| Volume           | - | 100 ml.  |
| Specific Gravity | - | 1.019    |
| Mg. Pb/Liter     | - | 0.18     |

BLOOD

|                   |   |                       |                  |
|-------------------|---|-----------------------|------------------|
| Analysis Number   | - | 47A-1981              |                  |
|                   |   | <u>Spectrographic</u> | <u>Dithizone</u> |
| Grams             | - | 14.2                  | 19.3             |
| Mgs. Pb/100 Grams | - | 0.12                  | 0.09             |

Samples Collected: 3-19-47

Samples Received: 3-24-47

Samples Reported: 3-29-47

URINE

|                  |   |          |
|------------------|---|----------|
| Analysis Number  | - | 47A-1978 |
| Volume           | - | 100 ml.  |
| Specific Gravity | - | 1.020    |
| Mg. Pb/Liter     | - | 0.35     |

BLOOD

|                   |   |                       |                  |
|-------------------|---|-----------------------|------------------|
| Analysis Number   | - | 47A-1979              |                  |
|                   |   | <u>Spectrographic</u> | <u>Dithizone</u> |
| Grams             | - | 18.0                  | 21.0             |
| Mgs. Pb/100 Grams | - | 0.23                  | 0.24             |

Samples Collected: 3-19-47  
Samples Received: 3-24-47  
Samples Reported: 3-29-47

Source: Employees of Markey Bronze Bushing Company, Delta, Ohio

Material: Urine and Blood

Submitted: 12-3-56 by Dr. Ben Reed, Delta Clinic, Delta, Ohio

Required: Lead Analyses

N19736.04

KE 0018773

| Name       | URINE           |            |              | BLOOD           |                |               |              |               |
|------------|-----------------|------------|--------------|-----------------|----------------|---------------|--------------|---------------|
|            | Analysis Number | Volume ml. | Mg. Pb/Liter | Analysis Number | Spectrographic |               | Dithizone    |               |
|            |                 |            |              |                 | Weight Grams   | Mg. Pb/100 g. | Weight Grams | Mg. Pb/100 g. |
| [REDACTED] | 56A-6592        | 112        | 0.13         | 56A-6593        | 15.9           | 0.05          | 16.7         | 0.05          |
| [REDACTED] | 56A-6594        | 49         | 0.07         | 56A-6595        | 15.3           | 0.05          | 16.0         | 0.07          |
| [REDACTED] | 56A-6596        | 140        | 0.15         | 56A-6597        | 17.1           | 0.15          | 17.8         | 0.17          |
| [REDACTED] | 56A-6598        | 51         | 0.15         | 56A-6599        | 14.3           | 0.09          | 15.7         | 0.10          |
| [REDACTED] | 56A-6600        | 37         | 0.06         | 56A-6601        | 11.3           | 0.05          | 15.8         | 0.06          |
| [REDACTED] | 56A-6602        | 103        | 0.20         | 56A-6603        | 13.9           | 0.09          | 15.3         | 0.12          |
| [REDACTED] | 56A-6604        | 32         | 0.09         | 56A-6605        | 14.4           | 0.06          | 16.6         | 0.06          |
| [REDACTED] | 56A-6606        | 92         | 0.10         | 56A-6607        | 12.4           | 0.06          | 14.5         | 0.08          |
| [REDACTED] | 56A-6608        | 150        | 0.28         | 56A-6609        | 15.4           | 0.31          | 17.5         | 0.33          |
| [REDACTED] | 56A-6610        | 149        | 0.22         | 56A-6611        | 12.5           | 0.09          | 15.9         | 0.10          |
| [REDACTED] | 56A-6612        | 68         | 0.18         | 56A-6613        | 12.8           | 0.07          | 14.1         | 0.07          |

| Name       | URINE           |            |              | BLOOD           |                |               |              |               |
|------------|-----------------|------------|--------------|-----------------|----------------|---------------|--------------|---------------|
|            | Analysis Number | Volume ml. | Mg. Pb/Liter | Analysis Number | Spectrographic |               | Dithizone    |               |
|            |                 |            |              |                 | Weight Grams   | Mg. Pb/100 g. | Weight Grams | Mg. Pb/100 g. |
| [REDACTED] | 56A-6614        | 121        | 0.16         | 56A-6615        | 14.5           | 0.06          | 14.6         | 0.06 ✓        |
| [REDACTED] | 56A-6616        | 58         | 0.10         | 56A-6617        | 15.4           | 0.06          | 16.6         | 0.06          |
| [REDACTED] | 56A-6618        | 34         | 0.26         | 56A-6619        | 11.3           | 0.06          | 13.5         | 0.06 ✓        |
| [REDACTED] | 56A-6620        | 125        | 0.07         | 56A-6621        | 14.6           | 0.06          | 16.0         | 0.05          |
| [REDACTED] | 56A-6637        | 41         | 0.08         | 56A-6638        | 14.6           | 0.06          | 17.6         | 0.06          |
| [REDACTED] | 56A-6639        | 130        | 0.03         | 56A-6640        | 15.0           | 0.06          | 15.3         | 0.07          |
| [REDACTED] | 56A-6622        | 15         | 0.23         | 56A-6623        | 14.0           | 0.06          | 14.8         | 0.06          |
| [REDACTED] | 56A-6624        | 57         | 0.10         | 56A-6625        | 13.4           | 0.07          | 14.4         | 0.10          |
| [REDACTED] | 56A-6626        | 88         | 0.10         | 56A-6627        | 13.7           | 0.05          | 15.1         | 0.05          |
| [REDACTED] | 56A-6628        | 135        | 0.06         | 56A-6629        | 15.8           | 0.05          | 18.1         | 0.07          |
| [REDACTED] | 56A-6630        | 130        | 0.05         | 56A-6631        | 14.7           | 0.05          | 14.8         | 0.06          |
| [REDACTED] | 56A-6632        | 122        | 0.10         |                 |                |               |              |               |
| [REDACTED] | 56A-6633        | 132        | 0.10         | 56A-6634        | 14.8           | 0.07          | 16.1         | 0.07          |
| [REDACTED] | 56A-6635        | 91         | 0.17         | 56A-6636        | 11.4           | 0.07          | 14.3         | 0.07          |

\*Insufficient quantity of blood for analysis.

Samples Collected: 11-27-56  
 Samples Received: 12-3-56  
 Samples Reported: 12-15-56

not be returned to work involving such exposure until the levels of lead concentration in the urine and blood have returned to the normal range. These men are [REDACTED]

[REDACTED], and [REDACTED]. Two of these men are in grave danger, having blood levels in the highly hazardous range, which is often associated with the more serious manifestations of plumbism. These two are [REDACTED] and [REDACTED], the latter being in the more dangerous situation. The others in the group are in only a little less danger.

One additional man, [REDACTED], is just at the threshold of danger. He should not be subjected to any further exposure to lead and should not resume work under conditions of exposure until he has returned to the normal range of lead concentration.

[REDACTED] and [REDACTED]  
margin of [REDACTED] to  
lead were to continue for any very considerable period of time without material reduction.

There is no man in this group who fails to show some evidence of abnormal absorption of lead in one or the other of the urine or blood. Of those whose blood lead is within the upper normal range (11 of the men) only 4 have urinary levels of concentration that are near the mean normal range, and 4 of the group have significantly elevated levels of lead concentration in the urine.

The average concentration of lead in the urine of the group is 0.13 mg. per liter; the average of all of the results on the blood (the blood sample from 1 man was inadequate for analysis) is 0.081 mg. per 100 grams. These values taken as an expression of the level of lead exposure of this plant as a whole, to the extent that these men are representative of its various areas and activities, show that the environmental conditions are quite dangerous and that the environmental control is woefully inadequate.

Note: In view of the complete lack of any information concerning the nature and the duration of the exposure of these men, or of any other information, the interpretation above must of necessity be based upon the findings alone. It is a valid interpretation in all respects, but it could be made more useful to all concerned, if suitable information were available.

Signed:

Robert A. Kehoe  
Robert A. Kehoe, M. D.

Dear Doctor Reed:

I send you herewith the report of the analyses carried out on the urine and blood of the employees of the Markey Bronze Bushing Company. I know nothing of your relationship with the management or the employees of this plant, but it is necessary to speak to someone about the situation of which these analytical results are indicative, and it seems the best part of prudence to address my remarks to you as a basis for such advice as you may wish to give the management.

1. It is evident, as I have indicated in the report, that this is a dangerous plant in which to work. It should be put in a state of reasonable safety or else closed down. It can be made reasonably safe, and this should be done promptly and effectively.

2. It is foolish, and wasteful of my time and effort, to send samples of this type to us without providing me with the information on the plant, the nature and duration of the employment of these men, and the clinical status of the men. With such information I could interpret the results more satisfactorily and give better advice. In addition to this aspect of the matter, however, there is another factor that makes this imperative. This is not a service laboratory, but a research organization in this University. We charge merely what it actually costs us to do such work, and in return for our efforts we expect to obtain information of the type indicated. We will not continue to perform such analyses unless such information is forthcoming. We are using our facilities improperly and unproductively unless we learn from our work the facts of life as they exist within the industries to which we give assistance and advice. I would appreciate any efforts you may make to pass my comments along to the right people.

I shall do my best to be of assistance to you if you bear my professional responsibility for these people, but these are the conditions under which our work is done.

Cordially yours,

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Robert A. Kehoe, M. D.

RAK ef

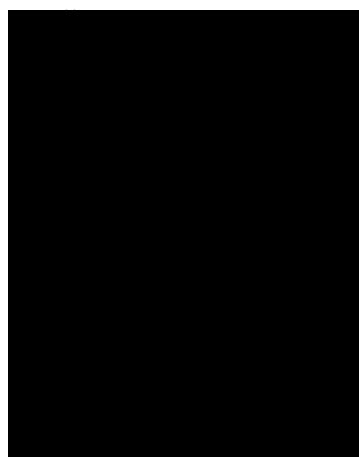
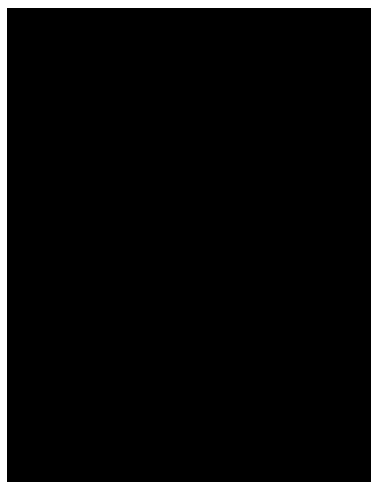
Enc.

KE 0018776

N19736.06

TO: Markey Bronze Bushing Company  
Delta  
Ohio                      Attention: Dr. Ben Reed

FOR: Reimbursement of the Kettering Laboratory for analysis of  
urine and blood of the following employees for the determination  
of lead:



49 Analyzes at \$10.00 each

\$ 490.00

\* Urine only.

KE 0018777

N19736.07