

January 23, 1947

Mr. H. E. Harlan,
Plant Manager, Magnus Metal Division,
National Lead Company,
1029 W. Seventh Street,
Cincinnati 3, Ohio.

Dear Mr. Harlan:

Pursuant to our telephone conversation, I am writing you in connection with your request for information as to the procedures which we might employ in examining into the potential lead hazards of your plant. I shall do my best to outline our suggestions, and in so doing, I might point out that we have some considerable familiarity with the problems associated with the manufacture of brass and bronze castings of variable lead content. I am sure you are aware of the possibility of other difficulties than lead exposure, but since your request related to lead I shall confine myself thereto.

The problem of lead exposure in work of this type arises principally from the contamination of the atmosphere breathed by workmen, with lead vapor and fume. It is true that some lead may be taken in by mouth as the result of carelessness, lack of training, or ⁱⁿadequate sanitary facilities in the plant, but the chief danger is from inhalation of excessive quantities of lead. Therefore, a very good idea of the extent of the lead hazard can be arrived at by the analysis of a sufficient number of properly representative samples of the air taken at the breathing zone of workmen. One assumes that air like that analyzed is actually breathed by the men. Naturally if the samples are not taken with sufficient care, or if for any other reason, such air is not actually breathed by the workmen, analyses do not portray the picture properly. For example, some or all of the men may wear respirators, in which case some of the material in the atmosphere will be removed by the respirator and will not be breathed. Thus you see there are pitfalls in this method of approach, and it is necessary to know the conditions in the plant in order to establish whether such procedures will work, and if so, how many samples will have to be taken to yield a composite picture of the lead exposure. This problem is further complicated by the fact that the lead exposure may vary tremendously from day to day with the amount of lead-bearing materials which have to be handled, by the concentration of lead which is introduced into various alloys, and by the extent of the ventilation. The latter is often greatly influenced by the outside temperatures, and, therefore, may vary appreciably from day to day and from season to season. Nevertheless with sufficient care one can appraise the hazard by this means with reasonable accuracy.

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Another method of procedure, and one which we prefer, because of its speed and accuracy, is that of obtaining samples of blood and urine from representative persons among the plant personnel. It has been clearly demonstrated that the lead concentration in these materials bears a direct relationship to the severity of the lead exposure over a period of months or even years. Consequently one can appraise the situation quickly and accurately, without having to give detailed consideration to all of the factors indicated above. In other words, the men who are exposed in the course of their day's work will give adequate evidence of the extent of their exposure, if they are subjected to proper tests.

We are preparing to do a limited amount of work to assist you in the solution of your problem, and inasmuch as this is a University laboratory, working in the field of public and industrial health, we will make only such charges for the work as will reimburse us for the actual out-of-pocket cost. Moreover, we wish to do only the minimum that is necessary, since we are hard pressed with a heavy program of investigation at this time.

It would not be possible for us to give you sound advice on how to proceed without seeing the conditions under which the plant work is carried out. After familiarizing ourselves with these conditions we could give you advice, as well as an estimate of the actual cost of the work to be done. I suggest, therefore, that you consider the matter, and if you wish to avail yourselves of our services, you should let us know when we can see the plant in operation. We shall then submit a brief report with recommendations which can be considered by yourself and your principals.

Very truly yours,

Robert A. Kehoe, M. D.

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C.C.: Dr. Henry Ryder

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