

July 16, 1949

Mr. Frank A. Patty, Head,
Industrial Hygiene Department,
Research Laboratories Division,
General Motors Corporation,
P. O. Box 188, North End Station,
Detroit 2, Michigan.

Dear Frank:

I very much fear that I cannot give a very intelligent answer to the questions in your letter of July 7. We have no data that would enable us to answer your questions with sound evidence. Therefore, I would be put to the necessity of merely expressing certain opinions. I have observed some very definite effects on the incidence of lead poisoning, and on the lead in the atmosphere, in association with increases in the concentration of lead in certain types of alloys. I have also seen evidence of increase in atmospheric contamination, in the case of alloys that require high temperatures for their handling. On the other hand, just what would be the effect of small changes in the composition of solder is quite unknown to me. I should say that anything that necessitates an increase in the temperature at which soldering is done will increase the volatilization of any lead which is in the solder. I should also say that anything which increases the surface oxidation would result in increased atmospheric contamination. I have no knowledge of any other phenomena that would be of any real significance.

I have only one other comment to make on this aspect of your general problem. I feel quite confident that if you wish to explain the elevated concentrations of lead in the blood or urine of a group of exposed employees, you will be able to find the answer without any very serious difficulty, if you will watch them work. There is nothing very mysterious about industrial exposure to lead. Good observation, plus, perhaps, certain analyses of the air, will usually answer the question of the relative severity of exposure of men in differing occupations. No doubt the particle size and the chemical composition is very important in certain situations, but I find it rather difficult to believe that these factors enter very seriously into lead exposure as it relates to soldering. Consequently I would try to solve this problem by observations in the plants rather than in the laboratory. In my opinion, it would be both less costly and more directly practical.

The only laboratory application of your problem that I can see immediately, is that of carrying out certain specific observations on different alloys, with respect to the quantities of lead given off into the atmosphere in the form of either vapor or fume, under certain variable conditions. Experiments along this line could be

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devised and carried out without too great difficulty. If this is the kind of thing you have in mind, and if you think it is worth doing, I should be glad to talk it over with Cholak, and submit a program to you together with an estimate of its cost. On the other hand, if I have misunderstood your purpose, do not hesitate to tell me so. I still think, however, that even if you had this information, you would have to examine rather carefully the men at work before you could put your finger on the origin and character of their exposure.

Sincerely yours,

Robert A. Kehoe, M. D.

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