

April 22, 1937

Mr. I. Dent Jenkins
Harrison Radiator Division
General Motors Corporation
Lockport, New York

Dear Mr. Jenkins:

In accordance with our conversation I am forwarding some sample containers to Dr. Barry for such use as he may choose to make of them.

I am sending you herewith a tentative list showing my selection of workmen to be examined at the time of our visit to Lockport. Having gone over our schedule, I have come to the conclusion that we can best carry out the work required during the second week in May. What I propose is as follows: that my associates Dr. Machle, Dr. Schradin and Dr. Sanders be in Lockport on Monday, May 10th to begin the examination of the men. I shall be occupied with class work on Monday and Wednesday and shall be unable to get away until Wednesday evening, so that I shall expect to arrive on Thursday. My associates are wholly competent to carry on the work without me, but I expect to relieve Dr. Machle on Thursday morning so as to enable him to make certain tests of the atmospheric lead in the plant on Thursday and Friday and, if necessary, on Saturday. You will note that I have indicated the advisability of examining some seventy-five or eighty persons, and I believe this can be done by Friday evening. I doubt if we shall be able to work more rapidly than this for our detailed examinations take time and if one tries to push too hard, he receives diminishing returns for his effort. As a matter of fact by the time one has looked at eyes, teeth, tonsils and ears for some eight hours, he begins to see things that are not there, and after some two or three days of this kind of work, eyes, ears and tonsils and other protuberances begin to float around the room. However we shall work as rapidly as we can since it is necessary for us to finish this work as quickly as possible so as not to upset our other experimental program more than is necessary.

Perhaps a few comments are required to clarify the brief notations in the list which I am

Mr. I. Dent Jenkins

sending you. It is my feeling that the selection of men for examination will have to be made by you and your associates on the basis of your detailed information of their personal qualities and their record of employment. From my point of view the most useful men for the purpose of illustrating the conditions in your plant will be those who have continued for the longest period of time in a certain occupation. Men who have been changed from job to job will not be satisfactory as evidence of the exposure associated with any one job. Therefore what we desire are the longest employed and the most characteristic or representative employees in relation to a given occupation. We should not want them selected on the basis of obvious physical fitness, but rather on the basis of their true representation of plant conditions. Moreover, so far as possible, both for your sake and our own, we should like reliable and responsible men who will be willing to follow instructions and who will not resent too much the rather rigid examination which they will be given. My experience is that in general workmen appreciate a thorough examination. Moreover if it can be done without a loss of time or wages, they regard it as an advantage. If the time taken is at their own expense, they will obviously not welcome the cost. I, therefore, feel that we should work, so far as is humanly possible, within the limits of the employment hours and that some program be arranged which will enable the men to be released or relieved in a systematic manner so that we can keep our examining team fully occupied and yet not rushed. I presume you will want men from both shifts, if you are running two shifts. This may mean some reorganization of our working hours, but I am quite sure we will be willing to arrange our time in accord with the best interests of the men and of the plant. It would be advantageous, of course, to begin our work early in the morning and to quit at a reasonably early hour. Thus if your hours are from seven to five, we might well arrange our time accordingly. On the other hand, if we are to examine two shifts, it might be well to begin at a later hour in the morning and so extend our work into the hours of the second shift. There is a distinct limit to the time a medical man can put into this work, and in general eight or nine hours is just about the maximum. On the basis of this information, I believe you will be able tentatively to set up a schedule, the final details of which can be worked out with Dr. Machle on the spot. Dr. Willard F. Machle, incidentally, is the Assistant Director of the laboratory and both he and the other men have been associated with me in this work for a period of years.

I have indicated a choice of four men from the foundry because it appeared that this was perhaps the most hazardous job in your plant. If you have two shifts

on this job, it might be wise to examine more than four, in order to make sure whether or not any one of the men is on the danger line. (It is likely that I will have the results of the analysis of the lead dust which I took from the foundry by the time this letter is typed, in which case I will add a postscript as to their significance).

I have indicated a choice of only one man from the Electroplating Department on the basis of our inspection there the other day. Obviously it would be wise to have the janitor of this department examined too.

It seems probable that you can choose more wisely from the Thermostat Department than I can. It will not be easy for us to examine or obtain samples of excreta in the case of the women. However I have a distinct feeling that this should be done in the interest of both your employees and your responsibility. I noticed a number of girls engaged in soldering work in the Thermostat Department. There were also a number of men and I think we should have suitable representation in this group. I also noticed several elderly men dismantling thermostats at a work bench without ventilation. Certainly several of these men, and particularly the man who was engaged in putting thermostats over a gas burner until they melted, then throwing them into a heap at his left side. The exposure of this man is almost certainly appreciable and he, as well as some of his associates, should be studied.

As to the Assembly Line, we could with profit examine more men than I have indicated. I have in mind here that the location of the ventilating duct and the posture of the men are important factors in the magnitude of exposure. Thus a sufficient number of men from your more modern assembly line, as well as the older one, should be selected to represent the various tasks and to so illustrate the variations among the men that we may certainly find out what is the maximal exposure. Obviously, where there is variation among men, the choice of subjects must be made with the idea of covering the whole range of possibilities. I have noted particularly a choice of men from the unventilated tank assembly rack, as well as workmen engaged in special repair work at the end of the assembly line where also the area was unventilated.

In the matter of the Core Dips, I have felt it wise to obtain information as to the exposure of men to lead dusts and fumes. I believe the greatest exposure here might be the result of relatively poor house-keeping arrangements. I noticed lead dusts and particles on the floor around the core dip and on the shelf or bench where the radiators emerge for inspection and examination.

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whether there is significant exposure, for it is quite certain that any significant exposure at these points can be eliminated by suitable cleaning methods.

The other departments to which I have called attention will be self-explanatory, I believe. I have indicated the choice of several men from the Service Department because I believe your ventilating facilities are less adequate in this area than elsewhere. I have indicated one man from the Stock Room because I saw dusts on the floor here and because such dusts can readily be eliminated by proper housekeeping if they constitute a danger of any consequence.

As to the janitors, I think it would be wise to examine them because it often happens that cleaners stir up more dust and are, therefore, exposed to more dust than other workmen in the plant. This may or may not be the case in your instance and your information on this point should be much better than mine.

As to foremen or supervisors, I think it worth while to include some of these for both practical and diplomatic reasons. If they move about in various sections of the plant, their magnitude of exposure is obviously problematical. I do not believe you can afford to have men of this type experience unpredictable hazards, and I do not think it wise on our part to miss so important a group of men in our study.

I think these comments will enable you to see the manner in which my mind works in relation to your plant, and I think you can be of unestimable assistance in combing over the situation thoroughly, and in selecting to your own satisfaction both the individuals and the total number of men who will best represent the conditions in which we have mutual interests. I have no wish to increase the number of men to be examined beyond that which is necessary to obtain the proper sampling of your plant conditions. From a statistical point of view, however, I think it is wise to point out that where there is a high degree of variability of exposure, as there is in your plant, one's only assurance of adequate sampling is gained by making numerous observations. In this instance we shall have to take our choice between making an adequate number of observations initially, and making repeated observations on a smaller number of men. I personally feel that the former of these methods is the most desirable. Moreover I think it will turn out to be less costly in the long run.

After you have gone over this somewhat lengthy letter, I would appreciate having any comments or criticisms which occur to you and your associates. Moreover if there are any questions which you wish to raise, I shall be glad to do my best to answer them.

Please accept my thanks for your courtesies at the time of my visit and for the very pleasant evening which we spent in lengthy discourse.

I have assumed that you would wish me to send a notation of my expenses, and I am, therefore, attaching such notation to this letter.

Cordially yours,

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Robert A. Kehoe, M.D.

<u>Location</u>	<u>Number of Men</u>	<u>Description of Work</u>
Foundry	4	Plating and sorting castings
Electroplating Dept.	1	Wire brushing lead strips
Thermostat Dept.	(3	Men dismantling for recondi-
	(3 (female)	tioning
	(2 (male)	Various soldering operations
Assembly Line	(6	Various soldering operations
Not less than 2 such	(6	Soldering line
groups representing an	(2 or 4 if	Test line
older type and the more	(available	Tank assembly (unventilated)
modern Chevrolet	(2 or 4 if	Special Repair(unventilated)
	(available	Operators of preheater and dips
Core Dip	(4	Inspectors at end of dip
	(2	
Header Soldering	2 to 4	
Heater Radiator Assembly	(6 (female)	Various soldering assembly
	(2	operations.
		Hand dipping radiators
Service Dept.	6 to 10	Various unventilated soldering
Old Models		operations.
Stock Room	1	Baling scrap etc.
Cleaners or janitors	Several from the various depts. especially the Core dip area, the electro plating dept.	
Foremen or Supervisors	Any men who are moving about from dept. to dept. or who are in charge of certain areas would be useful in representing the cross-sectional exposure of the plant.	

Note:-

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Persons in the above groups should be selected as subjects on the basis of their length of service in relation to a particular

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<u>Location</u>	<u>Number of Men</u>	<u>Description of Work</u>
Foundry	4	Plating and sorting castings
Electroplating Dept.	1	Wire brushing lead strips
Thermostat Dept.	(3	Men dismantling for recondi-
	(3 (female)	tioning
	(2 (male)	Various soldering operations
Assembly Line	(6	Various soldering operations
Not less than 2 such	(6	Soldering line
groups representing an	(2 or 4 if	Test line
older type and the more	(available	Tank assembly (unventilated)
modern Chevrolet	(2 or 4 if	Special Repair(unventilated)
	(available	Operators of preheater and dip
Core Dip	(4	Inspectors at end of dip
	(2	
Header Soldering	2 to 4	
Heater Radiator Assembly	(6 (female)	Various soldering assembly
	(2	operations.
	(2	Hand dipping radiators
Service Dept.	6 to 10	Various unventilated soldering
Old Models		operations.
Stock Room	1	Baling scrap etc.
Cleaners or janitors	Several from the various depts. especially the Core dip area, the electro plating dept.	
Foremen or Supervisors	Any men who are moving about from dept. to dept. or who are in charge of certain areas would be useful in representing the cross-sectional exposure of the plant.	

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<u>Location</u>	<u>Number of Men</u>	<u>Description of Work</u>
Foundry	4	Plating and sorting castings
Electroplating Dept.	1	Wire brushing lead strips
Thermostat Dept.	(3	Men dismantling for reconditioning
	(3 (female)	Various soldering operations
	(2 (male)	Various soldering operations
Assembly Line	(6	Soldering line
Not less than 2 such groups representing an older type and the more modern Chevrolet	(6	Test line
	(2 or 4 if available	Tank assembly (unventilated)
	(2 or 4 if available	Special Repair(unventilated)
Core Dip	(4	Operators of preheater and dips
	(2	Inspectors at end of dip
Header Soldering	2 to 4	
Heater Radiator Assembly	(6 (female)	Various soldering assembly operations.
	(2	Hand dipping radiators
Service Dept. Old Models	6 to 10	Various unventilated soldering operations.
Stock Room	1	Baling scrap etc.
Cleaners or janitors	Several from the various depts. especially the Core dip area, the electro plating dept.	
Foremen or Supervisors	Any men who are moving about from dept. to dept. or who are in charge of certain areas would be useful in representing the cross-sectional exposure of the plant.	

Note:-

Persons in the above groups should be selected as subjects on the basis of their length of service in relation to a particular occupation, their probable intelligence in following instructions for

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