

NORFOLK AND WESTERN RAILWAY COMPANY

OFFICE OF CHIEF SURGEON

ROANOKE, VA.

W. R. WHITMAN, M. D.
CHIEF SURGEON

M. A. JOHNSON, JR., M. D.
ASSISTANT CHIEF SURGEON

February 19, 1937.

Dr. Robert Kehoe,
University of Cincinnati,
Cincinnati, Ohio.

My dear Dr. Kehoe:

Recently we have had, among employees of the Norfolk & Western Railway Company, several cases of alleged lead poisoning. In some of these cases that have been reported as lead poisoning the victims were, in the course of their duties, using acetylene torches in the process of removing rivets from old painted plates in cars; others were engaged in the work of applying a composition containing 25% lead, using the compressed air method. These laborers have been required to wear respirators.

I have communicated with E. I. duPont de Nemours & Company regarding the subject of lead poisoning and their Chemical Director, Mr. John Marshall, has referred me to your work and investigations along this line. He advises me that your articles on this subject have appeared in The Journal of Industrial Hygiene and Toxicology. I shall appreciate it greatly if you will be kind enough to let me have reprints of your articles which have appeared in this Journal. In the event you do not have reprints, will you kindly advise me in what issues of the Journal your articles have appeared, and the address of the company publishing The Journal of Industrial Hygiene and Toxicology so I may secure copies of these issues.

Any other information you may be able to give us that might be valuable to us in helping to solve our problem towards taking precautionary measures with a view to protecting our employees engaged in this line of work, will be much appreciated.

Very truly yours,

W. R. Whitman
Chief Surgeon.WRW.

February 23, 1937

Dr. W. R. Whitman
Chief Surgeon
Norfolk and Western Railway Company
Roanoke, Virginia

Dear Doctor Whitman:

Your letter of February 19th refers to some of our published work of which my supply of reprints has been practically exhausted. However I take pleasure in referring you to the Journals in which these articles were published, and I believe you will have no difficulty in obtaining copies of the Journals. We have been studying over a period of years the lead metabolism of normal individuals together with that of individuals under conditions of exposure to lead compounds in industry and elsewhere. A series of six articles in the September 1933 number of the Journal of Industrial Hygiene cover the background of our studies most satisfactorily. However some more recent articles, one in the Journal of the American Medical Association Volume 105, pp. 578-585, and two others in the Journal of Industrial Hygiene - Vol. XVI, No.2, March 1934 and Vol.18, No.1, January 1936 - give some additional data which will be of interest. The latter one in particular describes observations on normal human beings which, in my opinion, are among the most significant in relation to the behavior of lead in the human body.

You will not find in any of these articles any considerable amount of practical information as to the avoidance of lead absorption. Rather what we have been attempting to do is to show the level of lead absorptions which result in lead poisoning. The question of prevention now, as always, depends upon the use of certain precautionary measures which limit the exposure to persons employed in industry. In the main this can be done by various types of adequate ventilation. However there are instances in which protection must be provided through the use of various types of masks.

I should consider it quite probable that cases of lead poisoning would occur under the conditions which you describe unless certain special precautions were taken. Some of the most serious cases of lead poisoning seen in industry result from the application of a cutting

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torch or a welding torch to lead painted surfaces. In fact this type of exposure has resulted in a larger proportion of fatal cases than almost any other type of lead exposure with which I am familiar. Moreover the use of spray apparatus in painting provides certain rather serious hazards. The latter can usually be taken care of in industrial plants through specially designed ventilation which removes the finely divided spray particles from the atmosphere in the immediate vicinity of the sprayer. Such ventilating equipment, however, is not always feasible because of the nature of the work, and here dependence has to be put on the use of adequate masks of one type or another. In general it might be said that the use of respirators or masks is not wholly satisfactory and for a variety of reasons which I shall not attempt to discuss here. Of the available masks, the most satisfactory for most purposes is the air-line mask through which air is pumped at a density pressure. With masks of this type leaks do not result in the aspiration of dusts from the atmosphere. It would seem to me that in the type of work which you describe, some application to this type of mask might be made in such a way as to provide substantially adequate protection. However I may as well express to you my personal point of view that the use of spray paints of high lead content is not a justified procedure. I do not feel that any paint as dangerous as this should be applied by a spray gun unless it is possible to effect local ventilation of a substantially fool-proof variety. Such paints can be applied by hand with safety. This can not be done with a spray gun except under conditions specially designed for the purpose. I realize that spray painting sometimes results in a somewhat better job, and certainly a less costly job. Neither of these points, in my opinion, justify the unreasonable hazard.

As to the protection of men engaged in using acetylene torches on painted surfaces, this I admit to be a very difficult job. It has given trouble to almost every employer who has had to be responsible for work of this kind. My own feeling is that it will be necessary in this type of work to use a specially designed positive pressure mask. Such a mask will have to be designed in such a way as to include the type of protection which is required and which is supplied by the welding helmet. It would not be difficult to do this and I think it will have to be done in dealing with heavily coated surfaces. We have had this point in mind for some time and have discussed it with at least one of the manufacturers of safety equipment. I am sure I should be glad to give such aid as I can to the accomplishment of a proper device in this type of mask equipment, and if you wish to take this matter up with one of the companies, I should willingly give such assistance as I can to promote the idea.

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If I can give you any further
advice or suggestions, please do not hesitate to call
on me.

Very truly yours,

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Robert A. Kehoe, M.D.

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