

February 12, 1930

There are two possible defenses, without considering any strictly legal and technical matters of which I have no knowledge. The one concerns itself with demonstrating that the alleged injury is not due to the effects of the absorption of tetraethyl lead. The other would maintain that in case the effects are due to the absorption of tetraethyl lead, there is no grounds for suit since the injury so sustained is compensable under the state laws as lead poisoning.

(1)

The first of these defenses would be difficult, if not impossible to present convincingly. There are four elements which enter into the formation of a diagnosis in this case, viz.- (1) the question of the significance of the subject's exposure to lead; (2) the matter of the similarity of the symptoms and signs of illness to those commonly seen in lead poisoning; (3) the existence of laboratory findings specifically related to lead; and (4) the relationship, in time, between the occurrence of exposure and the development of the injury as now seen. In the case of this man there was undoubtedly a significant exposure. His exposure was of such a sort that when I saw him at the Reconstruction Hospital in 1926, I concluded that his symptoms at that time might well have arisen from the absorption of tetraethyl lead. I do not remember the details of his work, whereby he received his exposure, but I would not have arrived at that conclusion without sufficiently convincing evidence. His exposure to lead since that time has apparently been negligible so that all considerations as to the significance of the exposure must go back to the original period of experimentation and contact with Ethyl Fluid.

The symptomatology displayed by the man at present is not specifically and certainly due to lead. Furthermore the usual outcome of exposure and symptoms such as he experienced in 1926 or thereabouts, is that all of the effects disappear and no residual injury remains. On the other hand his present symptoms apparently cannot be proven to arise from some other cause, and they are compatible with the generally believed behavior of lead compounds. In so far as an expert opinion, based on recent experimental information, might be formulated, it is reasonable to suppose that a man who has absorbed a considerable quantity of tetraethyl lead would have nervous system symptoms chiefly,

and that these symptoms might persist indefinitely, or recur after having abated. This opinion is based on our findings, verified in part by English observers, that the central nervous system binds lead and retains it for long periods of time.

This brings me to consider the laboratory evidence obtained at the Reconstruction Hospital in 1926, which tends to show that Evans' lead excretion was not such as to warrant a diagnosis of lead intoxication. There are several reasons for discounting the validity of conclusions based on this evidence. First, it can be shown that after the elapse of a year, the lead excretion in such a case will have reached a level which is practically that of the normal unexposed person. (In this instance there was an interval of more than a year, between the period of exposure and the time of observation.) The use of ammonium chloride and ammonium acetate in such a case does not always promote an increase in excretion. This is especially true when the subject's lead content is low, as was probably the case here after the elapse of more than a year. Therefore this negative finding is of no significance, because it showed what might have been expected, namely, that his general lead content was low. On the other hand, it tells nothing as to the lead content of his central nervous system - the tissue about which information is most needed. Finally the method by which the lead analyses were carried out does not yield uniform results which are susceptible to proper interpretation. For all of these reasons the analytical data available on Evans contribute little to the solution of the case.

The information obtained by blood examinations is in approximately the same doubtful position. It would not be expected that stippling of the red blood corpuscles would be present to such an extent as to be diagnostic after the elapse of more than a year since exposure. It can be shown that an important amount of stippling does not exist in most cases after three to six months from the cessation of exposure. The absence of stippling, however, does not mean that lead may not be the cause of the symptoms, for here again no information is obtained as to the lead in the central nervous system.

The long period of time since the exposure indicates a considerable likelihood that some factors other than lead are responsible for the present condition of the subject. However the previous discussion shows how lacking are proofs of the point. One's tendency would certainly be to give a sick man the benefit of any doubt that existed in this connection.

(2)

It might be feasible perhaps to present the alternate defense, to the effect that Evans' injury if occupational at all, has arisen from well recognized lead hazards, and, as lead poisoning, is compensable under the laws of the State of New Jersey. It would be highly desirable to have this matter settled once and for all, and in such a way that the nature of poisoning from tetraethyl lead might be understood. There has been too much vagueness and awe surrounding the subject. It should be classified as in no way different from other forms of lead poisoning. This has been done from the first in Ohio, and all cases coming under this category have been so dealt with.

If any evidence is needed on the scientific and clinical aspects of the matter, such can be found in medical literature, and in further experimental work which we are soon to publish. In fact, it can be shown that tetraethyl lead is decomposed in the tissues and eventually behaves in a manner which is identical with that of the water soluble compounds. Its distribution in the body, its rate of excretion, and its clinical results on the blood and other tissues are identical with that of other lead compounds. It would be difficult to find any point of variation except for its initial peculiarities due to its original fat soluble character.

It would be difficult to anticipate the effect that the facts I have discussed would have upon a jury, but it would appear that a judicial decision might well be made which would take the entire matter out of the hands of a jury.

I trust that the above paragraphs make my position sufficiently clear, and I submit them for what they may be worth.

(Signed)

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