February 26, 1947

Dr. Edgar V. N. Allen,
102-10 Second Avenue, S. W.,
Rochester, Minnesota.

Dear Dr. Allen:

I am writing to you as a senior member of the Mayo group, concerning a situation which would seem to be worthy of some attention. I do not ask you to do anything about it, for you may feel that it is neither necessary nor desirable to do so. On the other hand, I have felt that I could call your attention to the matter without the possibility of any misunderstanding or of giving offense in any way to any individual.

It so happens that on more than one occasion I and my associates have been drawn into cases of litigation or of medical controversy, involving the potentialities of the use and distribution of leaded gasoline for the production of lead poisoning among gasoline handlers, when the issue had been brought about largely, it appeared, from an opinion expressed by some member of the Mayo group. A case in point has recently aroused a considerable amount of difficulty, and has occasioned more than a little controversy and trouble. It seems unfortunate that this case should have created such a disturbance, particularly so because in the final analysis the issue came to be a question of the veracity and professional competence of a number of physicians. I realize fully that these situations are more or less inevitable, that differences of opinion among medical men have always occurred and will always occur, but I am frank to say that I do not feel that some of your colleagues can quite justify their ignorance, if I may use such a term, of the evidence that is available to demonstrate the inadequacy of the opinion expressed in the case in question. I realize also that doctors are frequently misquoted and that statements made by them more or less lightly, are often taken very seriously. Nevertheless, several incidents have led me to believe that no proper consideration has ever been given by most practicing physicians to the insignificance of the lead exposure associated with the ordinary handling and use of leaded gasoline. Therefore, I am taking the trouble to comment on the facts, at the risk of appearing to be pedantic.

First, let me cite a few of the facts concerning the case in question. A Mr. [redacted] of Thermopolis, Wyoming, an employee of the City of Thermopolis at a pumping plant, developed primary bilateral optic atrophy in 1942. My first contact with this case came in April of 1945 when I received a letter from a practicing ophthalmologist in Denver, concerning the case, on which he had been consulted. Subsequently through the inquiries of a

number of physicians and executives of oil companies, whose attention was called to the matter by reason of impending litigation, I received further questions to which I replied as well as I could on the basis of the information supplied. It appears that this man had seen a number of physicians, and at some time between 1942 and 1945 had visited the Mayo Clinic, where it appeared he was told that his condition had resulted from lead poisoning, and that the probable source of his absorption was from contact with leaded gasoline in the course of his work. This opinion, according to my best information, was given by Drs. C. W. Mucker and P. H. Hersema. I have not seen their report, but it appears that they saw the patient three or four years after the onset of his difficulties. It also appears that some lead was found in the patient's urine and that this was the presumptive evidence on which the etiologic basis of the lesion was determined. Perhaps I need not comment at all on the possible significance of an analytical result in this time relationship to an exposure to lead which is presumed to have occurred several years before.

I shall not go into a lengthy discussion of this case, for the details are not entirely relevant. Rather my purpose is to call attention to the fact that any idea that casual or frequent handling of leaded gasoline and contact therewith can result in the absorption of significant quantities of lead, was utterly exploded on adequate evidence at least ten years ago. Actually the evidence was quite satisfactory to anybody who took the trouble to inquire into it carefully more than fifteen years ago. I shall not even cite the evidence, since it is available to medical men in general, and since I do not wish to bore you with arguments. Rather, let me call attention to a few simple facts. My associates and I have had this matter under careful consideration as well as clinical observation and experimentation during the entire period of the use of this fuel. I think I need not defend our disinterestedness in a matter so vital to the public health, nor need I argue concerning the competence of our observations and conclusions. My testimony on that score might be regarded as inadmissible, and I prefer to stand upon the record. During the period of the use of this product in most of the countries of the earth, but principally in the United States of America, on account of its concentration of motor vehicles, at least as many as one quarter million men have been regularly and systematically exposed to contact with gasoline containing lead, and to the exhaust gases of automobiles using such fuel. If one includes all of the garage mechanics, filling station employees and refinery employees involved in this business, the number would be swelled to five or six times the figure I have given. During that period, despite continued advice to the public to the contrary, gasoline of this type has been used for almost every possible thing for which ordinary gasoline is commonly used. That is to say, it has been used for cleaning tools, clothing and greasy surfaces, including the exterior of automobiles, as well as for fuel

in gasoline stoves, blow torches, and the like. The abuse has not been very great, and it has obviously been intermittent, but it is to be admitted frankly that the lead exposure involved in the use of leaded gasoline as fuel for ordinary gasoline stoves might be significant under proper circumstances. Fortunately such circumstances have not been seen with sufficient frequency to create difficulty under the conditions of modern community life. What has actually been seen by way of trouble has occurred only under certain extreme conditions brought about by the war in or near combat zones. I have had the opportunity of seeing most of these situations at firsthand, having investigated the matter in some detail at the request of the United States and British Armies. However, to return to normal civilian conditions, we have looked in vain for twenty years for a single case of lead poisoning, or for the evidence of a single occurrence of measurable lead absorption, on the part of persons who handle gasoline regularly and in all ways. We have never seen lead poisoning or measurable lead absorption in any filling station employee or in any refinery handler of leaded gasoline. We have been able to demonstrate that a fair proportion of garage mechanics, by virtue of their multiplicity of minute exposures to lead, absorb lead in quantities slightly greater than those obtaining in the case of persons with no occupational lead exposure of any kind. The actual level of their lead absorption, however, as indicated by the level of lead excretion (which incidentally has been proved to be an adequate index), is of such a magnitude as to be just barely demonstrable, and is hygienically insignificant. I make this statement categorically on sound evidence. For these reasons, it is manifest that the customery handling of leaded gasoline, even over long periods of years, is without significance from the point of view of lead absorption. Consequently as a background for the interpreation of a clinical lesion only dubiously related to lead absorption, it is unworthy of serious consideration by any critically minded clinician who has any familiarity with the facts.

The results of experience, as indicated above, are not remarkable, in view of the experimental information obtained in the early years of the use of this product in order to evaluate this potential health hazard in advance. Consequently we were not surprised at this outcome. In fact, if we had not been reasonably certain that this would be the case, on the basis of extensive experimental evidence, we should have advised against the introduction and continuance in use of this fuel. It is simply inconceivable that any responsible industrial group would have undertaken to market and to continue the marketing of this fuel, if there had been any very great doubt on this score. It is, therefore, an act of irresponsibility on the part of ill-informed clinicians to raise this issue with any other than the most dubious attitude, when presented with a difficult etiological problem. The situation that results from litigation, and from the detailed consideration of a case of this type in courts of law or in compensation hearings, is

such as to discredit the skill and judgment and even the good faith of medical men in a rather public fashion. This has been a source of embarrassment to me, in a number of instances over a period of years, and it is principally for this reason that I become unusually disturbed from time to time. I admit that this is an attitude of too great seriousness, and that these matters work themselves out in time without one's intervention. On the other hand, it is my practice, when things bother me, to do something about them if I can. Therefore, I have taken this means in this instance in the hope that this might be a matter of some interest to you, and that you would feel justified in discussing it with your colleagues, perhaps, or in calling it to their attention in some other manner.

Cordially yours,

Robert A. Kehoe, M. D.

RAK ef