Dr. Rafael Schiaffino
Montevideo -Uruguay

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Dr. Rafael Schiaffino
Administracion Nacional de Combustibles
Alcohol Y. Portland
25 De Mayo 409
Montevideo
South America

Dear Doctor Schiaffino:

I had your letter some time ago with its questions and also the clinical information on the men at the refinery. My delay in replying has been occasioned in large part by the fact that my associate Dr. Machle has been engaged for some time in the collection of information, and in the preparation of a paper on gasoline intoxication. I felt that this paper would be of infinitely more use to you than any discussion which I might include in a letter, and accordingly I am sending you herewith a copy of this paper, together with some recommended regulations for the safe handling of gasoline.

In sending you this information I realize fully that it will not answer all the questions raised in your letter. I believe, however, it will give you a clear idea of what to expect in connection with gasoline exposure and, therefore, will be of some benefit in the consideration of the symptoms described in your letter. I do not want you to think that I have considered too lightly the symptoms which you have described. On the other hand I would be less than frank if I did not say that I consider them in the main indidental and largely unrelated to occupational hazards and toxic exposures. Many of the conditions which you describe are not especially unusual in men who work in industrial plants. If one were to consider the normal physical status of what might be called an average industrial worker, he will find it to be something very different from that set up in the text books as the normal for young healthy individuals. There are rather extensive variations in the erythrocyte count, much more extensive variations in the leucocyte and differential leucocyte counts, and in general all of the physical constants whether derived from clinical observation or laboratory procedure will be found to show rather wide deviations from what we are pleased to call the normal physiological picture. All of these things

occur in men who are not disabled, and unless they are associated with the existence of recognizable and demonstrable disease processes, they have to be accepted, I believe, as essentially normal in the sense of representing the status of average men living under certain environmental conditions. Most of the things which you have described in the way of symptoms are things which many of us have at times, and which very frequently or commonly we ignore. It often happens that men who have not been working as industrial workers suffer a good many slight difficulties as a consequence of their changed life when under industrial employment. If in addition to these difficulties, such men have reason to believe they are exposed to poisonous materials, they tend to become highly introspective and they note symptoms which they would ordinarily ignore. I have very little doubt that this provides some portion of the explanation of the conditions described in your letter. It would be presumptuous and impertinent for me to judge just what portion of the circumstances were of this type. On the other hand I think I have a certain justification in doubting if there is much here in the way of specific intoxication. It is fair to say in general that the handling of petroleum products and the operation of a gasoline refinery do not represent especially hazardous exposures to toxic materials. There is always the danger of fire and explosion, and there is also always the danger of being overcome by gasoline vapors in enclosed places. Other associated toxic substances can not be ignored. On the other hand our experience with general workmen in refineries leads us to believe that the hazards of their occupation are certainly small from the point of view of dangerous intoxication. It is this experience and this point of view which makes me somewhat skeptical of the significance of many of the symptoms which you have mentioned. Most of us, as doctors, have been in the habit of having people come to us when they are ill. The well population, or the portion of it which is not disabled, do not come to us and consequently we are in the habit of thinking of them as free of symptoms of illness of any kind. This is distinctly not the case, as can be established by anyone who for any reason undertakes the physical examination of a large number of people who are carrying on their day's work regardless of its nature. We have found that laboratory workers in general tend to be more introspective and tend also to have more symptoms which they themselves consider indicative of some abnormality. This, we believe, is true to a lesser degree of most persons who are under examination where any suspicion attaches itself to the conditions under which they work.

I shall not go into detailed discussion of the several heads under which you have discussed various abnormalities. I might, however, make one comment, and that in particular relationship to the findings in the blood. Extensive variations in the leucocyte count are very common among people who are in no wise disabled. This is essentially true of the lymphocytic and monocytic proportion of the blood. I think it is fair to say that a very large proportion of industrial workers have a low polymorphonuclear neutrophil count with a high lymphocyte count running between 40 and 50 percent. The eosinophils also vary rather extensively and in the case of persons with low grade infections, parasetic infestations and allergic reactions, extensive variations occur here not without medical significance but without any definite relationship to occupational conditions. You will gather from all this that I am exceedingly skeptical of the significance of the observations made by Dr.Ardao. I have no doubt that these conditions existed in some degree but I doubt very greatly that they had any important relationship to any occupational hazards within the plant in question.

I shall be very much interested in your reaction both to these comments and to the articles which I am sending you. It is indeed a pleasure to hear from you again, and I trust that this will be only one of many exchanges of communications between us.

With kindest personal regards,

I am

Sincerely yours,

RAK:is

Robert A. Kehoe, M.D.