

September 21, 1945

Mr. L. V. Taylor
Supervisor of Industrial Hygiene
American Can Company
11th and St. Charles Road
Maywood, Illinois

Dear Mr. Taylor:

In accordance with your request I am giving the background of the opinions expressed to you in our conference of September 18th concerning the medical and hygienic program of your company.

The general program of medical examinations as projected, seems to me to be quite satisfactory, so far as its expression on paper is concerned. The quality of the actual performance, on the other hand, will be determined entirely by the quality of the energy, judgment and skill of the doctors who carry out the program. For this reason, some means of determining the capabilities of the local physicians, and the quality and quantity of their interest and professional work, is needed. This responsibility and that of the selection of other professional personnel when and where necessary, should be vested in some medical advisor of your company, who should be responsible to general executives of the company. For example, the program requires that the frequency of certain periodic re-examinations be determined by the plant physician. One may ask how the plant physician arrives at a decision on this important point. Is it out of his own knowledge of the hazards involved, or out of information supplied by the industrial hygienists, or out of the data of physical examinations, or by sheer clairvoyance? Something in way of expert knowledge based on good information is required at this point. Do the physicians visit the plants frequently enough to know the severity of the occupational hazards? If not, they should.

With respect to more or less specific medical tests there is equal need for some degree of critical examination of local procedures. For example, examinations of the blood for microscopic evidences of changes suggestive of hazardous exposure to lead, benzol or some other toxic agent, should be carried out by techniques that are uniform in sensitivity and accuracy throughout the company plants, for otherwise they are likely to be misleading and certainly they will not have their maximum usefulness. In the case of the microscopic blood changes generally believed to be

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more or less related to lead absorption, it is recommended specifically, that one test be chosen for uniform use (whether or not other tests of the same general type are used and preferred locally). For purposes of simplicity a simple test for stippled erythrocytes (in our opinion as good as any of the procedures) could be employed, by having each physician (or nurse) make blood smears by a uniform technique and send them in to a central laboratory to be stained and examined there by one or more technicians using a uniform technique. This general method of procedure has demonstrated its feasibility and accuracy in practice and can be done with little difficulty. Unfortunately no laboratory test of this type is capable of doing what is expected of it, for reasons that need not be discussed here, but such tests are useful as adjuncts to other information when properly carried out and when properly interpreted, and current medico-legal thought and practice make it advisable to have information of this type. It is better however that the plant physician should arrive at an opinion concerning the clinical status of any man whose health is in question without dependence upon the results of such tests. In the present status of the knowledge of the significance of these special laboratory techniques, on the part of medical men generally, this information from the laboratory is quite as likely to mislead the physician as to aid him. Therefore these tests can best be carried out for the whole company in a single laboratory and used there to evaluate the general lead exposure of a plant or occupation, rather than to be used by a physician to interpret the condition of an individual employee.

Accurate lead analyses on the blood and/or excreta of workmen exposed to lead are of the greatest usefulness when properly interpreted. However it is not believed that analyses of this type are necessary in this industry as a routine procedure. Their function as a routine measure is to determine the severity of the lead exposure associated with the various occupations of a plant, and they will serve this function with an accuracy that cannot be achieved by any other means. However in this industry, this end can be accomplished satisfactorily and at less cost, by accurate and properly spaced analyses of the air of work rooms. Such procedure, in conjunction with adequate engineering measures for controlling the lead exposure, will eliminate the general operating lead hazards, if employed consistently.

On the other hand facilities for the accurate analysis of urine and blood for lead should be available and should be employed in connection with all cases of illness in which there is any question of the rôle of lead absorption. These facilities need be available only in a central laboratory, to which samples, obtained locally by proper means and in containers supplied by the laboratory, can be forwarded as indicated. Standard procedures for this purpose are

available and have been shown to be wholly satisfactory in practice. The proper use of such facilities by fully informed medical personnel can serve the double purpose of yielding precise and urgently needed medical information in specific instances, and of resolving medico-legal problems before they reach a difficult and embarrassing stage.

It may seem that this discussion has not clarified the respective functions of the plant physicians and those responsible for the control of plant conditions. In order to clarify these matters, it should be pointed out that both the doctor and the engineer should be concerned about plant conditions. Unfortunately however this is not often the case in practice. The doctor may know little about the plant, and little or nothing about the lead exposure in a quantitative sense. Under these circumstances he should not be permitted to exercise judgment in this field. He should then be expected only to give strictly medical information and service, i.e. to carry out pre-employment and periodic clinical examinations, to arrive at diagnoses in cases of illness, and to deal with such cases accordingly. Under these circumstances the control of environmental conditions, and observations on the existence and severity of the occupational lead exposure must be in other hands. Here the personnel responsible for industrial hygiene, in the environmental sense, may have to work alone, - that is, without the help of the physicians. It is for these reasons that resort to a central laboratory for services of this type may be, and in the case of your company, are believed to be, advisable. If and when the quality of the medical service can be brought up to a point of uniform excellence, this may not be necessary. Even then, however, the use of central laboratory procedures is one means of obtaining comparable information for central appraisal, on all of the plants involved.

On the whole therefore I should advise the employment of your central laboratory for the three-fold job of (1) carefully studying the environmental conditions in all of your plants, by means of air analyses; (2) systematically examining the blood of exposed personnel in the plants by means of a simple technique of determining the basophilic granulation (stippling) of the erythrocytes; and (3) carrying out accurate lead analyses on the urine and blood of all persons who may develop illnesses suggestive of lead poisoning.

I should further advise the development of means whereby the performance of plant physicians can be brought up to a uniform level of good quality. This in my opinion will require the services of a chief medical consultant or medical director who can select, advise, and instruct plant physicians along the professional lines of industrial medicine and hygiene, and who in other ways can work with and assist your industrial hygienists in the development and maintenance of healthful industrial conditions in your plants.

Mr. L. V. Taylor - 4 - September 21, 1945

I trust this will convey my ideas in a useful form.

In accordance with your wishes I am also enclosing
a bill for consultation.

Cordially yours,

Robert A. Kehoe, M.D.

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