September 21, 1971

Mr. R. L. Dollins
Dues Building Systems, Inc.
135 West Dorothy Lane
Dayton, Ohio 45429

Dear Mr. Dollins:

There is actually very little which I can contribute, by way of specifications or advice, in connection with the plans which you left in my office. This is especially true of the plant, proper. I can make suggestions, however, but in a general manner, for the medical facilities.

Because of the problems which a physician should anticipate, as well as the manner in which he must go about insinuating himself into the construction and arrangement of a plant in which certain hazards exist, I have chosen to prepare a memorandum for such use as it may be to you and your associates (including the persons in Quemetco who are undertaking to make suitable preparation for their production). This choice arises primarily out of the necessity of conveying the idea of what a physician should do - not what he now does in most of our industrial plants, but what he should be doing and what I hope Quemetco can bring him to do in their plant. I cannot tell you how to accomplish what needs to be done, but I can tell you, I believe, what I would hope you and your Company could achieve through your expertise in building structures which have a function to perform.

First, let me say that anything I have to say about the plant relates to its design for the purpose of making batteries. This means that the equipment comes first, arranged in some economical sequence as to position, spacing and the application of ventilation. This, of course, is primarily within Doctor First's function, but the building in which this equipment and the ventilating apparatus is housed should be so designed as to facilitate the operations, in such a manner that safety is achieved. Here housekeeping - that is to say, keeping the working area free of ordinary dirt and debris, but, specifically, free of lead-containing dust, at any point from which it is likely to be dislodged by the activities of workmen and other equipment - is of great importance in the lead trades. For example, the plates which are important parts of a battery are pasted with moist lead oxide paste. They are then dried, and wherever they go, by whatever means, they deposit oxide dust on vehicles, on floors over which vehicle operate (and disseminate the dust as they go and come). These plates should never be moved about unnecessarily or through any area from which they can be kept out. This means that within reasonable limits the places where they are produced should be as near as possible to the place or places where they are used in the construction of batteries. I have seen situations in which these are transported practically the full-length of a building, through areas which, otherwise, are not hazardous at all, such as, for example, areas in which the packaged, finished product is stored. There need be no lead dust in such an area.

In areas where dusts are produced, they should not be allowed to collect on flat surfaces - for example, window sills, shelves and the like. Floors, which should

(ideally) never be swept with brooms, should be cleaned (and kept clean) by vacuum cleaners. They cannot operate properly on rough floors, and objects in the way, but on smooth, level floors of suitable material to resist rough use as much as possible. Metal shod vehicles tear up floors, which need to be treated as gently as possible.

Workmen tear up any type of structure which hinders their fast movements. Window sills, also, can be eliminated, as can also windows of a type that can be manipulated - opened or closed, and so yield enormous alterations in the carefully calculated efficienty of ventilation. Moreover, ventilating ducts and other apparatus associated with ventilation or operations, which must be moved by hand, will simply be ignored or broken off or battered out of shape by impatient workmen. Complicated structures, which may be a nuisance in relation to the work of employees, cannot be employed unless they are absolutely essential to the operations of production. Safety is the last consideration of the average workman, and this is a fact which must be recognized despite what one would like to believe. No workman believes that the axe will fall on him, and it is difficult to the point of impossibility to train him to believe otherwise, for his job must be done (however sloppily) as a first consideration, and if attention to safety slows his work or makes it inconvenient, he will get around it somehow. And yet if anything happens to him, it is his employer's fault. This is particularly true where the relations between employers (and foreman who are alleged to be the minions of the employer) and workmen are less than agreeable (which, in my experience, are rarely mutually agreeable and straightforward).

What I am really saying above, and in the balance of this memo, is that the functioning or operating structures of an industrial plant in which hazardous operations are carried out come first and the enveloping walls and partitions should be located and designed to fit. I do not think this means the abandonment of the plans as made thus far, but rather that the arrangement of the operations (which, I suppose, exists in someone's mind) need to be drawn in and the entire thing examined to see, as fully as may be, whether a sensible and, so far as possible, hazard-free flow of materials and products can be visualized within the size and shape of the building contemplated. Where this can not be done, the building should be altered to facilitate the proper scope of the operations. Some consideration should also be given to increases or decreases in production, since some type of change seems inevitable in time.

Now, as to the medical and hygienic facilities of the plant, to which little or no (structural) attention has been paid, the following things should be said. Every hazardous plant, and particularly, perhaps, every lead-using or lead-producing plant, should have medical and (hygienic) engineering guidance during its operation. Considerations of the availability or the competence of such personnel enter into these matters, but nevertheless, the nature of the hygienic problem, and the laws of the land (including those just now developing out of recent legislation) require expert attention to these matters. Every such plant must have hygienic advice in planning its facilities, and every such plant needs some (little or much, continuously or from time to time) intelligent guidance in its operation. The orthodox pattern is that of a physician (who understands how to supervise the health of workmen in the lead trades) and an engineer who understands how to deal with this dangerous type of environment. The law requires that the lead content of the air in all parts of the plant be maintained within specified limits. This requires expert knowledge of methods to that end. The law also will require some medical supervision of the workmen. (The only reason it does not now set up such a requirement is that physicians who know what to do and how to do it, are not available. However, the means by which this can be

achieved are developing, and there will be a legal requirement as soon as it is feasible. It is only prudent to develop the means in industry, and in this I can be of real assistance, given the chance. We, in this Laboratory, have the facilities to provide the practical training required, and I can see that this is done in such a manner as to fit the circumstances.)

It is necessary, therefore, or at least wise, to fit into the plans of the office building the minimum of space required for the medical and engineering (hygienic) personnel and equipment. The doctor will need an office and examining room (combined in one space, in this instance). A separate adjoining office and treatment space (combined in one room) will be needed to house a nurse, who under the doctor's guidance, can do much of the work that will enable the doctor to spend but a fraction of his time at the plant. (However, the doctor must spend the necessary amount of time in the plant. To carry on absentee guidance in his own professional office and facilities, simply will not do. How much time will be required will depend upon a number of factors which must be dealt with.) The same principle applies to the industrial hygiene engineer, which under the new legislation will be very nearly mandatory. It would be wise, therefore, whatever arrangement can be made now, to provide space - office and laboratory combined - for this work. This person must be accessible to the plant management at stated times, at least. (It will probably be found to be unnecessary to have him full-time, unless his work can be combined with other technical work in the plant - say in the laboratory now contemplated. He should, however, be in close association, functionally, with the physician.) Incidentally, the first-aid station is best combined with the activities of a nurse who should probably be in full-time capacity, although if some arrangement can be made for a part-time nurse (say in the mornings or afternoons, but not the full-day, someone can be trained to assume the responsibilities of a first-aid attendant, in her off-hours). (Incidentally, all of this may sound like unnecessary expense to a manager who has not had any such employees and functions in the past, but I can assure all concerned that the recent legislation will demand ultimately - and probably soon - these necessary adjuncts to industrial operations in the dangerous trades.)

I believe that the matters referred to above constitute about all that need be said at once. The details, such as they may be, can come later. I have considered that a point of view in the general matter of hygienic considerations should be expressed so as to affect some procedure for bringing about further discussion at some later time. Any questions which have been created by this memo can be answered, or at least discussed, later.

I have completed the preliminary survey of the plans, which then can be picked up at your convenience. If then, you should wish to talk further about the plans or future plans, a mutually convenient time for your visit can be arranged by telephone.

Cordially yours,

Robert A. Kehoe, M.D.
Professor Emeritus of
Occupational Medicine

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