

April 3, 1941

Mr. O. B. Lewis,

Pan American Airways
Safety

Dear Oscar,

This will supplement our letter of March 27th and telegram of March 28th on the subject of the investigation of the deposits occurring in the aviation gasoline stored for use by the Pan American Airways.

As was reported in my telegram, Dr. Kitzmiller arrived in Miami on Friday March 28th and was given the complete story of what had transpired up until that time. He was given an opportunity to visit the tank repair room so that he could observe the working conditions as well as the actual circumstances under which the men might be exposed to the deposits which settle out from the gasoline. He was also given opportunity to inspect the laboratory where considerable handling of the deposits from the gasoline has taken place. Two of the chamois filters which had been used at one of the fueling points south of Miami for removing the deposits from the gasoline before it went into the tanks on the planes, were available in the laboratory for Dr. Kitzmiller to see and study. As reported to you before, as soon as these filters were exposed, sneezing was experienced by the persons making the inspection. It was Dr. Kitzmiller's opinion that the strong biting odor that was extremely noticeable in these deposits came from tri-ethyl lead salts and that this same material in a dust form was responsible for the membranous irritation that had been reported for the men who were exposed. It was reported to us that their flight mechanic, Mr. Carrin, who had brought these chamois filters from the fueling point in South America to Miami, had experienced nose bleeding throughout the night following his return to Miami with them. This was the only case reported where severe membranous irritation or the results of severe irritation persisted for any length of time after the exposure ceased. However, the men in the tank shop did experience head and joint aching and shortness of breath which would persist for varying lengths of time after leaving work.

A conference was held Friday, March 28th in the office of Mr. Toomey, Assistant Division Manager and Division Engineer for Pan American Airways, Eastern Division, which was attended by the following: Mr. Toomey; Mr. Farnham, Assistant Division Engineer, Pan American

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Airways; Dr. McDonald, Medical Director, Pan American Airways; Dr. Bell, Assistant to the Medical Director, Pan American Airways; Dr. Kitzmiller, Ethyl Gasoline Corporation; Mr. Phipps, Safety Engineer, Ethyl Gasoline Corporation; and Mr. Rosser, Ethyl Gasoline Corporation.

During this conference the technical aspects of the problem were discussed briefly in order that everyone present might have a clear picture of everything that had transpired, and the health angle was discussed at length and at great detail. This was the first time that Dr. McDonald had been in on one of the discussions although everyone else was somewhat familiar with most of the details.

From a health and safety standpoint, the problems were: 1. Examination of personnel previously exposed; 2. Preventing further exposure at points where this was known to exist previously; and 3. Cleaning of storage facilities and disposal of deposits without exposure to the personnel handling this work.

As previously reported to you, we have, throughout our activities with Pan American Airways, attempted to maintain a policy that would create as little disturbance and draw a minimum attention on the part of the working personnel in the Pan American Airways organization to the health problem involved, and all discussions were held primarily with department heads. In furtherance of this policy, Dr. Kitzmiller, during the conference, stated that he felt that physical examination for the men in the tank shop could be carried out as a part of a program of periodic routine physical inspection, by the Pan American Airways doctors, which is being instituted throughout this organization at the present time. However, it was felt best that specimens from those exposed be obtained and sent to Cincinnati for lead analysis, and arrangements were made whereby containers would be shipped to Miami by Dr. Kitzmiller for this purpose. It was Dr. Kitzmiller's feeling, that while exposure had occurred, it was evident that it was not of a currently serious nature, since all of the men involved had continued at their jobs, and therefore a slight delay in completing physical examinations could not be considered negligent nor dangerous to the health of those men. However, it was learned that on Saturday, Dr. Bell examined Mr. [REDACTED], who had reported the most pronounced effects from the exposure, and whose work had been confined entirely to cleaning and working with the fuel tanks from the ships. Examinations of the other men working in the tank shop were to be made the following week. In further support of this decision by Dr. Kitzmiller was the fact that a pressure spray, composed of a mixture of kerosene and light lubricating oil, had been used to wet the tanks to be worked on in order to keep down any dry deposits and dust materials that would likely be blown into the air. Instructions for following this procedure were issued on March 5th, and the symptoms which had previously been noted, especially the sneezing, had been reduced to a point where it was practically eliminated.

Prior to Dr. Kitzmiller's arrival, it had been learned that Ethyl Fluid was being used in the laboratory in connection with the

knock testing work, and therefore it was in order for Dr. Kitzmiller to examine these men, in accordance with our policy of periodic check up on men who are engaged in this type of activity. Dr. Kitzmiller felt that this should be done while he was in Miami and arrangements were made to examine the laboratory men on Saturday.

The second point involving prevention of future exposure was discussed thoroughly and brought out three distinct possibilities where this might occur. These points were: 1. Laboratory; 2. The tank repair shop; and 3. The fueling stations and storage facilities, and in the use of chamois filters for removing the deposits before the fuel is put into the plane tank. It was recommended that future filtering of the deposits from the gasoline in the laboratory be eliminated as much as possible. Where this is necessary, it was recommended that gloves be used by the persons handling the gasoline and the deposits, and that this work be carried out in a hood, and the filters immediately destroyed.

Examination of a number of tanks recently removed from planes, and also sumps removed from the tanks of planes currently in operation, showed comparatively small amounts of the deposits showing up in the plane tanks at the present. It was felt that the precautions which are being used, that is, pressure spray for settling any dry material while these units are being worked on, are adequate until disposal of the contaminated stocks is completed.

In the handling of the chamois filters at the fueling points in the field, Dr. Kitzmiller felt that rinsing thoroughly three or four times in clear naptha would clear these filters of dangerous materials so that it would be possible to continue to use them. This, of course, is to be done every time the filter is used to remove the deposits from the gasoline while the planes are being fueled. The matter of deposits in storage facilities was handled in the discussion of plans for cleaning the tankage in the field, and this matter was the subject for a further conference on Monday, March 31st.

In trying to work out a program and procedure for disposing of the deposits which had accumulated in storage facilities, it was agreed that it would be desirable to have information on the actual physical setup of these storage facilities before making definite recommendations. While most gasoline storage is maintained in drums, there are several points where underground storage tanks of approximately 1000 gallon capacity are maintained. The radio was used to obtain all information possible concerning these underground storage facilities.

By Monday, information was available to the extent that there would not be more than five points where there might be tank cleaning activities required. On this basis, general recommendations were made, which were primarily the "Precautions For Men Entering Tanks That Have Contained Leaded Gasoline", as well as information concerning specific

matter that might be encountered due to local conditions.

It was finally determined that W. H. Phipps, our Safety Engineer, would attend one tank cleaning at the nearest point to Miami, which would be Antilla, Cuba, with Mr. Garrison, Assistant Manager of the Control Laboratory. This would serve two purposes. First, Mr. Phipps would provide Mr. Garrison with firsthand experience and training in handling this activity, so that he would be in a position to carry on safely at the other fueling points where this work would be required. Second, as a result of the experience gained on this one job, and the information and general recommendations that had been covered in our conference, final instructions would be made up which would include our "Precautions For Men Entering Tanks That Have Contained Leaded Gasoline" that would be sent to the other divisions of Pan American Airways where this same condition exists, and tank cleaning would be required.

Mr. Phipps remained in Miami for the purpose of attending this first cleaning, but he subsequently reported that later information developed the fact that the tank at Antilla would be the only one that would have to be cleaned. Pan American Airways, in checking their records, found that this particular tank had been in service for quite a long time, and in view of this, decided to install new storage facilities rather than attempt to clean the old. There will be no tank cleaning required in the Eastern Division of Pan American Airways under the Miami Division office, which includes the lines operated from Miami to Barranquilla, the West Indies, and down the east coast of South America to Para, Brazil. The other divisions of this company operating in Mexico, Central America and the west coast of South America, and the east coast of South America from Para to the south tip, will necessarily require information for handling this condition in that territory where stocks of this same fuel have been stored. However, it is felt that the information and recommendations which were provided the officials in Miami, if followed, will be satisfactory for handling these activities in the other divisions. We have also assured the people in Miami that we are glad to cooperate with them to any extent, and would be glad to have them call on us for any additional information and assistance.

It should be mentioned that the two chamois filters which were inspected in Miami have been sent to Dr. Kehoe in Cincinnati along with a sample of the gasoline containing the deposits under question.

It is my understanding that the Texas Company is taking steps to regain all of the gasoline that was delivered to Pan American Airways with the lecithin inhibitor, and which is still in storage at their various fueling points, and this will be replaced with fuel containing UOP No. 4 inhibitor. It, of course, is not known what means will be used to clean the drums in which this fuel has been stored and in which it will undoubtedly be returned to the refinery at Port Arthur or to one of their terminal points, nor what disposition will be made of the deposits that come from these drums, and I am wondering if it would not be desirable to check this with the Texas Company.

Very truly yours,


George P. Rosser.

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P.S. Please note the attached report on laboratory hood.