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Mr. Elmer P. Wheeler
Industrial Hygienist
Monsanto Chemical Co.
1700 S. Second Street
St. Louis 4, Missouri

Dear Elmer:

Thanks for returning the copy of the Gordon Conference talk, which I want to send to Phil to look over before I attempt to put it in shape for publication. I shall be glad to loan it and the slides to you whenever you wish.

In relation to the determination of Aroclor 1242 in the atmosphere of the submarine, you are correct that if a standard UV curve were prepared for either Aroclor or the di-2-ethylhexyl phosphate and a sample of air containing both of these was analyzed for one or the other, that high results might be obtained because of interference by the other substance. However, if a standard UV curve were prepared from Pydraul F-150 and if the composition of the material in the air were not any different than that in the liquid state then a reasonable concentration of Pydraul F-150 would be determined and the concentration of Aroclor could be related to that concentration. This of course involves the divulgence of the composition and may not be desirable. Other objections to this method are (1)that it is not too specific since a peak of maximum absorption might not be present above 230 or 250 m/u, and (2)any other organic vapors present in air that absort at the selected wave length would also give high results from interference.

Two other indirect methods that might be more specific would be to determine the Santicizer 141 by one of two methods ((1)Hydrolyze and determine the phenol by coupling with diazotized para nitroaniline or (2)Hydrolyze and determine the phosphate as ammoniumphosphomolybdate). Either one of these methods would be fairly specific and fairly sensitive. I would prefer either of them over a UV method of the Santicizer based on the UV absorption due to the phenyl radicals. This of course also divulges the compositions.

The only way to analyse the atmosphere for Aroclor 1242 without revealing the composition is by direct analysis for the Aroclor. I do not know of any satisfactory way of directly determining the Aroclor except by the UV method or for the chloride. The UV, if based on a standard curve for Aroclor, might give greater interference (as mentioned earlier) than the interferenoe from extraneous chlorides by the method of thermal decomposition and precipitation as silver chloride. At the moment I can not think of any media that would remove the extraneous chloride before thermal decomposition that might not also remove some or part of the Aroclor.

If Aroclor 1242 was not removed from scrubbing through a weak aqueous alkaline solution, then the extraneous chlorides could be removed before thermal decomposition of Aroclor. However, I believe the probability is low that this would be absolute with the low concentrations of Aroclor in the air and might given significantly low results. If the Aroclor were completely removed by the alkaline solution and could then be removed by aeration, (the extraneous chlorides would remain behind) a satisfactory method would be available without revealing the composition. However there are probably too many "ifs" in this procedure.

Because of the apparent impasseof a good method of analysis without revealing the composition, I have looked again at the UV absorption curves for Aroclor 1248 (I don't have the comparable one for Aroclor 1242) in Figure 6 of the report of

March 11, 1953 on Pydraul F-9 and for Santicizer 141 in Figure 3 of the report of October 14, 1949 on Santicizer 141. These data hold some hope that the interference of the S-141 by UV at 246 mμ might not be too great in the determination of Aroclor 1242. This should be checked by running known solution of Pydraul F-150 and Aroclor 1242 in the UV to determine the extent of interference. This is not too difficult or too expensive if you wish us to check it for you.

Sincerely yours,

Joseph F. Treon

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