Monsanto INDUSTRIAL CHEMICALS CO.

FROM (NAME & LOCATION): J. P. Mieure - T2F

DATE: October 9, 1975

SUBJECT: VISIT BY VERSAR, INC.

REFERENCE:

cc: H. S. Bergen - B2SL
R. E. Keller - T1B
M. Pierle - E1SF
W. R. Richard - T3A
J. R. Savage - B2SL
D. Wood - B2SD

TO: W. B. Papageorge
B2SK

On October 9 R. G. Kaley and I were visited by G. Contos and E. E. Hackman of Versar, Inc., and C. H. Huether of Clark, Dietz & Associates, who are collaborating with Versar in the preparations of a report for EPA on the microeconomics of PCB effluent cleanup technology. It was our understanding that a secrecy agreement with Versar permitted us to discuss in general terms our knowledge of PCB cleanup technology. We felt it important to appear candid in our discussions because we sensed annoyance at Monsanto's reluctance to provide specific answers.

They listed eight processes for treating waste water that they wanted to cover:

1. Activated carbon
2. PVC chips
3. Clay
4. Polyurethane
5. Amberlite resins
6. UV photolysis
7. Wet oxidation
8. Liquid/liquid extraction

We professed our lack of knowledge in areas 2, 5, 6 and 7 and outlined our experiences in areas 1, 3, 4 and 8 as follows:

1, 3 and 4. We studied, on a laboratory scale, the ability of activated carbon, calcined clay and polyurethane foam to remove PCB from saturated aqueous Aroclor 1016 solutions. We found both carbon and foam to be superior to clay for PCB removal. Carbon and foam reduced the PCB concentration in several hundred liters of saturated water to 1-10 ppb. We emphasized that these were laboratory studies and should not be extrapolated to industrial wastewater.

8. Our analytical method for PCB in water utilizes extraction of PCB into hexane. We have not attempted large-scale extractions as a means of purifying wastewater.

In response to questioning about potential chemical means for PCB degradation, we indicated that our experience was limited to chemical methods for removing interferences from PCB solutions for analysis.

We also discussed the biodegradability experiments of Saeger and Tucker and of Baxter et. al. as means of removing PCB from aqueous waste.

We learned that a Canadian group has been experimenting with PVC chips for removing PCB from water. PVC chips work slightly better than carbon on actual wastewater, with a total surface 100,000-fold less. High surface area PVC might be a very efficient medium for PCB removal from water.

J. P. Mieure

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