Monsanto

FROM (NAME & LOCATION): W. R. Richard - Research Center

DATE: March 10, 1969

SUBJECT: NOTES ON MEETING 3/6/69
INDUSTRIAL BIO-TEST LABORATORIES, INC.

REFERENCE: AROCLOR - WILDLIFE

TO: FILE

cc: H. Bergen/D. Olson
T. Benignus/J. Bryant
~~J. Fallon/D. Roush/~~
S. Shaw
J. Springate/Schalk/
Waychoff
R. Keller/E. Tucker
C. Payton/K. Wells
B. Wildi

Those present:

Joe Calandra - Pres.-Chemist PhD and M.D. + Staff
Northwestern U-Pathology

Otis Fancher - V. Pres.-Chemist PhD + Drug Research

M. L. Keplinger-(Kep) PhD Biological evaluation

Ray Kary - Air Pollution - Rad. Health

Lawrence Beer- Environmental Services
Monitor chemical plants - Nuclear Power Plants

E. Wheeler
W. Richard } - Monsanto

E. Wheeler and W. Richard reviewed background on Aroclor properties, recent analytical results by Scott Tucker, history of Aroclor, application uses, ref. to Risebrough's Dec. 1968 paper in Nature; effects by public relations, legal and scientific findings on Aroclor and its products. We discussed amount of material-15,000 lb/yr, passing through Santa Clara warehouse, questioned whether PCB could really be present to affect wildlife as reported in Risebrough's paper on San Francisco Bay.

We asked for consideration of problem from public relations, DDT Wisconsin hearings, legal actions, and scientific aspects. We discussed problem from:

Analytical chemistry

Acute and chronic toxicity - animal-fish-bird studies

Enzyme enhancer

calcium metabolism → thin egg shells
hormones → human involvement

Terrestial ecology

The last subject, ecology, was just mentioned because Bill Johnson, Bio-Test man in this field, was at U. of Wisconsin. The name of Dr. Thomas Parks, U. of Chicago, was mentioned as a possible consultant - may be retired. Logistics of Aroclor exposure and likelihood of contamination not discussed enough.

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The question of a grant to Newall - at Stanford, was mentioned. Possible listening post for West Coast activities. - No decision.

The problem of contacting and maintaining contact with the University and Govt. people who are seeking biological information on PCB's was discussed. Names of Bill Johnson and perhaps Lawrence Beer were mentioned.

We discussed possible consultants who might be of help on this problem.

Monsanto Consultants

Alan Mehler	Marquette U - biochem and enzymes
Robert Metcalf	U. of Illinois-entomologist
Bert Vallae	Harvard - enzymes
Jean Mayer	Harvard - nutrition

Possible Bio-Test Consultants

Wayland Jack Hayes	Vanderbilt
Thomas Parks	U. of Chicago - ecologist-Dept. of Biology

Agreed to convene at earliest possible date at either Bio-Test or Monsanto with appropriate consultants. Job of educating Monsanto consultants, and getting permission, to fall to E. Wheeler and W. Richard. (March 21 tentative date)

Bio-Test consultants job to J. Calandra - Otis Fancher.

E. Wheeler will report on program to date:

I. Rat tissue residue study and acute levels for Aroclor 1242, 1254, 1260 and 5460.

II. Chicken tissue residue study and acute levels.

III. Fish toxicity TLM.

IV. Chicken toxicity - reproductive egg and meat residue (6 months)
To go ahead with study but add enzyme and hormone experiments plus calcium metabolism studies and egg shell thickness.

V. Mallard Duck - (Aquatic Bird) - Same type study as for chickens.

VI. Three generation reproduction in rats (18 months).
Start now.

VII. Two year study in rate (26 months)
Start now.

VIII. Two year study in dogs (26 months).

IX. Subacute Fish Study.
Start immediately.
Consider possibility of reproductive cycle.

X. Metabolic studies -
No decision, question on need for radio tracers.
Seem inclined to do without radio tracers.

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Francis T. Mayo
Chief Federal Water Pollution
Regional Enforcement Office
San Francisco District } Friend of Lawrence Beer.

Discussed requirements of sampling fish and water in San Francisco Bay, location of a lot of Risebrough's accusations vs. PCB and possible site of very low Aroclor usage. L. Beer indicated $40,000 for this kind of job. Wheeler and Richard said $4,000 plus a rowboat.

Defense seems to have these elements.

I. Aroclor not intended to be spread around. Used in closed systems, recycle of material, limited exposure. - most but not all Aroclor uses meet the above description.

II. Aroclor identification in nature. Is it really identified? Is it a metabolic product of something else like 2-4D or 2,4,5T or chlorophenols? For example, hard to see that 15,000 lb/year could pollute San Francisco Bay even if were all dumped in.

III. Atmosphere and streams around our mfg. plants and major customers. Need to establish a norm and an acceptable standard.

IV. Establishing a tolerable limit. Here the Wisconsin EDF type will want 0 tolerance. They will be driving on this subject as they are against DDT. Even if they fail, they will drive people from product use. This is already happening with DDT because of public relations aspect.

V. Not discussed but possibly obvious. Can we find out whether product degrades in nature so that it does not accumulate? Only real way out long term.

Joe Calandra again mentioned need for soil and bug experiments so that PCB's could be shown to degrade. If Aroclor is an enzyme enhancer, does that mean enzymes attack it? This program is not in gear.

WR.

W. R. Richard

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AROCLOR IN WILDLIFE

EDF people vs. DDT { Pollutant if it harms any animal, fish, or plant.
They are going after 2-3 generation theme, 0 tolerance for DDT.

Applications For Aroclor	Acute and Chronic Toxicity	Enzyme Enhancer?	Effect: Birdlife	Effect: Man
Transformers		In Vitro	Certain rare birds becoming extinct.	
Capacitors		In Vivo		
Heat Transfer			Says birds have DDT + PCB residues.	Expect effects in man.
Hydraulics		(a) PCB + Phenobarbital		
"Plastic"		(b) PCB + Hepatic enzyme Hepatic enzyme* → Ca Metab.	Brain damage	
Adhesives				
Paints		(c) PCB + Hormones → ?	2nd or 3rd generation have thin egg shells.	
Paper				
Misc.				
Mfg. Plants				
Domestic				
Foreign				
Competition				
Environment				

PCB's in Plants (Food Chain) → → →
Fish

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