MINUTES

AROCLOR - WILDLIFE; REVIEW OF BIO-TEST STUDIES

MONSANTO GENERAL OFFICES
MEDICAL DEPARTMENT
ST. LOUIS, MISSOURI

September 19, 1969

TO:

Those Present	Not Present
M. W. Farrar	W. R. Richard
W. L. Hunt	
R. M. Keller	
R. E. Kelly	
E. S. Tucker	
E. P. Wheeler	

The above attendees reviewed with C. E. Fancher, Director, Industrial Bio-Test Laboratories, the biological results to date of their feeding studies and the consolidation of tissue samples for residue analysis by the Analytical Group of the Applied Sciences Section.

A detailed analysis of the currently planned analytical support work for the Aroclor - Wildlife project was prepared for this meeting, Table I. The analysis includes a listing of studies, manpower requirements and a dollar cost for the analytical support of each study. In brief it was ascertained that there were at least five separate Bio-Test feeding studies in progress or planned which would require 105 man weeks to analyze the estimated 1340 samples being generated, at a cost of $63,000. An additional $18,000 of work not involving Bio-Test is also outlined in the Table.

Meeting Objectives

I. Review Bio-Test feeding studies with special regard to the scheduling and reduction of the number of samples to be analyzed.

II. Status review of the biological results, to date, of Aroclor - Wildlife Bio-Test feeding studies.

With these facts in mind each Bio-Test study listed in Table I was critically reviewed to determine if the number of samples requiring residue analysis could be decreased without appreciably affecting the results.

1. Rat Tissue Study

   Actions: - Delete residue analysis of rats fed chlorinated naphthalenes and pesticides.

   Pool male and female animals.

2. Chicken Toxicity, Reproduction, and Meat and Egg Residue Study

   Actions: - Pool larger numbers of eggs.

   - Analyze only fat, muscle, and liver tissues.

   - Restrict analysis to one, no effect level for each Aroclor.

3. Mallard Duck Study

   Action: - Equivalent to Study No. 2.

4. Two Year Chronic Toxicity in Rats

   Actions: - Delete 9 month sacrifice.

Actions: (Cont'd)
- Pool all male and female animals.
- Restrict analysis to one, no effect level for each Aroclor.

5. Fish Toxicity Study

Actions:
- None; study design requires this number of samples.

6. Rat Reproduction Study

Actions:
- Addition of 2nd litter, 1st generation, rat pups to be analyzed.

7. Two Year Chronic Toxicity Study in Dogs

Actions:
- Addition of selected tissues for residue analysis.

AROCLOR - MONTHLY ANALYTICAL SUPPORT REVISED

(Bio-Test Section Only)

		No. Samples	Man Weeks	$ Cost
I.	Residue Determinations			
	A. Biological Residues (Bio-Test)			
	1. Rat Tissue Study (3 levels + Control)	40	3	1,800
	2. Chicken Toxicity, Reproduction, and Meat and Egg Residue Study (Control + 3 Levels + 3 Cycles)	96	8	4,800
	~~3. Mallard Duck Study~~	~~96~~	~~8~~	~~4,800~~
	4. Two Year Chronic Toxicity in Rats (Pool all Males + all Females + One NOEL)	160	12	7,200
open	5. Fish Toxicity Study	60	9	5,400
	6. Rat Reproduction Study	10	1	600
	7. Two Year Chronic Toxicity Study in Dogs	40	3	1,800
10.71		[illegible]	44	26,400

It is important to note that neither Table I nor the revision take into account work done by the Spectroscopy Group (GC/Mass), duplicate analysis of samples, nor any additional method development required.

The results, to date, of the biological studies were issued in progress reports distributed by Dr. Fancher.

Additionally, arrangements were made to have Bio-Test store tissue samples in Chicago until they can be analyzed.

D. S. Tucker

db
Attachment

TABLE I

		Charges	Samples	Man Weeks	Anal. Cost ($)
I.	Residue Determinations				
	A. Biological Residues (Bio-Test)				
	1. Rat Tissue Study	Reg.	160	12	7,200
	2. Chicken Toxicity, Reproduction and Meat and Egg Residue Study	Reg.	360	27	16,200
	3. Mallard Duck Study	Reg.	360	27	16,200
	4. Two Year Chronic Toxicity in Rats	Reg.	400	30	18,000
	5. Fish Toxicity Study	Reg.	60+	9	5,400
			1,340	105	63,000
	B. Environmental Residues				
	1. Outside				
	a. Lake Michigan WARF Study	Reg.	12+MD	2	1,200
	b. Detergents & Components	Inorg.	20+MD	3	1,800
	2. Monsanto				
	a. Anniston - Water/ Sediment/Fish	Mfg.	14 in hand	1	600
	b. NCK - Water/Sediment	Mfg.	13 in hand	1	600
	c. Pensacola - Water/ Sediment/Fish	Reg.	12 in hand	1	600
	d. Sumbon - Sediment	Reg.	4 in hand	1	600
	e. Florida - Soil Poison Test Samples (Soil)	Reg.	45 X 2	5	3,000
			165	14	8,400
II.	Special Studies				
	A. Ultraviolet Degradation of PCBs, et al	Reg.	MD	4	2,400
	B. Water Extractability of PCBs From Painted Surface	Reg.	MD	5	1,800
	C. Characterization of Competitive PCB Products	Reg.	MD	1	600
	D. Analysis of Auto Exhausts for PCBs	Reg.	MD	1	600
	E. Analysis of Pesticides for PCBs	Reg.	MD	3	1,800
	F. Determination of the Quarter Phenyl Content of Arocior 5460	Reg.	MD	4	2,400
			-	18	9,600
	TOTALS:		1505	135	81,000

Assumption - 3 hr./sample
$15/hr. = $600/w...

MD - Method Development

MONS 030220

Aroclor FF

January 15, 1970

STATUS OF AROCLOR STUDIES

AT INDUSTRIAL BIO-TEST

Aroclor 1242

2 year rat at 1, 10 and 100 ppm:

At 90 days--possible liver enlargement. Males at 100 ppm. Histology O.K. Others O.K. Blood, urine.

2 year dog at 1, 10 and 100 ppm:

At 6 months--O.K. body weight, food consumption, reactions, mortality, hematology, blood chemistry and urine.

3 generation rat reproduction at 1, 10 and 100 ppm:

100 ppm--effect on survival--difficult to obtain pups for maturing and mating, egg production.

Chickens--egg production, hatchability, survival, etc. at 1, 10 and 100 ppm:

10 and 100 ppm levels effect hatchability. 1 ppm O.K.

Aroclor 1254

2 year rat at 1, 10 and 100 ppm:

At 90 days possible liver enlargement in males at 100 ppm. Histology O.K. Other levels O.K.

2 year dog at 1, 10 and 100 ppm:

At six months body weight effected at 100 ppm. Possibly less food consumption? Other levels O.K. Same parameters as 1242.

MONS 030221

Aroclor 1254 (Continued)

3 generation rat study at 1, 10 and 100 ppm:

100 ppm--effect on survival same as 1242.

Chicken--egg production, hatchability, survival, etc. at 1, 10 and 100 ppm:

10 ppm O.K. but 100 effects hatchability.

Aroclor 1260

2 year rat at 1, 10 and 100 ppm:

At 90 days--possible liver enlargement in males and females at 100 ppm. Other levels O.K.

2 year dogs at 1, 10 and 100 ppm:

At six months, body weight effect at 100 ppm, possibly at 10 ppm. One male and one female died--refused to eat. No other obvious reason for fatalities by gross examination.

3 generation rat study at 1, 10 and 100 ppm:

No adverse effects.

Chicken--egg production, hatchability, survival, etc. at 1, 10 and 100 ppm:

No effect.

	1242	1254	1260
2-year rat chronic			
At 1, 10, 100 ppm Status 90 days	100 ppm Liver enl. Males 10 ppm O.K.	100 ppm Liver enl. Males 10 ppm O.K.	100 ppm Liver enl. M & F 10 ppm O.K.
2-year dog chronic			
Status--6 months	100 ppm O.K.	100 ppm Body wt. dec. 10 ppm O.K.	100 ppm 1M-1F died refused food-- no other gross abn. 10 ppm Possible body wt. effect
3 generation rat reproduction	100 ppm affects survival 10 ppm O.K.	100 ppm affects survival 10 ppm O.K.	100 ppm O.K.
Chicken--Egg Production, Hatchability, Survival, etc.	10 ppm affects hatch. 1 ppm O.K.	100 ppm affects hatch. 10 ppm O.K.	100 ppm O.K.