6-12

ANALYTICAL PROGRAM (4/70)

FOR

POLYCHLORINATED BIPHENYL ENVIRONMENTAL PROBLEM

The Applied Sciences program for the 3/31/70 Aroclor Environmental Management Plan is outlined by actions shown below. The projects indicated are supportive to the objectives given in the Management Plan. The actions represent work currently in hand. It is expected that this program will be revised continuously on a priority basis consistent with the changing needs of the Management Plan.

		Man Weeks	Target Date
Objective 1 -	Reduce and effectively control the PCB content of all effluent from Monsanto plants.		9/1/70
I Action 1)	Monitor WGK Mississippi River water, sediment and plant effluent for PCB. No water sed. in hand. None expected.	8	Complete
I 2)	Transfer GC methodology to WGK. Jean Webbe – ARD-Homer	1	Complete
I 3)	Determine PCB residues in fish from Choccolocco Creek at Anniston. 1242, 1254 types being found plus possible chlorinated terphenyls	4	75% Complete
		13	
Objective 2 -	Inform customers of the PCB problem and the importance of preventing environmental pollution both at their plants or by their products.		5/1/70

Priority A - [illegible]
" B - [illegible]
" C - [illegible]

		Man Weeks	Target Date
Objective 3 -	Develop products to replace Aroclors for those uses in which Aroclors have been demonstrated to be harmful to the environment and cannot be prevented from escaping into the environment.		12/1/70
II **Action** 1) (4)	Develop techniques needed for purity or composition measurements and for biodegradation studies of replacement candidates.	6	
	- More accurate method for isomers in distilled Aroclor 1130 and 1142.	2	Completed
		8	
Priority C	- Schedule Aroclor 1260 or highest Aroclor possible and separate by prep. GC		Not Started
Objective 4 -	Develop reliable analytical procedures for determining PCB content of liquids, gases, or solids.		7/1/70
I **Action** 1) (5)	Develop improved isolation and GC techniques for more specific and accurate measurement of PCB's.	4+	Not Started

			Man Weeks	Target Date
I	Action 2) (6)	Develop and issue method for PCB's in air. Tentative Method - Rough Draft	3	75% Completed
II	(7) 3)	Produce PCB reference materials by preparative gas chromatography. Same as Action (4)	6	
II	(8) 4)	Show if there is Aroclor product composition change over 40 year manufacturing period. Samples from early 40's obtained from SPC. will be run side by side with current	X 0.6	10% Completed
I	(9) 5)	Estimate analytical methodology and program needed for chlorined terphenyls - 5425 and 5460.	14	10% Complete

Gerry Gaser to Within one week.

Aroclor 1242, 1248, 1254, 1260

Obtain typical GC chromatograms for Swedish sample vs current + other Monsanto product.

Firm up reply to Sweden.

Priority AB

	Objective 5 -	Develop methods for effective disposal of wastes containing PCB without contaminating the environment.		10/1/70
I	Action 1) (10)	Examine gas samples from John Zink Co. incineration study.	2	completed

			Man Weeks	Target Date
I+ II	Action 2) (11)	Evaluate Vapo-Coupled sand and glass wool for absorption of PCB from water. Glassware per se removes PCB - needs retesting with equilibrated equipment.	3	100% Completed Clarify = Richards about priority
II	(12) 3)	Set up biodegradability laboratory for semi-continuous activated sludge treatments. 9 units operating - MIPB - UV down to 1 ppm. HB-40 - UV " " 1 ppm.	2	
II	(13) 4)	Carry out biodegradability studies of Aroclor products per se, HB-40, monoisopropyl biphenyl and potential substitution products.	18	
			25	

Develop enzymes for TCC.
Develop gas sampling techniques - get equipment.
Aroclor 1242 B - Team I will handle
Nine replacement ring products for Pyranol blends.
Six chlorinated diphenyl ethers

Objective 6 -	Develop methods for reclaiming and reusing off-grade fluids containing PCB.	9/1/70
Objective 7 -	Determine effects of PCB's on birds, aquatic life, animals and humans.	6/71

		Man Weeks	Target Date
Action 1) (14)	Correlate PCB residues in tissues with Bio-Test toxicity data -		
	- Rat, chicken and dog feeding studies.	30	
	- Fish studies.	8	
(15) 2)	Confirm type and amount of PCB in wildlife (fish and birds) from different geographical sources.	6	
		44	
Objective 8 -	Establish and maintain favorable relationships with customers, the press, governmental agencies, the public and the universities.		Continuous
Action 1) (16)	Appleton Paper Co. - PCB in scrubber solutions from air samples from NCR coating operations.	2	
(17) 2)	GMC Foundry, Bedford, Indiana - PCB in water settling ponds.	2	

			Man Weeks	Target Date
I	Action (18)	3) N. Johnson - Major Industrial Fluids Users (Johnson Motors, Wisconsin, Lester Casting) - Water samples for PCB levels discharged.	4	continue [illegible]
I	(19)	4) Wisconsin Alumni Research Foundation - PCB in Lake Michigan fish from Lake Michigan pesticide investigations. Send report to WARF.	1	Completed
I	(20)	5) Ohio FDA - PCB in milk from dairy herds. Send report to Ohio FDA.	1	Completed
I	(21)	6) Inorganic Division - PCB in detergents and components thereof.	5	Hold
II	(22)	7) Determine if commercial DDT, et al, contains trace PCB as contaminant.	3	Compl[illegible]
III	(23)	8) Determine presence of dioxin and/or related toxic materials in PCB products. Obtain Utrecht answer first.	2	
			20	
		4/1/70 Grand Total =	124	Detn toxicity of furans in PCB used by [illegible]

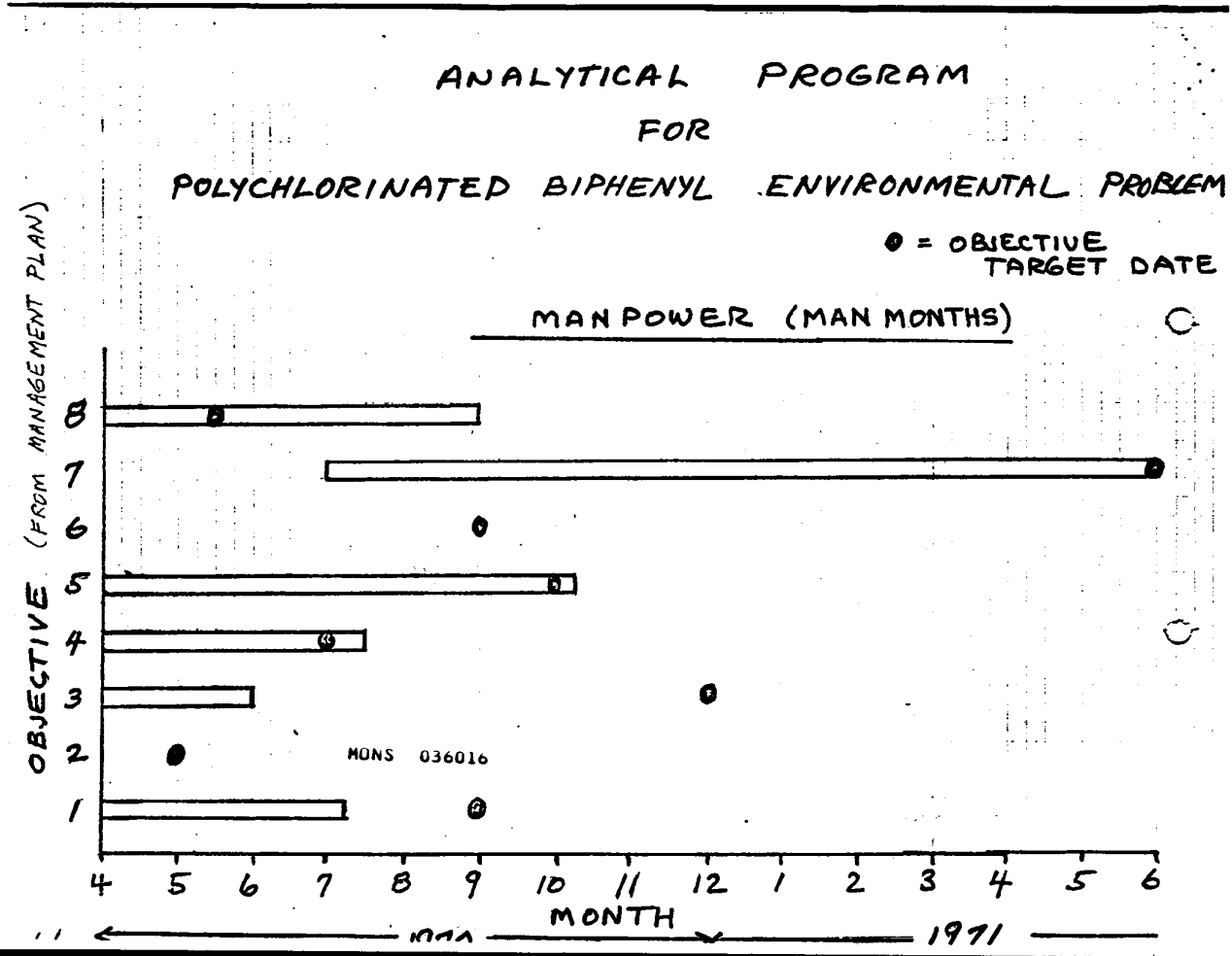
124 X $600/Week = $74,400

(24) PCB in HCl, Fumaric, Saccharin from WGK Byproduct of chlorination process. R. E. Keller — Completed

db

(25) UV exposure of PCB's. Scott will call contributor of ACS [illegible].

MONS 036015


ANALYTICAL PROGRAM
FOR
POLYCHLORINATED BIPHENYL ENVIRONMENTAL PROBLEM
● = OBJECTIVE TARGET DATE
MAN POWER (MAN MONTHS)
OBJECTIVE (FROM MANAGEMENT PLAN)
8
7
6
5
4
3
2
1
MONS 036016
4 5 6 7 8 9 10 11 12 1 2 3 4 5 6
MONTH
1971