Analytical Chemistry
Special Study 70-21
Job No. 13480/16300

AROCLOR DEFENSE - 1970 PCB SUPPORT ANALYSIS

INTRODUCTION

In the past year, in addition to the analysis of the numerous samples generated by internal Organic Division research on Aroclor and Aroclor substitutes, several hundred assorted types of samples have been analyzed for PCB's. The results of these analyses have been used by both Monsanto and its customers to: (1) identify, locate, and assess the magnitude of Aroclor pollution problems, (2) help determine what needs to be done to control the pollution source(s), (3) verify that the proposed pollution control procedure(s) is (are) effective, and (4) develop methods of reclamation for recycle and/or safe destruction of Aroclor wastes.

The objective of this special study report is to consolidate this information for ease of reference as well as provide a general over view of the findings.

SUMMARY

The attached table summarizes results of the work done during 1970 on the detection of PCB's in environmental materials. It covers a total of 486 samples which were analyzed during 1970. PCB's typical of our Aroclor products were found in

- Water and sediment from 4 manufacturing sites, 13 customer sites, 12 U.S. rivers, 1 U.K. river and Lake Michigan.
- Air at the Anniston Plant and at the Appleton Coated Paper Co.
- Fish from Lake Michigan and 8 U.S. rivers.
- Human fat from a midwest biopsy specimen.
- Milk from Maryland, Ohio, and Massachusetts dairy farms.
- Shrimp from Escambia Bay, Florida.

The air, water, and sediment samples contained materials most typical of Aroclor 1242, 1248, 1254 and/or 1260. The milk,

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shrimp, and fish samples most often contained PCB's typical of Aroclor 1254-Aroclor 1260.

RESULTS

See attached table.

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Location of Manufacturing or User Site	Associated Waterway(s)	Sample Matrix	No. of Samples	PCB's Found Most Typical of Aroclor 1242	1248	1254	1260	PCB Level	Support Objective
Industrial									
Monsanto, U.S.A. W. G. Krummrich Plant Sauget, Ill.	Mississippi River	Water	69	X	X	X	X	ppb-ppm	Plant Pollution Contrd
		Sediment	12	X	X	X	X	ppb-%	"
		Fish	17	X	X	X		ppm	"
		Muriatic Acid	9	X				ppb	"
J. F. Queeny Plant St. Louis, Mo.	Mississippi River	Water	6	X				ppb	"
		Fumaric Acid	2					None Detected	"
		Saccharin	5					"	"
Delaware River Plant Bridgeport, N. J.		Phthalic Anhydride	5	X	X			ppb	"
Pensacola Plant Pensacola, Florida	Escambia Bay and River	Water	7			X		ppb	"
		Fish	1			X		ppm	"
		Shrimp	4			X		ppb	"
Anniston Plant Anniston, Ala.	Snow Creek Choccolasso Creek	Water	26	X	X	X		ppb-ppm	"
		Sediment	5	X	X	X		ppb-ppm	"
	Coosa River	Fish	35		X	X		ppb-ppm	"
		Hog Fat & Liver	2	X		X		%	"
Monsanto, U.K. Newport, England	River Severn (Uskmonth Area)	Sediment	4	X				ppb-ppm	"
National Cash Register Portage, Wisconsin	Fox and Wisconsin Rivers	Water	12	X				ppm	Customer Service
Appleton Coated Paper Co. Appleton, Wisc.	---	Air	10	X				mg/m^3	"
		Water							
General Motors Corp. Central Foundry Div. Bedford, Ind.	---	Water	13	X	X			ppm	"
General Motors Corp. Pontaic Div. Pontaic, Michigan	---	Mold Sand	1	X				ppm	"
Ford Dearborne, Michigan	---	Mold Sand	2	X				ppm	"
Johnson Motors Waukegan, Ill.	Lake Michigan	Water	4	X				ppm	"
Wisconsin Steel Chicago, Ill.	Chicago Metro Sewer	Water	3	X				ppm-%	"

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Location of Manufacturing or User Site	Associated Waterway(s)	Sample Matrix	No. of Samples	PCB's Found Most Typical of Aroclor 1242	1248	1254	1260	PCB Level	Support Objective
Wheeling Pittsburgh Steel Steubenville, Ohio	Ohio River	Water	1	X				ppm	Customer Service
		Sediment	1	X				ppb	
Lester Coating Co. Bedford, Ohio	Storm Sewer	Water	1	X				ppm	"
Central Diecasting Chicago, Ill.	Downtown Sanitary Sewer	Water	2	X				ppb-ppm	"
Timken Bearing Canton, Ohio	---	Water	3	X				ppb	"
U.S. Steel Christy Park	---	Water	1	X				ppm	"
JARD Co., Inc.	---	Water	6	X				ppb	"
General Electric Pittsfield, Mass.	---	Water	15			X	X	ppb	"
Non-Industrial	**Sample Source**								
Organization Supplying Sample									
Wisconsin Alumin Res. Foundation Institute, Inc.	Manitowoc River Wisc.	Fish Composite	1			X		ppm	Colaborative Analysis
	Kewaunee R. Wisc.	Fish Composite	1			X		ppm	"
	Burns Ditch Lake Mich.	Fish Composite	1			X		ppm	"
	Manistee R. Mich.	Fish Composite	1			X		ppm	"
	Unknown Source	Human fat biopsy sample	1			X		ppm	"
State of Ohio Dept. of Agriculture Food, Dairies, and Drug Laboratories	Dairy Farms	Silo Scraping	1			X		%	
		Milk Extract	1			X		ppm	
		Raw Milk	3			X		ppm	
Maryland Cooperative Milk Producers, Inc.	Coop Dairy Farms	Milk	5					ppb	
		Water	4					None Detected	
Misc. Support Work									
Bio-Test Laboratory Tissue Studies	---	Rats	48	X	X	X		ppm-%	Residue Research on Synthetic Samples
		Chickens	36						
		Fish & Water	40						
John Zinc Co. Tulsa, Oklahoma	---	Gas Scrubber Samples	49	X		X	X	ug/m^3-mg/m^3	Waste Incineration
Monsanto Enviro-Chem St. Charles, Mo.	---	"	3	X				mg/m^3	"
		Water	4	X				ppb	"
		Sediment	4	X				ppb	
Monsanto Inorganic Division	---	NTA	8					None Detected	Divisional Service

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